A QUALITATIVE STUDY EXPLORING INFLUENCES ON THE TYPES OF ONLINE INSTRUCTIONAL SUPPORT PROVIDED BY HIGH SCHOOL LIBRARIANS

by

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ABSTRACT

VALERIE S. BRYAN: A Qualitative Study Exploring Influences on the Types of Online Instructional Support Provided by High School Librarians
(Under the direction of Barbara Kawulich, Ph.D.)

This study explored the lived experiences of high school librarians related to use of online environments to provide instructional support. The study sought to discover influences on the types of online instructional support provided by high school librarians. Inquiry focused on the participant librarians' perceptions of the benefits and challenges of implementing different types of online instructional support. Additionally, the study investigated the participants' experiences of the relationship between the online instructional support that they provide and instructional partnerships.

A purposive sample was sought through a posting in a statewide library media listserv, which led to five participants, each from a different school district. The most valuable source of data collection was a semi-structured interview; other supporting data came from prompted participant journal entries, and from artifacts related to the participants' online instructional support. Individual cases examined in this qualitative study are not intended to produce generalizable knowledge; however, they provide examples documenting what is possible for high school librarians seeking to provide online instructional support. Thick, rich description was provided regarding each of the participants' experiences in order to enable other librarians to consider the possible transferability of the concepts presented to their own instructional context.

Findings suggest that networking assists school librarians with ideas about what technologies to use and how to use them to support instruction; however, much of the learning that the participants described required the school librarian to take the initiative to engage in an independent learning effort to prepare for implementation. The participants were resilient when obstacles were encountered, finding alternative routes when necessary to provide online instructional support to serve the needs of students. Ease of use and compatibility of technologies influenced the participants' choice of online instructional resources and strategies, as did local school district actions. Ultimately, audience acceptance strongly influenced which online instructional technologies and strategies were frequently used. Recommendations include focusing on a limited number of online instructional support strategies, to increase the amount of time that may be devoted to content-area instruction.

DEDICATION

To generations of family members who have provided examples of high levels of achievement, encouraged me to achieve more, and supported me through challenges. I am grateful for the inspiration provided by their accomplishments. I am most appreciative of my husband Russell Kevin Bryan, who encouraged me to pursue a career in education and has supported my efforts through challenging years of change, and our daughter Brielle Eileen Bryan, who shares my passion for academic excellence and has inspired me to reach further through her examples of exemplary achievement.

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FIELDS OF STUDY

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TABLE OF CONTENTS

Chapter One

Introduction to the Study

Multiple forces are converging to bring on rapid changes in education. Technology, economics, and politics are among the major influences that are driving transformation in educational practices. The past decade has brought about many changes in technology such as smart phones, iPads, tablets, and apps; and the pace of change continues to grow as new technologies are introduced daily (Meister & Willyerd, 2010a). Changes in the economy have had significant impact on education budgets. A report from the Center on Education Policy indicates that no district, whether urban or rural, is immune to budget reductions or staffing cuts (Kober & Rentner, 2011b). While making adjustments for challenging fiscal scenarios, educational institutions are also facing calls for radical transformation of instructional programs (Department of Education, 2010; Gee, 2009). Political influences are driving many educational reforms, but budget and staffing capacity may be insufficient for implementation of reform strategies within expected timeframes (Kober & Rentner, 2011a; Tucker, 2012). Among those challenged to keep pace with the rate of change in education are school librarians.

Invoking comments made by Gordon Gee regarding the imperative for radical reform in higher education, the Association of College and Research Libraries (ACRL, 2009) encourages librarians to embrace systemic change or risk being factored out of the equation. Gee suggests the choice is "reinvention or extinction" (Gee, 2009, p. 18). He explains that "change at the margins will not do" (p. 18). The *ACRL 2009 Strategic Thinking Guide for Academic Librarians*

in the New Economy describes three forces driving the need for change: the economy, technology, and students. Increased connectivity through smart phones, laptops and other portable technologies along with access to online social networking tools are changing student behaviors (ACRL, 2009; Tapscott, 2009). Current student populations are highly collaborative in their approach to education (Gee, 2009). The learning styles of today's digital learners must be considered during instructional planning (Costello, Lenholt, & Stryker, 2004; Manuel, 2002; Sheesley, 2002). For the current student population lectures are considered an ineffective instructional technique; it is suggested that lectures be replaced with more active learning experiences (Lambert, 2012; Manuel, 2002). This study was designed to explore high school librarians' current use of instructional strategies for online environments to meet the needs of 21st century students. The study aimed to identify influences on the types of online instructional support that high school librarians provide. The investigation focused on the benefits and challenges of different types of online instructional support that high school librarians provide, and librarians' experiences of the relationship between the online instructional support that they offer and instructional partnerships.

School librarians are encountering the same influences as other educators and must also respond to the call for change. The rate at which new information is produced continues to accelerate, and new technologies are useful for managing the increased flow of information (Meister & Willyerd, 2010a). At the same time, librarians find they need to continually update their technology skills to effectively support 21st century learners (Sigman, 2008). Student learning outcomes are expected to include the ability to assess the credibility and accuracy of information to prepare students for college and careers (CCSSI, 2012, CCSS.ELA-Literacy.CCRA.W.8). During recent decades the role of the school librarian has evolved to a

multifaceted position, requiring librarians to continually place a high priority on remaining educated, active and current, particularly related to technology, to meet new and emerging user needs (Goetsch, 2008; Riley-Huff & Rholes, 2011).

Problem Statement

School librarians need to conquer traditional and new challenges as they seek opportunities to fulfill their instructional roles. Traditional obstacles that some librarians struggle with in their attempts to provide relevant library instruction may include fixed scheduling, faculty culture, or lack of administrative support (Badke, 2005; Cooper & Bray 2011; Hardesty, 1995; Rix, 2012). New challenges to be considered when planning instruction include using current instructional models and technologies to meet students in their world (Rosen, 2011; Tapscott, 2009). To serve 21st century schools with 24/7 learning environments today's school librarians may seek to extend instructional support beyond the physical space of the library (see, for example, Hamilton, 2012 and Williams, 2012). Literature indicates that academic librarians are implementing and researching online instructional support at the post-secondary level (Bottorff & Todd, 2012; Coulter & Draper, 2006; Mestre et al., 2011; Su & Kuo, 2010), but research is lacking on how this strategy is currently employed at the high school level. Teaching and learning occur under different circumstances in high school and college (Kay, 2008; Southern Methodist University [SMU], 2013), requiring that new research on the phenomenon be conducted specific to the high school level. This research fulfills a need to provide high school librarians with information on online instructional support that is relevant to their positions in traditional high schools which are being transformed by new educational initiatives.

For instruction to be relevant, school librarians collaborate with content area teachers to relate library instruction to specific class assignments (Novotny & Ellysa, 2006). However, many librarians find it difficult to establish collaborative teaching relationships with a significant portion of their faculty (Farmer, 2011; Manuel, Molloy, & Beck, 2003; McGuinness, 2006). Administrative support and flexible scheduling may provide the school librarian with the needed freedom to serve as an instructional partner and work on collaborative instructional partnerships with faculty (AASL, 2011; Marcoux, 2010; Miller & Shontz, 2001; Rix, 2012). Still, some faculty may continue to have concerns about giving up time from their own subject specific instructional plans to bring their students to the library for instruction (Hardesty, 1995). School librarians who are knowledgeable about the use of online instructional options may help support learning for students whose teachers do not schedule library visits.

Using online instructional support strategies may also be an effective way for school librarians to reach students using the technologies that have become part of the students' daily lives. Students who have grown up with digital technologies have different learning styles from previous generations (Tapscott, 2008, November 10). Current student populations prefer active learning experiences with the option for instruction at the point of need (Lambert, 2012; Manuel, 2002; Mestre, 2010; Rosen, 2011). To appeal to the preferred learning style of 21st century students, it is recommended that instruction be designed in small chunks (Meister & Willyerd, 2010b), using multimodal formats (Mestre, 2010). Today's students expect customized education with opportunities for individual feedback (Costello et al., 2004; Sheesley, 2002). They are accustomed to having information available whenever and wherever they want it (Kazakoff-Lane, 2010) and are intolerant of delays (Sheesley, 2002). Students consume massive amounts of media, spending nearly all of their waking hours using technology (Rosen, 2011).

School librarians need to take advantage of students' connection to technology and media to deliver instruction more efficiently and effectively; this qualitative study explored the lived experiences of high school librarians who are taking on this new challenge.

Offering online instructional support in addition to face-to-face instruction may increase school librarians' opportunities to accommodate preferences of both students and faculty, by providing point of need instruction desired by students without taking any time from the teacher's class plan. Librarians experiencing difficulty establishing collaborative instructional relationships with their faculty may consider pursuing instructional approaches involving little or no faculty involvement, such as online tutorials (Hrycaj & Russo, 2007). By using digital learning objects, librarians may offer instruction that is accessible through the library website or courseware (Mestre et al., 2011; Su & Kuo, 2010). Online instructional options enable students to have more control over their learning experiences (Su & Kuo, 2010). Students prefer instruction offered at point of need, and online instructional assistance may expand beyond the school day, appealing to some students' desire to learn in the evening (Sheesley, 2002). Additionally, online library learning options may be used to provide instruction for a class without interfering with the teacher's plans for time in the classroom. Online instructional support offerings may also provide tools to assist some faculty members who prefer to do their own library research instruction with students without assistance from a librarian (Cannon, 1994).

A variety of ways exist for school librarians to provide instructional support online (Coulter & Draper, 2006; Hamilton, 2012; Mestre et al., 2011; Su & Kuo, 2010; Williams, 2012). However, to provide online instructional options it is imperative that librarians focus on remaining educated, active, and current particularly related to technology (Goetsch, 2008; Riley-

Huff & Rholes, 2011). To remain current school librarians need to find ways to supplement their education in order to acquire the technology skills to facilitate 21st century learning (Riley-Huff & Rholes, 2011). Many school librarians indicate that they must figure out how to use new technologies for instruction on their own (Mestre, 2010). School librarians with current technology skills may choose between multiple options for either creating digital learning objects (Mestre et al., 2011) or providing direct instruction online (Hamilton, 2012) to expand their instructional program beyond the school day and the physical space of the library. Knowledge of current technologies enables school librarians to offer instruction in formats that appeal to 21st century students' learning styles (Costello et al., 2004). Considerable time and effort may be required for developing or providing online library instruction (Bottorff & Todd, 2012; Mestre, 2010), so librarians must continuously remain informed about new educational initiatives and work collaboratively with faculty to ensure that time spent on library instruction is relevant to current standards (CCSSI, 2012). New political influences may be expected to bring about further changes in educational practices (Digital Learning Act, 2012; Meyer, 2012; Online Clearinghouse Act, 2012). School librarians need to learn how to update their library instruction programs in light of new initiatives that will impact their schools.

A review of current literature reveals that school librarians are adjusting their roles to serve changing needs in their school communities (AASL, 2009; Hamilton, 2012; Rix, 2012; Williams, 2012). Librarians are placing emphasis on strengthening their role as an instructional partner (AASL, 2009). Findings from research studies offer insight into some of the challenges that librarians face in their efforts to provide effective and relevant instruction (Cannon, 1994; Hockersmith, 2010; Hrycaj & Russo, 2007; Leckie & Fullerton, 1999; Manuel et al., 2003; McGuinness, 2006). Additional research provides an understanding of 21st century students'

learning styles and their relationship with technology (Costello et al., 2004; Mestre, 2010; Tapscott, 2009). Results from the research are useful for guiding librarians in designing instruction which is efficient, effective and relevant to current student populations. However, the majority of this informative research has been conducted at the post-secondary level. Much of the literature related to the work of high school librarians' efforts to provide online instructional support is in the form of anecdotal descriptions of an individual's experiences (such as Hamilton, 2012; Williams, 2012). Insights gained from such professional literature indicate that high school librarians are beginning to use similar strategies to those in use by academic librarians at the post-secondary level. This research study was designed to expand current literature by exploring the experiences of high school librarians who are adapting traditional library instruction to meet the learning styles of 21st century students by using online instructional support to expand their school library programs. Focusing on librarians' perceptions of the challenges and benefits of providing different types of online instructional support and their experiences of the relationship between online instructional support and instructional partnerships enabled this study to generate new information that may serve as a guide to high school librarians who are new to implementing these strategies.

Purpose of the Study

The purpose of this qualitative research study was to explore the lived experiences of high school librarians related to use of online environments to provide instructional support. The study sought to discover influences on the types of online instructional support provided by high school librarians. Inquiry focused on the participant librarians' perceptions of the benefits and challenges of implementing different types of online instructional support. Additionally, the

study investigated the participants' experiences of the relationship between the online instructional support that they provide and instructional partnerships.

Research Questions

The primary research question for this qualitative study was:

What influences the types of online instructional support that high school librarians provide?

The following secondary research questions were used to provide additional focus for the scope of the study:

1. What do high school librarians perceive as the benefits/challenges of different types of online environments which may be used to provide instructional support?
2. What are high school librarians' experiences of the relationship between the online instructional support that they provide and instructional partnerships?

Significance of the Study

Although use of online library instruction techniques has been researched from various perspectives at the post-secondary level (Bottorff & Todd, 2012; Coulter & Draper, 2006; Mestre 2010; Mestre et al., 2011; Su & Kuo, 2010) similar research is lacking related to high school library instruction. Post-secondary academic librarians have been providing online instructional support for over a decade (Holmes, 2003), while discussions of the topic at the high school level have emerged more recently (Hamilton, 2012; Williams, 2012). Educational practices at the high school level are different from those of post-secondary educational institutions (Kay, 2008; SMU, 2013), warranting new research to explore the types of online instructional support provided by high school librarians. New education initiatives call for educators to use technologies for teaching and learning that have the capability of reaching learners anytime and anywhere (Department of Education, 2010). Together, changes in technology, the economy, and

political influences are converging to bring systemic change to our schools (Department of Education, 2010; Digital Learning Act, 2012; Gee, 2009; Meyer, 2012; Online Clearinghouse Act, 2012). Many existing educators, however, do not have a strong understanding and ease with using technology (Department of Education, 2010); and many currently practicing librarians did not receive instruction in their preparation programs for the technologies that are now available to educators (Riley-Huff & Rholes, 2011). To lead change it is important that change agents identify issues that may influence the change; examining both potential barriers and/or supports that might affect the desired change (W. K. Kellogg Foundation, 2004). Understanding the key influences that have affected the types of online instructional support provided by the high school librarians who participated in this study may assist others to expand library programs in their schools, beyond the physical space of the library and hours of the school day. Findings from this study may be useful to administrators, pre-service and continuing education programs for school librarians, practicing school librarians, and teachers interested in expanding their collaborative relationship with their school librarian.

This research study was designed to provide new information to specifically address the issues likely to be encountered by high school librarians who are expanding their instructional programs into online environments. The primary goal of the study was to identify influences on the types of online instructional support that high school librarians provide. The study focused on identifying some of the benefits and challenges of different types of online instructional support, based on the lived experiences of high school librarians who are implementing a variety of techniques. Additionally, the librarians' experiences of the relationship between the online instructional support that they provide and instructional partnerships were explored. By providing information on the benefits and challenges of different types of online instructional

support that have been implemented at the high school level the study may empower more school librarians to effectively expand their instructional programs to meet the demands of 21st century students and new educational initiatives. Developing new insight into the relationship between instructional partnerships and the online instructional support provided by high school librarians may also assist school librarians to establish more productive collaborative relationships with teachers.

Conceptual Framework for the Study

The National Education Technology Plan (NETP) recommends implementing "learning resources that exploit the flexibility and power of technology to reach all learners anytime and anywhere" (Department of Education, 2010). The plan emphasizes that "Technology provides access to a much wider and more flexible set of learning resources than is available in classrooms…" and allows learning experiences to be personalized. School librarians may use online instruction techniques as a means to support recommendations of the NETP. However, current research does not explore high school librarians' use of online environments to provide instructional support. Concern is expressed in the plan that many existing educators do not have a strong understanding and ease with using technology. This study was designed to fill a gap in research about school librarians' who are providing online instructional support and their experiences serving 21st century schools by establishing 24/7 learning environments. Findings from this study may assist school librarians with implementation of the NETP.

Nature of the Study

This study used a basic qualitative research framework to explore the lived experiences of high school librarians related to use of online environments for providing instructional support. Qualitative researchers' methods vary and result in interpretive understanding or

meaning related to a certain situation, thus results are not generalizable (Mertens, 2010). Purposive sampling was used to identify participants for the study. Data collection included use of participant journals and in-depth interviews to explore participants' reflections and lived experiences related to their use of online environments to provide instructional support. Investigation focused on discovering influences on the types of online instructional support that high school librarians provide. A goal of the study was to identify perceived benefits of implementing varying types of online library instruction along with challenges. Additionally the study explored the participants' experiences of the relationship between the online instructional support that they provide and instructional partnerships. A selection of online instructional resources used by the participants was also examined to add depth to descriptions and provide an enhanced understanding of the phenomenon. Follow-up interactions with the participants explored questions that arose during the examination of online instructional resources and provided opportunities for member checking of my interpretations of the data from the participants' journals and interviews. As described by Merriam (2009) analysis of the data occurred throughout the data collection process and involved identification of recurring themes.

Basic Assumptions

The following basic assumptions were premises for the success of this study:

1. Participants provided honest and reflective responses to journal prompts and interview questions.
2. Participants shared examples of online instructional resources that they have actually used in their schools.
3. Instructional resources that were examined are representative examples of the online instructional support provided by the participants' library programs.

4. All data was carefully collected, analyzed, and described using appropriate qualitative research methods.

Sampling

The purposive sample for this study was sought through a professional listserv in a southeastern state that provides strong support for its library media programs. Criteria for selection of participants included:

1. Participants are practicing high school librarians with two or more years' experience in the field.
2. Participants have experience implementing multiple online instructional resources to support learning in their schools.
3. Participants were prepared to provide three to five artifacts for examination that exemplify the online library instructional resources which they have implemented.
4. Participants were available for interviews and follow-up interactions and agreed to respond to periodic journal prompts.

Limitations

Certain limitations are inherent in the qualitative nature of this study. Due to the small sample size that was used for the study, results are not be generalizable to other schools or academic levels. Analysis of certain types of online instruction techniques was limited by restricted access. Study participants may not have recalled some of the previous challenges that they overcame to develop the online instructional support they currently offer.

Definitions

Blog: short for web log; a website that uses a chronological format for organizing postings.

Courseware: learning management systems such as Blackboard, CourseSites, WebCT and Moodle; used for both distance education and hybrid courses (Jackson, 2007).

Learning object: a digital resource that can be reused to support learning in different contexts (Wiley, 2000).

Listserv: a system allowing users to send email to one address which then forwards the message to all subscribers of the service.

Pathfinders: instructional guides that suggest sources for research, recommendations for search terms and citation help may be included in the guides.

QR Code: quick response code, an array of black and white squares, which usually links to a URL when read using the camera on a smartphone or tablet with a QR reader app.

Screencast: a video recording of screen action which may be accompanied by an audio track and other enhancements.

Web 2.0: dynamic websites or applications that invite a participatory culture.

The School Librarian's Varying Roles and Titles

The American Association of School Librarians (AASL) identifies five key roles of a school librarian: leader, instructional partner, information specialist, teacher, and program administrator (2009). With each of these roles comes an array of responsibilities. As school librarians' roles and responsibilities have changed over past decades so have the job titles used for these transformative educators. Over the past four decades school librarians have been using varying names including: school library media specialist (or simply media specialist), teacher librarian, information specialist, or media coordinator (American Association of School Librarians, 2010; Pentlin, 2010; Perham, 2010). Literature for the field refers to school library professionals by any of these terms and an AASL survey indicated "confusion" and

"misperceptions" about the varying job titles for the profession (American Library Association, 2010). In January of 2010 "the AASL Board of Directors voted to adopt school librarian as the title which reflects the roles of the 21st-century school library professional" (American Library Association, 2010). Subsequently the online, refereed AASL journal formerly known as *School Library Media Research* has been updated *to School Library Research*, to reflect the adoption of the professional title "school librarian" (American Library Association, 2012). Following the leadership of the AASL, I will use the profession's currently preferred term, school librarian, throughout my writing for this study. The alternate terms - school library media specialist, teacher librarian, or information specialist, may be used in reference to the literature or studies of others.

Organization of the Paper

This paper is organized into five chapters. Chapter one begins with background information and the problem that points to the need for new research. The purpose of the study is presented along with the research questions that were explored. The significance of the study is justified and the conceptual framework for focus is explained. Chapter one also provides an introduction to the qualitative nature of the study, as well as assumptions and limitations which may have influenced the study. Definitions are provided for several terms which appear throughout the paper. Finally, an explanation is provided regarding the AASL's preferred title for the profession of school librarian.

Chapter two links the study to related literature. The basic qualitative theoretical framework used for the study is introduced. The review of literature related to the school librarian's instructional role addresses some challenges which librarians must overcome in order to provide relevant instruction. Other literature provides recommendations on best practices for

instruction using emerging online technologies for providing 21st century students with the type of support they expect. Research and professional considerations for measuring and evaluating online library instruction are discussed. The final focus examines new educational initiatives and driving forces for change in education that school librarians need to understand and address.

Chapter three provides a thorough explanation of the methodology that was used during the study. The strategies that were used to identify the purposive sample for the study are described. Procedures followed for collecting, organizing, and securing the data are explained. The data analysis process that was used to discover themes in the data is presented. Steps that were taken to increase reliability, validity and trustworthiness of the study are discussed along with the researcher's subjectivities.

Chapter four presents the findings of the study. A narrative on each of the five participants offers rich description of the participant's lived experiences related to providing online instructional support. Details of the specific tools and strategies that the participants use are woven into the narratives. Following the participant narratives I present my thematic analysis of the common influences that impacted the online instructional support provided by each of the participants.

In chapter five I present answers to the research questions. I explain the multiple influences on the types of online instructional support that high school librarians provide. The general benefits and challenges of common types of online instructional support provided by the participants are described. The nature of the relationship between the online instructional support that high school librarians provide and their instructional partnerships is discussed. Following the final discussion I present implications and recommendations pertaining to four key

groups that may find this information useful to their practice. Prior to concluding the paper, I offer my suggestions for further related research.

Chapter Two

Review of Related Literature

While high school librarians are relatively new to providing online instructional support to extend their programs beyond the physical space of the library, adapting to new roles to lead changes in schools is not new to school librarians (AASL, 2009). The role of instructional partner is currently emerging as a high priority for professionals in the field (AASL, 2009). This chapter provides a review of literature related to the school librarian's instructional role, including some of the challenges that librarians must overcome in order to provide relevant instruction. The literature also provides recommendations on best practices for instruction using emerging online technologies which provide today's students with the type of support they expect. As new technologies become widely available, and political and economic influences drive new education initiatives, school librarians are working to adapt library instruction to meet the learning styles of 21st century students; some librarians do this by offering online instructional support, which relates to the focus of this study. Cilesiz (2011) suggests experiences related to teaching and learning with technology are distinct phenomena from experiences with traditional teaching and learning; and thus, in-depth study of experiences with technology in education is required to understand technology's impact on teaching and learning. A qualitative approach was selected for this in-depth study to explore influences on the different types of online instructional support provided by high school librarians.

Theoretical Framework

Merriam (2009) suggests that a basic, interpretive study is the most appropriate type of qualitative research for applied fields and is the most common type of qualitative research conducted in applied fields of practice such as education. Constructionism underlies what Merriam calls a basic qualitative research study. She states that all qualitative research is interpretive, explaining that individuals construct reality through interactions within their social worlds. According to Crotty (1998), meanings are constructed as people engage with the world they are interpreting. A variety of methods may be used to collect qualitative data about participants' interactions and experiences related to a phenomenon. Analysis of the data in a qualitative research study occurs throughout the data collection process and involves identification of recurring patterns, or themes, that characterize the data (Merriam, 2009).

Constructivist research methods evolved from the philosophy of Edmund Husserl and other German philosophers; while qualitative researchers' methods may vary, they all result in interpretive understanding or meaning related to a certain situation (Mertens, 2010). In qualitative research based on the constructivist paradigm individuals develop subjective meanings for their experiences (Creswell, 2003). Instead of testing a theory, as in positivism, constructivist researchers seek to make sense of the subjective meanings of individuals to find a pattern of meaning for a group of individuals (Creswell, 2003). Husserl (1927) suggested that a variety of significant problems are united by transcendental bonds. The transcendental experience of a phenomenon is purified by a reduction (Husserl, 1927). Husserl (1927) believed that "all objective existence is essentially 'relative,' and owes its nature to a unity of intention" (p. 9). Qualitative research strives to uncover the unity of intention related to a phenomenon in

order to build the knowledge base of what Husserl (1927) describes as *transcendental inter-subjectivity*.

In order to discover a commonality among individuals' experiences, qualitative researchers must use a rigorous process for data collection and analysis (Eichelberger, 1989). Use of multiple data sources and data collection strategies provide researchers with a more complete picture of what is being studied and allow for cross-checking of information as a means of ensuring the validity of qualitative research (Gay, Mills, & Airasian, 2006). Data analysis begins from the initial interaction with participants and requires ongoing interaction and analysis throughout the study. Qualitative researchers must be responsive to findings during early stages of data analysis and willing to relinquish ideas that are weakly supported by the data (Morse et al., 2002). Gay et al. (2006) explain that researchers must be patient and reflective as they strive to make sense of multiple data sources. During a qualitative study, the researcher attempts to gradually narrow, and focus in on, key aspects of the data. Using an inductive analysis process, qualitative researchers begin with large amounts of data and seek to progressively narrow the collected data into small and important groups of key data. Researchers construct meaning by identifying patterns and themes that emerge during data analysis.

Qualitative researchers must get to know their data intimately as they work through a multistage process of organizing, categorizing, synthesizing, analyzing, and writing about the data; cycling through the stages in their efforts to narrow and make sense of what is in the data. Gay et al. (2006) describe three iterative steps for qualitative data analysis: *reading/memoing*, *describing*, and *classifying*. During the reading and memoing stage, researchers makes notes in the margin of textual data and underline or highlight sections that seem important, to create an initial record of their thoughts. The only time that researchers come to data with a fresh

perspective is the first time that they look at the data (Krathwohl, 1998), so it is important to capture initial impressions. Once researchers reach a further point in their analysis of the data they may find that some of their initial impressions do not hold up while others are relevant throughout continued analysis (Gay et al., 2006). The search for common threads and recurring themes in the data begins with the recording of initial impressions. Qualitative researchers read through their data repeatedly, memoing throughout each pass, to become familiar with the data and identify potential themes.

Using the data, qualitative researchers develop thorough and comprehensive descriptions that convey the rich complexity of the research (Gay et al., 2006). Descriptions for qualitative research require "a detailed rendering of information about people, places, or events in a setting" (Creswell, 2003, p. 193). Detailed descriptions of the context enable readers to determine when there may be some applicability or transferability of the findings to a similar setting (Gay et al., 2006). Beyond descriptions of the data qualitative researchers break their data down into smaller units, determine the importance of the units of data and put the pertinent units of data together to identify themes in the data. This process is typically accomplished by classifying and coding the data, and then grouping the coded data into categories of related ideas or concepts to identify emerging themes in the data (Creswell, 2003; Gay et al., 2006). The cyclical process of data collection and analysis continues until data saturation is achieved, when no new or relevant information emerges (Given, 2008). Final interpretation in a qualitative research study can take various forms dependent on the research design, theoretical or conceptual lens, and researchers' interpretive focus.

This study focused on influences on the types of online instructional support that high school librarians provide. Experiences related to teaching and learning with technology are

distinct phenomena from experiences with traditional teaching and learning (Cilesiz, 2011). In-depth study of experiences with technology in education is required to understand technology's impact on teaching and learning (Cilesiz, 2011). This study used a basic qualitative research framework to explore the lived experiences of high school librarians related to use of online environments to provide instructional support. To inform this study of the phenomenon I have reviewed literature related to the school librarians' instructional role. An additional focus of the literature review includes influences for changes in school librarians' instructional approach.

Changing Roles of the School Librarian

Originally serving predominantly as a program administrator organizing collections of books, the role of the school librarian has progressed to a multifaceted position which continues to expand to meet new demands. The AASL and the Association for Educational Communications and Technology (AECT) brought the teaching role of the school librarian to center stage, publishing *Information Power: Guidelines for School Library Media Programs* (1988), and a decade later *Information Power: Building Partnerships for Learning* (1998). School librarians became known as library media specialists, and through these guides, were directed to collaborate with teachers to design authentic learning experiences based on self-directed inquiry to ensure that information literacy permeates students' learning. School librarians have widely accepted the role of teacher (AASL, 2009). In fact, a small study of pre-service school librarians indicated a preference for the professional title teacher librarian (Franklin, 2009).

In *Empowering Learners: Guidelines for School Library Media Programs* (AASL, 2009), results from a survey of school librarians ranked the current order of importance of the four primary roles of the position as: teacher, information specialist, instructional partner, and

program administrator. When asked how they thought that these roles might shift in importance in the future, they prioritized the roles as instructional partner, information specialist, teacher, and program administrator. The survey results were further explored at a professional summit, where participants identified the additional role of *leader* as "essential to the future of the profession" (AASL, 2009, p. 16). Summit participants explored the roles of a school librarian: *leader*, *instructional partner*, *information specialist*, *teacher*, and *program administrator*. Among the themes which emerged across these roles was the need "to model emerging technologies to reach learners, and to create virtual 24-7 access to the school library" (AASL, 2009, p. 16). Recognizing that information literacy and technology skills are central to learning in the 21st century, school librarians are expected to lead the way to building these skills among students and faculty throughout the school. As an instructional partner, the school librarian guides instructional design by collaborating with classroom teachers to develop standards based assignments which include critical thinking, technology and information literacy skills. In supporting the information needs of a 24/7 learning environment school librarians now communicate with teachers and students virtually, as well as face-to-face.

In the 21st century, an increasing level of technological expertise is required for fulfilling each of the five key roles that the AASL describes for school librarians. Sigman (2008) points out that school librarians' technology skills must evolve along with advances in technology. She notes that librarians must devote continued time and effort to improving their technology skills so they may offer effective support to students who need these skills for success in the 21st century (AASL, 2009; Weis, 2004). School libraries bring together the tools and learning activities that students need to develop 21st century skills. School librarians have thus become

leaders in preparing students to use information communication technologies of the 21st century (Lowe, 2001; Sigman, 2008; Valenza, 2006).

Administrators who hire librarians are increasingly recognizing the need for finding staff possessing a wider range of information technology skills to support library patrons who are accessing information through new technologies. In a study of recent graduates of a Master of Library Science program, Deyrup and Delozier (2001) report that two-thirds of the respondents believe that their information technology or computer skills enabled them to obtain a professional position in the library field. A later study reports that 54% of the academic library administrators who responded to a survey expressed having difficulty getting an applicant pool with adequate skills (Riley-Huff & Rholes, 2011). The study of the perceptions of librarians and the administrators who hire librarians regarding opinions of the librarians' job readiness indicates a disconnect between the two groups. Survey results indicate that 50% of librarians agree that they were adequately prepared "as a new librarian right out of graduate school" (Riley-Huff & Rholes, 2011, p. 36), while only 29% of administrators agree that new librarians who were recent graduates seemed to be adequately prepared for the job.

Job readiness is not only a concern at the beginning of a librarian's employment, but throughout the individual's career. While all educators require continuing education, the need for continued skill acquisition is a greater concern for librarians who have significant technology roles because of rapid changes in technology (Riley-Huff & Rholes, 2011). School librarians have the responsibility to serve as technology leaders in their schools (AASL, 2009) and must continuously acquire new skills to meet this expectation. Riley-Huff and Rholes' (2011) indicate that a majority of the librarians they surveyed attend conferences or classes, use online training, or purchase learning materials to supplement their education related to technology skill

development. Results of the administrators' survey also show support for supplemental training for library staff to expand their technology related roles. Many librarians indicate that they must take initiative to figure out how to use new technologies for instruction on their own (Mestre, 2010). However it may be accomplished, school librarians must place a priority on remaining current particularly related to instructional technology skills.

Personality traits, such as the ability for continuous learning and working independently, may be more important than specific skills, when hiring librarians (Tennant, 1998). Librarians need the ability to learn constantly and quickly without formal training. Among other traits Tennant (1998) suggests that effective professionals exhibit the ability and desire to work independently. Those who supervise skilled librarians are advised to provide resources and guidance and then stay out of the way. Much of the librarian's growth in technology skills comes from experience and on the job learning (Riley-Huff & Rholes, 2011). Thus it follows that the ability to learn constantly and quickly, especially related to changing technology, will continue to be a necessary trait for success in all of the school librarian's key roles.

Calls for Instruction and Collaboration

Findings from an initial study indicating that performance of an instructional role by school librarians tends to lead to higher average test scores for students (Lance, 1994) increased the focus on the school librarian's role as an instructional partner. Subsequent studies replicated and expanded Lance's study (Lance, 2002; Lance, Rodney, & Schwarz, 2009), and the AASL and AECT published new guidelines for school librarians to address their role in instruction and collaboration (1998). In *Information Power: Building Partnerships for Learning*, the AASL and AECT (1998) called upon school librarians to create a community of lifelong, independent learners, and ensure that information literacy permeates students' learning to

facilitate their developing a personal construction of meaning. Today's school librarians, through leadership, collaboration and technology, encourage collaborative teaching and learning to create student-centered programs emphasizing information literacy skills along with curricular objectives (AASL & AECT, 1998). Research findings continue to indicate that students benefit from instruction focused school library programs (Lance, Rodney, & Hamilton-Pennell, 2000; Lance, Rodney, & Hamilton-Pennell, 2005; Lance et al., 2009; Quantitative Resources, LLC, 2003), with particular focus on the importance of teacher-librarian collaboration (Lance et al., 2009).

Having a school librarian who works with teachers to integrate information literacy into approaches taken to meet curriculum standards is characteristics of the library programs which contribute to higher levels of academic achievement (Lance et al., 2000). An Oregon study reports that in strong school library programs, the library staff has collegial, collaborative relationships with teachers (Lance, Rodney, & Hamilton-Pennell, 2001). The Oregon study describes successful library media specialists as those who work with classroom teachers to identify the best resources to support and enrich instruction, teach essential information literacy skills to students, and provide in-service training opportunities to classroom teachers. Student achievement increases when school librarians develop collegial relationships with their faculty, and serve as a consultant and teacher to other teachers (Lance et al., 2001).

Instructing students in the efficient and effective use of library resources makes a difference in how frequently the resources are used and the educational outcomes achieved. Increased library usage, especially related to group visits for information literacy instruction, leads to higher student achievement on standardized tests (Lance et al., 2005; Quantitative Resources, LLC, 2003). The National Educational Technology Standards for Students (NETS-S)

groups expectations for students' acquisition of technology knowledge and skills into six categories: "creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem-solving, and decision making; digital citizenship; and technology operations and concepts" (ISTE, 2007). School librarians work collaboratively with content-area teachers to design learning activities and instructional support to engage students in inquiry-based research assignments that provide opportunities for the students to practice the skills prescribed by NETS-S. Although students feel they are knowledgeable about technology, they do not necessarily understand that this does not make them information literate. Instruction is required to help students learn to think critically to develop more effective information-seeking behaviors (Brown, Murphy, & Nanny, 2003). Research findings from Brown et al.'s case study indicate that information literacy instruction is effective when it is relevant to students, and when instructional activities are "thoroughly, yet succinctly, described" (p. 386).

Smalley (2004), an Instruction Librarian at Cabrillo College Library, finds that school library instructional programs make a difference in student achievement, even after the students graduate from high school. Smalley's (2004) study examines the success rates of high school graduates from three California school districts who enrolled in a local community college information research course. Only one of the three school districts has school librarians and library instruction programs. Smalley's research indicates that the group of students from the school district with librarians performed significantly higher at all checkpoints in the college's information research course, as compared to the groups of students who attended school districts that did not have librarians. In addition to the availability of online library resources, instruction in their effective use is needed (Brown et al., 2003; Smalley, 2004).

Novotny and Ellysa (2006) use a verbal protocol method to analyze students' use of the online library catalog a few weeks after library instruction. They find that students transfer knowledge across interfaces, learning from experience, suggesting that "this transference of such skills across databases reinforces the importance of teaching concepts rather than the intricacies of specific interfaces" (Novotny & Ellysa, 2006, p. 162). They recommend that instruction emphasize common features rather than differences in the assortment of online resources the library provides, be relevant to a specific assignment, and avoid unnecessary details.

The desire for instruction in the use of online information resources continues beyond school years. In a survey of primary healthcare staff regarding use of libraries and electronic information resources, many of the adult professionals expressed a desire for training in the use of information resources to assist with on the job information needs (Doney, Barlow, & West, 2005). The current generation of professionals may not have much experience with the use of online library resources, as only 17% of 25- to 64-year olds report having used an online database in the 2005 OCLC survey.

Information literacy instruction in schools takes place when teachers and school librarians collaborate; however, according to the results of *School Library Journal's* 2011 survey a majority of school librarians plan collaboratively with 20 percent or fewer of the teachers in their school (Farmer, 2011). Hockersmith's (2010) study of library collaboration in a Delaware school district indicates that most teachers view the school librarian as a resource manager rather than an instructional collaborator. The study reports that collaboration in the district is hindered by fixed schedules. Hockersmith (2010) also notes that pre-service teacher institutions did not prepare new teachers for working collaboratively with school librarians. Cooper and Bray (2011) recommend that school librarians start by identifying teachers with whom they have the

best chance for developing successful collaborative instructional experiences, and then work to ensure that teachers are satisfied with the results of collaborative instruction. Word of successful collaborations will spread naturally throughout the faculty leading to future opportunities for additional collaboration. The collaboration process matures as teachers and school librarians gain mutual trust and respect (Cooper & Bray, 2011). Today's school librarians focus collaboration with teachers on lessons that address both the content area curriculum standards and acquisition of the 21st century information and technology skills students need to succeed (AASL & AECT, 1998; Cooper & Bray, 2011). However, librarians recognize that establishing collaborative relationships is not easy and is not the end goal, but rather one possible means to the goal of improving students' learning (Johnson, 2006).

Faculty Culture and Perceptions

Librarians' efforts to increase teachers' interest in the use of library resources and instructional services have been studied for decades. Hardesty (1995) reviews the concerns and efforts of librarians regarding the importance of working with faculty, and the librarians' frequently disappointing success in making their desired progress. A frequently cited challenge is the unwillingness of faculty to give up time with their students from subject specific instruction for instruction on research skills from a librarian (Hardesty, 1995). Badke (2005) continues the examination of librarians' struggle to develop a collaborative relationship with faculty. Claiming that effective collaboration is not the norm, Badke (2005) suggests that librarians' numerous promotional efforts are indicative of a general lack of success of routine collaboration.

Using surveys several researchers reveal teachers' perceptions of the information literacy instruction provided by school librarians (Cannon, 1994; Hrycaj & Russo, 2007; Leckie &

Fullerton, 1999). Findings from a survey of 229 social sciences and humanities faculty at York University in Toronto report a correlation exists between the academic discipline of faculty members and their attitude toward library research instruction (Cannon, 1994). A higher percentage of faculty respondents from departments such as history and philosophy indicate that they believe "library research instruction is extremely or very important," as compared to faculty from departments such as visual and performing arts and math. A significant number of respondents indicate that they value library research instruction, but prefer to do it on their own without the assistance of a librarian. Leckie and Fullerton (1999) report results from a similar survey of the science and engineering faculty of undergraduate studies at two large Canadian universities. Results from their survey reveal that the percent of faculty who indicate that library research is required of students increases in upper-level courses. Forty-one percent of faculty respondents indicate that some or all of their first and second year courses require students to conduct library research, compared to 83% responding that some or all of their third and fourth year courses require library research.

Hrycaj and Russo (2007) further the examination of faculty attitudes toward collaboration with librarians; their study indicates favorable attitudes towards all library instruction approaches. Faculty particularly find an online, self-guided tutorial to be helpful. Hrycaj and Russo express a valid concern regarding interpretations made by other researchers related to faculty responses indicating that library instruction should be provided by both faculty and librarians. Cannon (1994) and Leckie and Fullerton (1999) view the response as an indicator that the faculty are open to collaborating with librarians on information literacy instruction. As Hrycaj and Russo suggest, selecting the response that information literacy instruction should be provided by both faculty and librarians does not necessarily mean that the respondents intend the

instruction to be collaborative. Faculty respondents may feel that each group, faculty and librarians, should individually devote time to teaching information literacy.

Hrycaj and Russo (2007) also question other results from their own study and those of previous researchers including Cannon (1994), as well as Leckie and Fullerton (1999). Alternative interpretations are presented related to a gap existing between the library research instruction methods that faculty indicate they *use* and those they report that they would *support* (Hrycaj & Russo, 2007). A similar gap appears in all three studies of faculty perception toward library instruction (Cannon, 1994; Hrycaj & Russo, 2007; Leckie & Fullerton, 1999). Both the Cannon (1994) study and the Leckie and Fullerton (1999) studies, indicate a lack of awareness results in the gap between the faculty's actual use and willingness to use library instruction. Hrycaj and Russo (2007) suggest that the gap between faculty's use of library instruction methods and support or interest for the methods may simply be a way for faculty respondents to "express what appears to be a positive attitude toward something while being able to disguise one's non-commitment, or even negative attitude, toward that thing" (2007, p. 693). Thus, faculty responses may have been influenced by a social desirability bias, which DeMaio explains is a "major source of response bias in survey research" (1984, p. 257). While Hrycaj and Russo (2007) conclude that recent surveys do not warrant optimism regarding the prospects of faculty collaboration with librarians for information literacy instruction, they recommend that library instruction approaches involving little or no faculty involvement, such as online tutorials, still be pursued.

McGuinness (2006) discusses the 21st century trends to integrate information literacy development into undergraduate curricula and promote student-centered learning; however, she suggests that librarians continue to have difficulty developing relationships with faculty to

achieve this goal. Examining the perceptions of faculty towards information literacy development, McGuiness (2006) explains that librarians struggle to establish collaborative instructional relationships with all but a few individual "library-friendly" faculty members, because faculty members' personal experience emphasizes independent learning of information literacy skills. Faculty members expect that students will learn through repeated trial and error during repeated application of skills (McGuinness, 2006). As a consequence, faculty members with such beliefs do not incorporate information literacy instruction into their curricula, believing that students will learn these skills independently as they work (McGuinness, 2006). In general McGuinness found "learning by doing" was a common theme in faculty's comments, while a need for structured intervention, guidance, or information literacy instruction was not a strong concern of the faculty. Other researchers have also found that faculty do not value information literacy instruction as highly as librarians do, which is a root of the problem for librarians' difficulty in establishing collaborative instruction with faculty (Manuel et al., 2003).

Flexibility is Key

For school librarians to provide leadership as instructional partners in student-centered, 21st century learning environments flexibility is key (AASL & AECT, 1998; Rix, 2012). To develop successful school library programs that meet the needs of 21st century schools, librarians require flexibility in terms of scheduling, freedom to move about the school, and the ability to adapt their library's physical and virtual spaces for varied learning experiences. This section reviews literature which explains how the various types of flexibility enable school librarians to best fulfill their roles to meet the needs of 21st century schools. The importance of gaining the support of the principal and other school administrators to obtain the flexibility needed for a successful library program is also considered.

Flexible scheduling has been advocated as a best practice for school libraries for decades (Creighton, 2007). Students and teachers should be free to use the library throughout the school day (AASL, 2009). Classes must be scheduled in the library on an as needed basis to facilitate research at the time a need for information arises. Open access to information resources is essential to inquiry-based student learning and is supported by the practice of flexible scheduling. Teachers should be able to bring classes to the library for research when the need arises, rather than at a set time each week (Creighton, 2007). Flexible scheduling allows time for school librarians and teachers to collaborate (Rix, 2012). In fact, school librarians with flexible schedules are more likely to participate in collaborative planning with teachers (Hockersmith, 2010; Miller & Shontz, 2001), which has been linked to higher student achievement (Lance et al., 2009). Kachel and Lance (2013) examined findings from a recent study of Pennsylvania school libraries. Since 21st century students must learn to be effective information consumers and producers of knowledge, Kachel and Lance explored the relationship between writing scores on the state test and quality school library programs. In comparing the writing test scores to library scheduling practices, they found that students are about four times more likely to earn "Advanced" writing scores when the school library uses flexible scheduling.

Administrators' support is required for establishing a flexible school library program (Rix, 2012). Cooper and Bray (2011) emphasize the importance of the school librarian developing a positive relationship with the school principal and other administrators. Many of today's administrators and teachers did not experience the type of school library program recommended by current guidelines (Lance, 2010). School librarians must be seen serving in their new roles, as leader, instructional partner, information specialist and teacher, in order to receive administrators' support for the flexibility these roles require. Cooper and Bray (2011)

express concern that, without assertive action on the part of the school librarian, principals remain mostly aware of the librarian's administrative role. On the other hand, Rix (2012) provides examples of how savvy administrators support the flexibility needed for developing successful school library programs. Administrators who understand and promote the currently advocated roles of a school librarian not only support flexible scheduling, but they provide the necessary library staff to allow the school librarian the flexibility to move throughout the building to work with faculty and students (Marcoux, 2010; Rix, 2012). School librarians who are supported by administrators have the freedom to visit classrooms to assist with projects and research, work with faculty to share research and best practices (Rix, 2012), and collaborate with teachers to develop student-centered, inquiry-based learning experiences to engage students (AASL, 2009; Shannon, 2012). Unfortunately, in Shannon's survey of strategies that administrators use to support the library program, providing adequate support staff was the only strategy that did not receive a rating of "Very Important" (2012, p. 19) from a majority of principals.

Proper staffing is required to develop a flexible and collaborative library program (Marcoux, 2010). However, noted researcher of school library impact, Keith Curry Lance (2010) points out that in many areas there are too few school librarians compared to the number of teachers and students for collaboration to occur on a widespread basis. Findings from his second Colorado study indicate that the school librarian's leadership role must come first. The critical leadership roles that Lance (2010) suggests school librarians may have more opportunities to play in most schools include:

- teaching 21st century skills to students independently,

- providing in-service professional development opportunities to teachers (i.e., being teachers of teachers),
- being recognized as "go-to" resource people for teachers, and
- serving as school leaders (e.g., meeting regularly with principals, attending faculty meetings, serving on key committees) (2010, p. 81).

To gain the support of administrators and colleagues for a flexible and successful school library program which is a central part of the daily life of the school, Lance (2010) recommends that school librarians must do a great job partnering with educator colleagues. Librarians must then take the initiative to document that work to help others understand the value of their contribution and gain further support (Lance, 2010).

In addition to flexibility in terms of scheduling and freedom to move throughout the school building as needed, it is important to create flexible spaces within the library to support new styles of teaching and learning (Sullivan, 2011; Wallace & Husid, 2012). Flexible instructional spaces enable the school librarian to implement a greater variety of teaching strategies to adapt to students' learning styles; teaching is moving away from the "front of the room" focus (Sullivan, 2011). Current literature makes frequent reference to the school library as a "learning commons" (Marcoux, 2011; Wallace & Husid, 2012) or "academic commons" (Lewis, 2007). Flexible spaces are key to the commons concept which creates active spaces that encourage students to interact with each other and technology, and find support for use of library resources (Lewis, 2007). Newly designed or updated school libraries may contain the same areas as traditional spaces; however, by using modular designs the spaces may more easily be reconfigured to accommodate different learning activities (Wallace & Husid, 2012). Students developing 21st century skills must learn to use a variety of resources in their research and then

demonstrate their understandings in new ways, such as through producing a multimedia presentation or video (Sullivan, 2011); these activities require different learning spaces. Flexible space allows for movement of furniture and materials to create a customized learning space providing support and guidance for a particular task (Wallace & Husid, 2012).

In addition to adapting physical spaces, school librarians are adding variety to the virtual spaces they provide for 21st century students. Pathfinders may be created for specific units of study (AASL, 2009). Web 2.0 features are being added to school library websites to move libraries from simply being one-directional providers of information to facilitators of participatory learning and collaboration (Hamilton, 2011; Israel & Moorefield-Lang, 2012). Walbert (2006) cautions school librarians to be aware of the basic concepts of good website design as they add to their virtual spaces. He provides guidelines for librarians to follow to develop websites that enable the intended audiences to effectively and efficiently achieve specific goals. Librarians are also advised to consider designs that allow flexibility for managing changing library website content (Walbert, 2006).

Literature on school librarian's support from administrators provides insight to the importance of flexibility in terms of scheduling and the school librarian's ability to move throughout the school (Rix, 2012; Shannon, 2012). Flexible scheduling and freedom of movement enables school librarians to fulfill all of their roles (AASL, 2009). The school librarian's leadership role is noted as rising in importance and requires initiative on the part of the school librarian (AASL, 2009; Lance 2010). Flexibility is key to remaking the position of school librarian as a recognized leader and instructional partner who develops 21st century skills among students and staff (AASL, 2009; Rix, 2012). To allow for such flexibility school librarians must have administrative support, including the provision of staff for maintaining basic

library operations while the professional librarian works with teachers and students to provide excellent, collaborative learning experiences (AASL, 2011; Marcoux, 2010), using both the library's physical and virtual spaces (AASL, 2009).

Taking Library Instruction Online

Jenny Levine (2004) explains that 21st century librarians must work to make libraries more portable, by experimenting with new methods. She notes that 21st century students expect information to come to them, rather than the other way around. Levine (2004) describes this change from pursuing information to receiving it as an information shift. Today's school librarians generally extend the mission of their websites beyond simple delivery of digital information resources to also include instructional support (Valenza, 2007). Without instructional support students conducting research are most likely to use commercial Internet search engines to locate resources, overlooking their library's academically strong online resources because they do not know how to access them (Valenza, 2007). The Pew study *The Internet Goes to College* reports that 73% of students indicate that they use the Internet more than the library, with only 9% indicating that they use the library more than the Internet for information searches (Jones & Madden, 2002).

Kuhlthau (1997) discusses the value of librarians as coaches in assisting students with the information search process in the vast resources of digital libraries. She explains that librarians must go beyond just providing a connection to the resources in digital libraries and offer support as coaches during the research process. However, as Levine (2004) suggests, librarians must meet 21st century learners in their world. She recommends school librarians experiment with new methods to make libraries more portable, even if the methods do not work as well as anticipated. Coulter and Draper (2006) report disappointing results from a study of their initial

efforts to use a blog as a means of information literacy instruction. Their goal of prompting students through blogs to collaborate in learning research skills was not met; no students posted to the research blog. To further explore the use of blogs for information literacy instruction Coulter and Draper present results from their two surveys, one for students and one for librarians. Findings from the student survey indicate that students rarely even checked the research blogs, but that when they later looked at the blogs students recognized that they may have been helpful during their research. Some respondents on the librarian survey explain that faculty collaboration is a key to successful implementation of an instructional blog.

Librarians developing online instructional resources must closely monitor their initial efforts and expect them to require revision. National Board Certified Teacher-librarian Connie Williams (2012) adapted an online tutorial to guide her high school students through the use of ten online presentation tools. When the tutorial was first assigned for homework few students did the work, or they applied minimal effort. Williams (2012) continued to refine the tutorial and delivery method. She tightened up directions removing extraneous explanations and used fewer words encouraging students to jump in and use the presentation tools. She finds that the tutorial is most effective when introduced during class, allowing students the time to ask questions of their teacher and the librarian as they work. As part of the tutorial students create blogs. Students who struggle with a task are encouraged to look at classmates' blogs to find another student who has accomplished that task and request assistance from that student. This technique enables the students to progress through the tutorial outside of class time after the initial session. Students may still visit the library or email the school librarian for assistance if they are unable to get help from classmates.

McClure, Cooke, and Carlin (2011) explain the benefits of using an online tutorial to reach a larger number of students. Face-to-face instruction through their library typically only reaches 25% of students in the school's composition class. Using an online information literacy tutorial provides access to the instruction for all composition students. Their analysis of a sample of 60 essays suggests that the use of online information literacy instruction may increase the amount of sources which students use in their work.

Clark and Chinburg's (2010) study evaluating the effectiveness of library instruction through an online embedded librarian versus traditional face-to-face library instruction analyzes citations in students' papers for groups receiving each type of instruction. This study does not examine a control group receiving no instruction, so the study only tests for variation between two methods. Variation between the two data sets is statistically insignificant. Clark and Chinburg (2010) interpret their findings to mean that students are receiving similar information literacy instruction through either face-to-face or online instructional support. Although using different methodology, other research reports similar findings indicating that the method for delivering instruction makes little difference. An investigation of the effectiveness of three delivery methods for information literacy instruction: face-to-face, online, and blended learning also finds no significant difference between the pre- and post-test results for the different methods of delivering instruction (Anderson & May, 2010).

Su and Kuo (2010) describe advantages of web-based tutorials over face-to-face instruction. They explain that online tutorials allow students to become independent learners who use instructional resources at the point of need. They note that web-based tutorials allow students to go through the material as many times as they need without feeling embarrassed and to jump around to the part of the instruction they need. However, Su and Kuo (2010) warn that

an outdated web-based tutorial could misinform and frustrate students. Thus, they recommend that provisions be made to solicit feedback and that designers routinely review and revise web-based tutorials, a process which they acknowledge may be labor-intensive.

Despite challenges that librarians may encounter in their initial efforts (Coulter & Draper, 2006; Levine, 2004) or concerns about the ongoing maintenance required for keeping online instructional resources up to date (Su & Kuo, 2010) it is critical that librarians provide updated services to teach 21st century learners (ACRL, 2009). The Net generation expects information, including instructional resources, to be accessible from anywhere at anytime (Kazakoff-Lane, 2010). Additionally, provision of online instructional resources enables librarians to reach a greater number of students even when faced with declining library staffing (McClure et al., 2011).

Options for Providing Online Library Instruction

A variety of ways exist for school librarians to provide instructional support online (Coulter & Draper, 2006; Hamilton, 2012; Mestre et al., 2011; Su & Kuo, 2010; Williams, 2012). The many online instructional options that librarians have to choose from fall into two broad categories, which involve either the use of digital learning objects, or using online

Table 1

Types of Online Instructional Support and Technologies Used

Digital Learning Objects *may be used independently*	Direct instruction *requires librarian interaction*
tutorials	blogs
research guides	wikis
videos	instant messaging or email
instructional games	video conferencing
online quizzes	courseware (e.g., WebCT or Blackboard)
Enable students to have more control	Increase personalized learning

applications to provide direct instruction, as illustrated in Table 1. Some librarians use multiple teaching technologies to provide a wide range of online instructional support (Hamilton, 2012). Understanding the benefits and challenges associated with the use of online learning objects and direct instruction technologies can help librarians decide which options they may use most effectively with their students.

Learning objects are digital resources that can be reused to support learning in different contexts (Wiley, 2000). Digital learning objects are usually web-based resources available in a variety of formats (Mestre et al., 2011), which may be used to enhance and enrich learning experiences (Mestre, 2010). Common types of learning objects used by librarians include tutorials, research guides, videos, instructional games and online quizzes (Mestre et al., 2011). Topics of instruction for the learning objects that librarians provide include information literacy, use of specific tools available for research, citation styles and common technology tools such as email (Su & Kuo, 2010). Online tutorial style learning objects provide users with the benefit of instruction at the point of need and may be used as a supplement to traditional face-to-face instruction (Mestre, 2010; Su & Kuo, 2010). Some students may feel uncomfortable asking an instructor for assistance or to repeat an explanation and may prefer to learn from an online tutorial (Su & Kuo, 2010). Mestre (2010) finds students prefer learning objects that include the ability to select the section to be reviewed.

Librarians are increasingly using screencasts for creating learning objects (Mestre, 2010; Su & Kuo, 2010). Software such as Camtasia, Captivate, Jing, Wink, or CamStudio records everything from the selected area on a computer screen along with narration; additional text and interactive features may also be added to the screencast (Mestre, 2010). Preparing a script for a screencast provides structure and clarity (Bailin & Pena, 2007). Much of the time required to

develop learning objects using screencasts is spent during the planning process and preparation of the script (Mestre, 2010). Thus, librarians may find designing online instruction takes more time than preparing for face-to-face instruction; however, once resources have been created maintenance of the resources may take less time than continued delivery of instruction through face-to-face sessions (Bottorff & Todd, 2012). Attention must be given to ensuring that online instructional resources are kept up to date. An outdated online tutorial may misinform and frustrate students (Su & Kuo, 2010). Su and Kuo (2010) suggest that tutorial designers periodically review the materials that they have created and allow users to provide feedback. It must be recognized, however, that when proper attention is given to development and continuous updating of online tutorials, the process may be labor-intensive and costly (Bottorff & Todd, 2012; Su & Kuo, 2010).

A majority of librarians who are providing direct instruction through online environments report these activities as taking more time than face-to-face instruction (Bottorff & Todd, 2012). Direct instruction requires monitoring instructional activities and providing appropriate guidance (Merrill, 2003). Online technologies which enable librarians to provide direct instruction include blogs, wikis, instant messaging, video conferencing and learning management systems such as WebCT or Blackboard (Adams & Cassner, 2010; Bower & Mee, 2010; Florea, 2008; Kazakoff-Lane, 2010; Kimok & Heller-Ross, 2008; Hamilton, 2012; Hensley & Miller, 2010; Niedbala & Fogleman, 2010). Librarians may use these technologies to provide instruction on an as needed basis, to offer reference and technical services to individual patrons, or as part of a course to offer class instruction customized to a particular curriculum (Hamilton, 2012).

Librarians may increase the level of direct instruction that they provide online by being embedded in a class. An embedded librarian uses online technologies to interact with the

students of a class in multiple ways throughout a semester (Bottorff & Todd, 2012). The extent of an embedded librarian's involvement in a course may vary from monitoring discussion boards to a more active role including creating learning modules and grading assignments (Bottorff & Todd, 2012). High school librarian Buffy Hamilton (2012) is an example of an intensely involved embedded librarian. She collaborates with English teacher Susan Lester to develop and deliver a course which incorporates information literacy into content-based performance standards. Hamilton (2012) uses a variety of online teaching technologies to guide students in the development of their own "personal learning environments" (p. 22). Using cloud computing applications she provides feedback and assistance for up to 65 students enrolled in three tenth-grade honors literature/composition classes. Hamilton (2012) is involved in instructional design, teaching and assessment of students. Along with Lester she shares the responsibility of creating instructional handouts, assessment rubrics, and daily learning activities. The current staffing ratio of school librarians to faculty does not permit this level of involvement on a widespread basis. However, Hamilton (2012) hopes that her example will inspire school districts to develop a new model of school librarianship which integrates additional librarians into the faculty to create rich learning experiences for students.

School librarians who are deciding which online instructional support options to implement should consider the needs of faculty and students at their school, as well as the time required for appropriate implementation. For efficiency and effectiveness it is recommended that learning objects be developed in small units which can be used in different contexts and retrieved and sequenced according to varying needs (Betty, 2008; Holmes, 2003; Mestre, 2010). Mestre (2010) recommends that librarians consider variations in learning styles in order to design effective, multimodal learning objects for their students. Librarians report that online

library instruction, especially through direct instructional support, requires a significant time commitment which may be greater than the time spent providing face-to-face instruction (Bottorff & Todd, 2012). As school librarians devote more time and effort to providing library instruction through online technologies they are advised to develop strategies for measuring the use and effectiveness of their instructional activities (Bottorff & Todd, 2012).

Measuring and Evaluating Online Library Instruction

Although forms of online instruction have been in existence for nearly two decades, librarians do not have clear measures for tracking online instructional activities (Bottorff & Todd, 2012; Coulter & Draper, 2006; Scherrer & Jacobson, 2002). Bottorff and Todd's (2012) survey of 307 academic librarians indicates that 93% of respondents continue to conduct library instruction in face-to-face sessions, with nearly 50% reporting that they also teach library instruction online. Over two-thirds of the respondents are involved in developing materials to be used for online library instruction, and only 13% indicated that they do not offer online library instruction through tutorials (Bottorff & Todd, 2012). For those librarians who are involved in offering online instruction, Bottorff and Todd (2012) describe the difficulty of reporting statistics for use of the various forms of online library instruction. They explain that the Association of Research Libraries (ARL) guidelines for statistics on instruction count only sessions and patrons, a model which will not fit many forms of online library instruction. Similarly the Library Statistics Program (LSP) of the National Center for Education Statistics (NCES) and the Association of College and Research Libraries (ACRL) collect statistics based on counting the number of presentations to groups and the number in attendance (Bottorff & Todd, 2012). Without standards for accounting for the use of different types of online library instruction

activities, inconsistency exists between the methods used by different library systems for counting and reporting such activities (Bottorff & Todd, 2012).

Scherrer and Jacobson (2002) recognize the need for librarians to gather new statistics to reflect the new roles that they have taken on to support patrons using 21st century technologies (Scherrer & Jacobson, 2002). Three new areas of service which they recommend librarians measure are *consultation*, *outreach*, and *Web authoring*. Consultation consists of appointments to provide in-depth assistance with research projects and individual instruction on the use of library resources. Outreach activities include providing continuing education for community members or grant-writing. Web authoring includes activities such as designing webpages, creating online tutorials or participating in the development of new products. Together these activities take a considerable amount of time that is not accounted for by the traditional statistics which are gathered regarding library services, such as user transactions or educational presentations (Scherrer & Jacobson, 2002). Although Scherrer and Jacobson (2002) do not focus solely on accounting for online library instruction they emphasize the importance of librarians measuring and documenting the new activities in which they engage, which may increasingly involve online instructional support.

Librarians should not only measure how active they are in providing online instruction, but also how effective the instruction is in terms of student achievement. There are many methods for evaluating the impact of library instruction each with its own benefits and challenges (Schilling & Applegate, 2012). Evaluation methods may be *direct*, focusing on knowledge and skills, or *indirect*, based on self-reporting of perceived skills or attitudes. Measures may be taken either *in-process* or by examining *end-products*. Schilling and Applegate (2012) provide an extensive review of a wide variety of commonly used measures of

library instruction, along with the advantages and disadvantages of the various types. Some methods for evaluating the impact of library instruction may require collaboration with faculty for access to students' work.

One common form of evaluating students' learning from library instruction is citation analysis. School librarians analyze students' citations as either part of a *formative* or *summative* assessment (Hamilton, 2012; Schilling & Applegate, 2012). When librarians analyze student citations as part of a formative assessment they may assist students with identifying useful sources they may have overlooked, or work with students on the correct formatting of a list of sources (Hamilton, 2012). Online Web 2.0 tools are particularly useful for facilitating this type of formative assessment. Blogs, wikis, drop boxes, and courseware may be used to share students' work in progress with the librarian for assessment and assistance (Hamilton, 2012; Schilling & Applegate, 2012). Comparison of data from formative evaluations with summative evaluations of student end-products, such as formally cited papers or presentations, can provide clear evidence of the impact of library instruction on student learning outcomes (Schilling & Applegate, 2012). This type of longitudinal evaluation of authentic products presents many challenges. Although an iterative process of evaluation and modification of instruction may be advantageous it may not always be feasible or practical. Trade-offs must be made between time spent on instruction or educational activities and evaluation (Schilling & Applegate, 2012). Using course products for evaluation is efficient in terms of students' time, since librarians do not need to implement additional evaluation activities. However, Schilling and Applegate (2012) note that a challenge which must be considered is the coordination required for the librarian to gain access to students' work.

Other options for evaluation may be practical for varying types of instruction. Evaluation of the use and effectiveness of online library instruction provided through learning objects such as a tutorial may be achieved using a variety of measures to assess students' skills, knowledge, attitudes and behaviors (Blummer, 2007; Schilling & Applegate, 2012). Usage statistics may be examined as a measure of behavior to evaluate the success of communicating the availability of an online tutorial (Blummer, 2007). Student surveys may be used to evaluate attitudes, allowing patrons to rate a tutorial in terms of usefulness and ease of use (Blummer, 2007). When designing assessment procedures librarians must consider effective use of students' time (Lindsay, Cummings, Johnson, & Scales, 2006). Lindsay et al. (2006) suggest that when practice or assessment is built in to a tutorial the design should include an option allowing students the opportunity to skip to the next part of the tutorial.

The various methods of assessing online library instruction each have their own strengths and weaknesses (Schilling & Applegate, 2012). Using multiple measures is recommended for developing a well-rounded evaluation program (Blummer, 2007; Lindsay et al., 2006; Schilling & Applegate, 2012). Evaluation helps to identify instructional programs which may need to be changed or updated. School librarians should gather and evaluate a variety of data related to the instructional support they provide to drive decisions on whether to continue, modify or expand programs (Schilling & Applegate, 2012).

New Education Initiatives

Much more is expected of teachers today, as compared to previous decades. Teachers must instruct classes full of students with diverse needs and are expected to demonstrate significant academic growth for all students (Duncan, 2009). Teachers are recognizing the need for using different approaches to teach 21st century students (Herron, 2012), while new standards

are also changing how students are taught (CCSSI, 2012; Tucker, 2012). The Common Core State Standards released in 2010 have been adopted by 45 states and 3 U. S. territories (CCSSI, 2012). The standards define skills and understandings that students must demonstrate, such as "use technology, including the Internet, to produce and publish writing and to interact and collaborate with others" (CCSSI, 2012, CCSS.ELA-Literacy.CCRA.W.6). The ability to work collaboratively using current technology is essential to success beyond high school (Tucker, 2012). School librarians are increasingly becoming leaders in their schools to support teachers in effectively integrating technology into their curriculum and facilitating collaboration (Tucker, 2012). The Common Core's College and Career Readiness (CCR) anchor standards state that students should be able to "gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism" (CCSSI, 2012, CCSS.ELA-Literacy.CCRA.W.8). School librarians have been teaching and promoting these skills since before the Common Core Standards (CCS) were developed (AASL, 2007).

Budget cuts leave teachers in many districts without professional development to transition to new teaching styles to support digital learners and the CCS (Tucker, 2012). School librarians are often filling the professional development gap and serving as leaders and instructional partners in their schools to introduce teachers and students to collaborative technologies that address new standards (AASL, 2009; Hamilton, 2012; Tucker, 2012; Williams, 2012). Annette Lamb and Larry Johnson (2012) provide an extensive list of Web 2.0 tools which they recommend librarians use to empower students. They compare the old and new ways in which students interact with information on the web to support learning activities. Implementing the CCS requires that schools engage students in the use of Web 2.0 tools and

cloud computing to develop the skills that they will need to be college and career ready (CCSSI, 2012).

Too often teachers bring assumptions to the classroom that their students are digital natives who are skilled technology users, which is not always the case; "access does not guarantee use, and use does not assure deep understanding" (Karchmer-Klein & Shinas, 2012, p. 291). Educators must assess what their students actually know and prepare to differentiate instruction to teach new literacies integrated into the CCS (Karchmer-Klein & Shinas, 2012). Cooperative learning with students working collaboratively in groups is recommended for differentiation in classes with heterogeneous groups and allows students to learn from one another (Brown, Tucker, & Williams, 2012). Educators may not always achieve the desired results when they have students work collaboratively on assignments, but they should persist in finding an effective method for implementing this practice (Tucker, 2012). Following previous frustrations with attempts to have students work collaboratively, Catlin Tucker (2012) finally found success when she embraced a blended learning model combining online engagement with class work, similar to the model described by high school librarian Buffy Hamilton (2012). Embedding a school librarian in online environments for student collaboration can provide extra instructional support and guidance to address a wider array of academic standards (Hamilton, 2012).

Continued changes in the K-12 educational environment are expected as technology advances and new literacies are addressed (Karchmer-Klein & Shinas, 2012). Multiple literacies must be recognized and taught in 21st century schools to make it possible for all students to succeed (AASL, 2009; Elmborg, 2006). School librarians need to "become specialists in coaching intellectual growth and critical development" (Elmborg, 2006, p. 198). Developing

collaborative learning environments in both physical and virtual spaces enables librarians to provide students with intellectual coaching (Hamilton, 2012).

A new teaching model known as a flipped classroom is blending online instruction outside of the school day with time spent in class devoted to students working on assignments (Fulton, 2012). Educators who have experienced success with this model identify many advantages of a flipped classroom. Students are assigned to watch instructional videos at home, which allows students to work at their own pace and review videos as needed. During class time students work on the type of assignments that would have traditionally been assigned for homework. Students may work on assignments collaboratively during class while the teacher observes and provides support as needed. Class time may also be spent on more creative hands on activities or problem-based learning (Fulton, 2012).

Components of massive online open courses (MOOCs) may provide useful ready-made resources for educators to incorporate into their own blended learning environments. While some educators are still debating issues related to blending traditional and online models for education, others are embracing new opportunities (Kolowich, 2013). During the fall 2012 semester at San Jose State, a professor piloted a program to compare different sections of his course, which he taught using two different models. He designed one section of the course to draw heavily from recorded lectures and other materials from a MOOC and compared passing rates for this section with those from the traditional sections. Students in the section that used components from the MOOC passed the course at a much higher rate than students enrolled in traditional sections (Kolowich, 2013). Further pilot courses using MOOC components are being offered to local high school and community college students (Lewin, 2013). Dr. Qayoumi, president of San Jose State University, envisions increased use of online materials for

instruction, from MOOCs and other sources, as a means to support student engagement and provide more cost effective instruction (Lewin, 2013).

Political influences are also leading educators to increase their use of online instructional techniques and resources. Georgia's Digital Learning Act of 2012 requires schools to "maximize the number of students taking at least one course containing online learning prior to graduation" and "provide opportunities for participation in part-time and full-time virtual instruction programs." Provisions of the Digital Learning Act must be enacted for students entering ninth grade during the 2014-2015 school year. Another initiative, Georgia's Online Clearinghouse Act of 2012 provides for local school systems and charter schools to offer their computer-based courses to students in other local school systems and charter schools, including options for dual enrollment. One of Georgia's largest school districts is initiating a supplemental online instruction concept for the 2013-2014 school year, and the district projects that by the 2018-2019 school year its teaching staff will consist of 75% traditional classroom teachers and 25% online teachers (Cobb County School District, 2013). In Florida a proposal is being considered to free school districts from state mandated textbook adoption cycles allowing educators to use their professional judgment to select up to date educational technologies that best suit the needs of their students (Meyer, 2012). Initiatives such as the supplemental online instruction concept and freedom from mandated textbook purchase cycles offer needed budgetary benefits, along with opportunities for an increased variety of learning options. Laurillard and Masterman (2010) suggest that technology enhanced learning (TEL) may help in meeting political and fiscal demands on education, noting that it can improve both the quality and reach of education while creating economies of scale. They explain the potential of TEL to improve the quality of education by offering the ability to adapt to individual learners' needs. Additionally, TEL may

expand the reach of education by providing greater flexibility in the mode and location of learning (Laurillard & Masterman, 2010).

School librarians are considering new educational initiatives, such as the CCS, and an increasing demand for online instruction and resources as they update their instructional programs. By working collaboratively with teachers and using current technologies school librarians can teach a wide variety of standards and engage students in collaborative learning in physical and virtual spaces (Hamilton, 2012; Tucker, 2012; Williams, 2012). Effective use of in-class instructional time for 21st century learners focuses on engaging students in active learning involving inquiry-based activities (AASL, 2009; Hoover, 2012). School librarians need to consider what part of their instruction may be moved outside of class time using the flipped classroom model to allow students more time engaged in active learning during class, and to suit the learning style of 21st century students (Hoover, 2012).

Teaching Information Literacy to 21st Century Digital Learners

The Net Generation is a term used to describe students who have grown up in the digital age; these students are generally comfortable and confident with technology. Net Generation students value freedom of choice, options for customization, collaboration, scrutinizing individuals and organizations, integrity and transparency, fun during work, speed, and innovation (Tapscott, 2009). One-way, one-size-fits-all instructional models are not effective with the digital learners in current student populations (Tapscott, 2008, November 30). Today's students expect conversation, rather than a lecture. They prefer working collaboratively in groups rather than individually. Tapscott (2009) has researched the characteristics of the Net Generation and describes implications of their characteristics for changes in education and the workplace. Today's students want the freedom to work when and where they want and to mix work with

social activity. He recommends that old teacher-focused models of education be abandoned in favor of a new informal, interactive and collaborative model.

Tapscott (2008, November 10) explains that for students who have grown up with digital technologies there have been changes in the way the brain functions. They are sensitive to visual icons and absorb more information when it is presented with visual images as opposed to straight text. Through observation of hundreds of Net Geners Tapscott (2008, November 10) concludes they are adept at switching tasks and blocking out distractions. Rosen (2011) suggests the label *iGeneration* as a follow up to Tapscott's description of the Net Generation. Based on research with thousands of teenagers, Rosen (2011) and his colleagues identify this group as those born after 1990. The *i* is representative of the popular digital technologies that are used by this generation as well as their preference for individualized experiences. Rosen (2011) suggests this new generation is "defined by their technology and media use, their love of electronic communication, and their need to multitask" (p. 12). They consume massive amounts of media, spending nearly all of their waking hours using technology. Rosen (2011) explains that "to members of the iGeneration, a phone is not a phone" (p. 13), it is a computer providing continuous access to information and social networks.

Schools need to take advantage of students' connection to technology and media to deliver instruction more efficiently and effectively. Rosen (2011) recommends that teachers access online curriculum content to bring material to life. He suggests the use of a *knowledge broker* to streamline the process of identifying useful online resources. School librarians working as instructional partners may fulfill the role of *knowledge broker* for students and faculty. In planning library instruction school librarians are advised to consider the traits of the current generation of students. Focus may be placed on developing methods for delivering

content according to students' preferences for accessing information and instruction at the point of need, keeping in mind that "their tech world is open 24/7" (p. 15). Effective instruction of 21st century digital learners features point of need instruction and opportunities for personal one-on-one contact (Costello et al., 2004; Sheesley, 2002).

Educators are realizing that lecture is ineffective, and that digital learners prefer active learning environments (Lambert, 2012; Manuel, 2002). Assessments indicate that interactive learning increases students' gains in knowledge (Lambert, 2012). A customized model of learning which is student-focused and self-paced yields better results than traditional teacher-focused, one-way, one-size-fits all instruction (Don Tapscott interviewed by Conan, 2011). Instructional productivity gains achieved through use of computer-mediated instructional materials are supported by research evidence since the 1990's; however, widespread development and use was formerly not seen as economically viable (Baker, Hale, & Gifford, 1997). New collaborative education networks are bringing long awaited innovation in education (Tapscott & Williams, 2010). Online open access to instructional materials traditionally viewed as guarded intellectual property is changing the economics of education (Tapscott & Williams, 2010). Librarians are joining in the collaboration and use professional networks to efficiently provide local students with a variety of instructional resources for creating customized learning experiences. Kazakoff-Lane (2010) describes the ANimated Tutorial Sharing (ANTS) Project for development of online multimedia learning objects which are useful beyond one library for information literacy instruction. The ANTS program focuses on providing current learning objects using new and emerging technologies that appeal to students and which may be accessed through a variety of formats, as 21st century students expect.

The Net Generation expects information and instruction to be concise and practical (Bodi, 2002; Costello et al., 2004). Even before the introduction of online technologies Cannon (1991) suggested that librarians focus on "distilling information into neat, ready-to-use packages" (p. 36). Now as librarians develop learning objects such as online tutorials, presenting content in small chunks continues to be recommended as a best practice (Mestre, 2010). According to Mestre (2010), students also indicate a preference for learning objects that are visually engaging, include both images and sound, are available at point of need, and allow them to select the parts they wish to review (Mestre, 2010). Options which allow students to select the instruction that they feel they need, when they need it, help to provide the personalized educational experiences that today's students expect (Costello et al., 2004).

With the amount of knowledge rapidly growing information literacy is essential to succeeding in the 21st century workforce (CCSSI, 2012; Neidbala & Fogleman, 2010). School librarians need to provide students with information literacy instruction in formats that match their learning styles (Mestre, 2010). As instruction is designed essential learning outcomes for college and career readiness are a primary consideration (CCSSI, 2012). Working collaboratively with content area teachers, librarians can design learning activities that provide students with practice using key 21st century skills including critical thinking, creativity, innovation, teamwork, communication, technology, ethics and social responsibility (Cuthell, 2010; Neidbala & Fogleman, 2010). Careful thought must be given in deciding what information should be provided to students and what information they may be expected to find for themselves, as well as what skills are best taught in advance versus at the point of need (Cuthell, 2010). In order to provide relevant instruction librarians need to continuously focus on

remaining educated, active and current particularly related to technology (Goetsch, 2008; Riley-Huff & Rholes, 2011).

Conclusions from the Literature

School librarians are called to focus on their role as instructional partner and consider how they may support the 24/7 learning environments that 21st century students expect (AASL, 2009). They are directed to advocate for support from administrators in developing flexible programs which provide opportunities for collaboration and innovation (AASL, 2009; ISTE, 2007; Marcoux, 2010; Rix, 2012; Shannon, 2012). As librarians design instruction they consider the preferences of faculty and students. While collaboration is essential for designing relevant instruction to support content area standards, school librarians recognize that some teachers prefer to implement inquiry-based learning approaches, involving library research, without the assistance of instruction from a librarian (Cannon, 1994). Instructors who prefer to work with their students without collaborating with librarians may express interest in using online library tutorials when they are provided (Hrycaj & Russo, 2007), such options may also be appealing to students. Learning styles of 21st century students are resulting in a turn away from lectures (Lambert, 2012) and towards brief learning vignettes for instruction at point of need (Meister & Willyerd, 2010a; Su & Kuo, 2010) with increased opportunities for active learning involving inquiry-based activities (AASL, 2009; Hoover, 2012). New educational initiatives are calling schools to use technology to provide learning resources to students anywhere and anytime, as well as to allow for learning experiences to be personalized (Department of Education, 2010).

Although much research literature has focused on academic librarians' use of online environments for instructional support of undergraduate and graduate college students, similar research has not been found related to librarians serving at the high school level. However, there

are indications in professional literature that comparable strategies are beginning to be implemented by high school librarians (Hamilton, 2012; Williams, 2012). This study was designed to expand the body of research on librarians' use of online environments for instructional support to the high school level. The study aimed to explore high school librarians' lived experiences related to use of online environments to extend instructional support beyond the physical space of the library to serve 21st century schools with 24/7 learning environments. A basic qualitative approach was identified as the most appropriate for this type of research in the applied field of education (Merriam, 2009). Chapter three will provide details of the methodology that was used to conduct this qualitative study of high school librarians providing online instructional support for 21st century students.

Chapter Three

Methodology

This qualitative study explored the lived experiences of high school librarians as providers of instructional support in online environments. Investigation focused on influences on the types of online instructional support provided. Although multiple researchers have studied the use of online library instruction techniques from various perspectives at the post-secondary level (Bottorff & Todd, 2012; Coulter & Draper, 2006; Mestre 2010; Mestre et al., 2011; Su & Kuo, 2010), similar research was not found related to high school library instruction. A qualitative approach was used for this study to facilitate an in-depth investigation of high school librarians' lived experiences that influence their use of different types of online instructional support. Experiences related to teaching and learning with technology are different from experiences with traditional teaching and learning, and require in-depth study to facilitate an understanding of technology's impact on teaching and learning (Cilesiz, 2011). Merriam (2009) indicates that basic qualitative research is appropriate and commonly used to conduct research in applied fields of practice such as education. A qualitative approach was particularly appropriate for an initial study such as this, because it did not attempt to provide definitive answers, but rather the goal was to describe lived experiences related to the phenomenon to inform others who may encounter the same phenomenon. Van Manen (1990) suggests that a good description of participants' experiences is something that others can nod to, "recognizing it as an experience that we have had or could have had" (p. 27). Qualitative research methods were

used to gather data that allowed for rich descriptions to facilitate determination of transferability (Lincoln & Guba, 1985).

The study used purposive sampling for participant selection. Participants were interviewed in-depth regarding their lived experience of implementing online instructional support, and additional data was collected through reflective journals and artifacts. Investigation focused on discovering influences on the types of online instructional support that high school librarians provide. The study aimed to identify benefits and challenges of using different types of online instructional support for meeting the needs of 21st century high school students. Additionally, the study examined the relationship between the online instructional support provided by high school librarians and instructional partnerships. Basic qualitative methods were used to thoroughly examine the data and identify convergent and divergent themes. Rich descriptive data is provided to enable readers to judge the transferability of the findings to other contexts (Cilesiz, 2011; Lincoln & Guba, 1985; Merriam, 2009). The following sections of this chapter explain details of the methodology used, including participant selection, data collection, data security and organization, and data analysis procedures. Additionally, I explain measures taken to assure the reliability, validity and trustworthiness of the study, which includes an acknowledgement of my subjectivities and relationship to the topic.

Participants

A purposive sample was selected for this qualitative study to research influences on the types of online instructional support provided by high school librarians. To select a purposive sample the researcher identifies criteria for selecting the sample (Gay et al., 2006). At the beginning of the study a minimum criteria for selecting participants was set, requiring that participants were practicing high school librarians with two or more years of experience in the

position and experience implementing multiple online instructional resources to support learning in their schools. Additionally, participants would need to agree to be available for interviews, complete reflective journals, and submit artifacts as examples of their online instructional support. The target sample size for the study was three to five participants; Smith and Osborn (2008) note that a small sample size allows sufficient in-depth engagement with each participant, as well as a detailed examination of similarities and differences.

Following approval for the study by the Internal Review Board, participants were sought through a posting in a statewide library media listserv with over 900 members. The initial posting to identify possible participants requested listserv members to recommend a high school librarian who uses online environments to provide instructional support; members were invited to recommend either themselves or another librarian (see Appendix A). The message for identifying participants was posted twice, with approximately a month between postings. The first posting was during summer break and the second was near the beginning of the 2013 fall semester. A link in the posting led to a Google form that I used to collect names and contact information for possible participants. Following the first posting seven names were suggested as possible participants, two more names were suggested following the second posting. Along with the name of the librarian recommended for participation the form requested, but did not require, the librarian's school name, email address and a phone number. I initially contacted each of the nine librarians whose names were recommended by sending an email invitation to briefly describe the purpose of the study and request their participation in the study (see Appendix B). The email requesting participation included a link to a Google form that requested contact information and brief descriptions of the types of online instructional support provided, from those who indicated an interest in participating.

Initially, five of nine people responded through the Google form linked from the email that requested their participation in the study. Four of the responders indicated interest in learning more about the study. The one negative response was followed up with an email in which the respondent indicated that she was declining to participate in the study because she was "now working in a different position." After receiving a response indicating interest in participation, I attempted contact by phone to discuss the procedures for proceeding. Of the four positive responses I was able to begin interacting with three respondents who became participants in the study; one of the possible participants, who initially indicated interest in the study, did not respond to emails or phone messages following the initial contact. To increase the number of participants, I went back to the list of recommendations and again reached out to those who did not respond to initial contact. Eventually, I was able to reach two more possible participants, by phone, who were qualified and willing to participate in the study.

The participants, who self-identified as using online environments to support instruction through their high school library program, exhibit some outstanding qualities. Two of the participants have award winning library media programs. One participant has written and administered a grant that attracted significant funding to her school. One participant is the school librarian for an online public school, and may be the only person to hold such a position in her state. The participant who most recently entered the profession transitioned from a career in the business world to become a high school librarian; now she supports teaching and learning through use of communication technologies that she formerly used in the corporate world. The participants work in a variety of settings from rural to urban, with diverse populations (see Table 2), and have varying previous experience; more information on the participants' individual backgrounds is presented in the findings in Chapter 4.

Data Collection

Multiple methods of data collection were used to gather rich descriptions of the participants' lived experience, and enhance the accuracy and credibility of the findings. Primary methods for data collection included interviews, reflective journals, and artifacts. Additional

Table 2

Demographics and Expenditures for Participants' Schools

	P1	P2	P3	P4	P5
Eligible for Free/Reduced Meals	25%	31%	90%	22%	55%
Largest Racial/Ethnic Group	61% White	55% White	95% Black	79% White	72% White
2nd Largest Racial/Ethnic Group	23% Black	24% Black	4% Hispanic	12% Hispanic	23% Black
Per Capita Expenditures	$24,156.37	$913.93	$7,712.18	$7,061.21	$7,043.42
Enrollment	180	2149	923	1585	666
School Setting	Suburban	Suburban	Urban	Suburban	Rural

Note. Values obtained from the most recent data available on the state Department of Education website.

data was received from the invitational Google form, email correspondence, and phone calls. I maintained a research journal to record information about my progress during the study, organization of the data I collected, and my reflections throughout the study. The most in-depth source of information from each participant was the interview. Supporting information was also gathered from participant journals and artifacts.

Data collection began with information submitted by participants on the Google form linked from the email inviting their participation in the study (see Appendix B). The form included two open-ended questions to gather data related to the types of online instructional support that the librarians provide. I used the participants' responses to the open-ended questions on the Google form to customize prompts for the first reflective journal entry (see Appendix C). A second reflective journal entry included prompts to gain follow-up information from the responses received in the first journal entry and to gain further information that would help me to prepare for the interview.

Semi-structured interviews, lasting an hour or more, provided in-depth information from each of the participants. In advance of each interview I used a table to organize data from the participant's responses to (1) the open-ended questions on the Google form and (2) the participant journal prompts. Information in the table was used to customize the opening cycle of questions for the interview (see Appendix D). The interview guide questions were adapted throughout the interview according to where the conversation led. When one topic of discussion had been fully pursued, I introduced another, either based on something the participant had said or on information in the table that summarized the data I had received from the participant prior to the interview. Some topics were revisited after the participant's responses to questions on a later topic led to further questions on a previous topic.

The semi-structured interview process provided both the focus and the flexibility that I needed to explore the phenomenon. As suggested by Merriam (2009) the questions, or ideas that I explored, were used flexibly, and there was no strict wording or order. Rubin and Rubin (2012) explain that flexibility to modify questioning, according to what the researcher is learning and to what the participant knows, keeps results fresh and interesting. While the initial focus of the

interview is selected by the researcher, questions pursued are responsive to what the interviewee says. A respondent may introduce an unexpected issue during the interview; using a semi-structured protocol enables the researcher to respond to new ideas that arise (Gay et al., 2006; Merriam, 2009). Gay et al. (2006) note the importance of developing a trusting relationship with participants for interviewing to be a successful method of data collection. They suggest specific actions to improve communication and data collection during an interview. Interviewers are advised to listen more and talk less, follow up on participants' responses, but avoid interrupting – learn how to wait and tolerate silence to allow participants to think. Interviewers should keep participants focused and request concrete details; they should avoid leading questions and never be judgmental of participants' responses (Gay et al., 2006).

As suggested by Rubin and Rubin (2012) I designed an interview guide with main questions that linked to the overall design of the study, and I used probes to clarify and complete my understanding of the participant's responses. To gain in-depth details I asked questions that led the participant to elaborate on the context of answers and allowed me to explore the implications of what had been said.

Smith and Osborn (2008) recommend getting the participant to speak about the topic with as little prompting as possible. To gain in-depth data from the interview I used a responsive interviewing technique. Rubin and Rubin (2012) explain that a responsive qualitative interview has similarities to a conversation. As they suggest, when I found that a participant misunderstood a question I politely listened to her reply and then rephrased the question to make it clearer. As may occur in a conversation, I let the interviewee know when I needed further information to understand a response. Although I had an interview guide to help maintain focus, I was flexible about the order in which questions were asked, and I adjusted questions in

response to the information I had already received from the participant. I allowed the participant's responses to flow without interruption, and asked questions that were personalized according to the participant's previous responses. Rubin and Rubin describe different types of questions to be used in a responsive interview to initiate discussion on a topic and ensure that participants' responses address the research problem with in-depth detail. The four types of questions recommended by Rubin and Rubin include tour questions, main questions, follow up questions and probes. The tour question on my interview guide was partially covered in advance based on participants' responses to questions and prompts during interactions prior to the interview. Thus after thanking the interviewee for participating and explaining the purpose of the study, I started with a main question based on their response to the first participant journal prompt. Cycling through the list of main questions ensured that all parts of the research problem were addressed. During the interview I asked follow up questions based on participants' replies and probed for details to gain greater understanding of the participants' responses.

Gay et al. (2006) recommend recording as the data collection method of choice for an interview, since it provides the researcher with the original data for use at any time. I conducted interviews for this study using video conferencing and screen capture software. Video conferencing provides a rich medium for capturing verbal and nonverbal cues, and it allowed me to interview participants from a greater geographical distance (Sedgwick & Spiers, 2009). Conducting interviews via video conferencing is appropriate for a technology related study, such as this, in which participants have access to, and familiarity with, the necessary software and hardware required for an online interview (Glassmeyer & Dibbs, 2010). Careful preparation is required for successful interviews through video conferencing (Glassmeyer & Dibbs, 2010; Salmons, 2010; Sedgwick & Spiers, 2009). Salmons (2010) warns, pre-interview

communications must include an assessment of the participant's comfort level and experience with the selected technology. In advance of an interview I confirmed that the participant had a web cam, which is common on today's computers and was familiar technology to the sample population for this study. Before beginning an interview I prepared my computer to work efficiently and without distractions by closing unnecessary programs, only having open the programs that I needed to conduct and record the interview (Glassmeyer & Dibbs, 2010). I had a paper copy of my interview protocol to help me maintain focus and to allow me to check off items that were covered as the interview progressed. Creating a screencast recording enabled me to focus on listening rather than taking extensive notes, and it preserved detailed data from the interview. Additionally, interviewing via video conference provided opportunity for the participant to display online information when needed for explanatory purposes; anything that the participant showed me online during the interview was recorded in the screencast.

Using a Google Hangout and screencast software to record the interview was highly effective. The Google Hangout allowed one participant to share her entire computer screen with me and take me through some of the online instructional resources that she provides to students. The online tour that the participant provided was very helpful, because I would not have been able to access the materials on my own, since they are embedded in a password protected learning management system. By using screencast software to capture everything that was visible on my computer screen along with audio from the interview, I was able to preserve details that enabled me to gain a deeper understanding of the participant's responses when I reviewed the video during transcription. Some of these details would have been lost had I used only an audio recording. Some participants were not familiar with Google Hangouts and choose to use Skype for the online interview which was also effective.

The other two sources of data, participant journals and artifacts, served as planned to add depth to the study and facilitate triangulation. These data added greater variety and details to *crystallize* the research findings (Richardson & St. Pierre, 2005). For the journals, participants were asked to complete four entries by responding to two or three prompts for each entry (see Appendix C). The number of prompted journaling entries was limited out of consideration for the research participants' time. Participants were also encouraged to use the journal at any point during the study to document their reflections and experiences related to implementation of online instructional support. However, participants did not enter any extra reflections in the journals, although some did so through email correspondence. Two of the prompted journal entries were requested before the interview and two following the interview. The participant journal entries submitted before the interview gathered preliminary data on what participants perceived to be the most beneficial and challenging technologies they use to provide online instructional support, and what they view as keeping them from using certain technologies. The data collected from the two pre-interview journal entries facilitated a more productive, personalized interview. Journal prompts following the interview provided participants with an opportunity for extended reflection, particularly for focusing on the influences that instructional partnerships have on online instructional support. The first post-interview journal entry also requested the participants to present artifacts, as examples of the online instructional support they provide, along with any associated descriptions. On the final prompted journal entry I included customized prompts based on the results of my analysis of all previously collected data.

The documents used for the journals facilitated participant's submission of artifacts, by allowing the participants to send links to most materials. Artifacts submitted by the participants presented examples of online instructional support that the participants provide in their schools.

Participants were invited to submit a couple of links to artifacts in their first journal prompt, but artifacts were not specifically requested until the third reflective journal, which followed the interview. Merriam (2009) uses the term *documents* to refer to this type of data; her definition is inclusive of what LeCompte and Preissle (1993) refer to as artifacts. Merriam explains that data collected from documents that are produced for purposes other than the research are subject to fewer limitations than data from interviews or observations. Data from documents are not altered by the presence of the investigator and are considered more "objective" than data from other sources (Merriam, 2009). Data from the example documents was used to furnish additional descriptive information for the study and served to verify participants' responses. Merriam notes that the use of online data is a rapidly evolving area in research and that the researcher must describe the tools and methods used, as well as their potential influences on the results.

Participants in this study were presented with guidelines for selecting artifacts to serve as examples of the online instructional support that they provide (see Appendix E). They were asked to submit items representing a variety of the different technologies they use and topics that their instructional support covers. Many examples included online instructional resources created by the participants, with some artifacts involving materials created by others that the participants link to from their library website and use with their students and faculty to provide instructional support. Lists of possible technologies, topics, and formats for submission of examples were presented to guide participants in selecting a variety of artifacts. Participants provided examples of online instructional resources that they have used in their schools, and which related to information discussed during the interview. Data gathered from the artifacts was used to add descriptive detail to the study and facilitate an understanding of influences on the types of online instructional support that high school librarians provide. Descriptions of the

artifacts are part of the individual participant narratives presented in the findings in Chapter 4, they include information about the topic covered, technology used, access procedures, interactive features, and updatability.

Participants were asked to provide three to five artifacts representative of the online instructional support that they provide. Most artifacts were submitted via hyperlinks. In some cases the online instructional support materials used were posted in a login protected learning management system and screenshots were sent along with an explanation about the resource. One participant, who works for an online school, had all of her resources posted in a login restricted system. This participant was very helpful and creative in finding ways to display her work for me. She demonstrated some of the resources that she uses during the online interview and later created a video tour just for the purposes of the study.

I interacted with the participants over a period of months, as I guided them through the procedures designed for the study to a point where data saturation was reached. As I worked to schedule interviews and gather data through participant journals I tried to balance patience with persistence. As working professionals, each participant had a busy schedule and at times there were delays in our communication. Notes in my research journal assisted me with keeping track of contacts I had made to encourage progress from participants without sending requests, or reminders, too frequently or forgetting to follow-up. With time, each of the participants fulfilled all of my requests and provided extensive data that contributed significantly to my findings.

Organizing and Securing the Data

All research data collected for this study is stored in digital formats. The files are saved on a password protected computer. Key documents including interview transcripts and participant journals are also stored in a secure cloud-based file storage account to provide off-site

data backup. My research journal contains information regarding collection of specific data, including: date, participant, type of data, filename, and location stored.

Data Analysis

As described by Merriam (2009), analysis of the data in this qualitative research study occurred throughout the data collection process and involved identification of recurring patterns, or themes, that characterize the data. As Gay et al. (2006) suggest, my data analysis began from the initial interaction with participants and was sustained through ongoing interactions with the participants during the study (see *Figure 1*). I began my data analysis with note taking during review of the information submitted by participants through the invitational Google form and the first two participant journals, prior to the interview. Early analysis of data was used to follow topics introduced by each participant during the next phase of data collection. As recommended by Morse et al. (2002), I was responsive to findings during early stages of data analysis. When one participant gave an extensive response on the Google form linked from her invitation to the study I revised the planned introduction to her first journal accordingly. I recognized that the revised introduction that I wrote, to help the participant's journal reflection focus on information

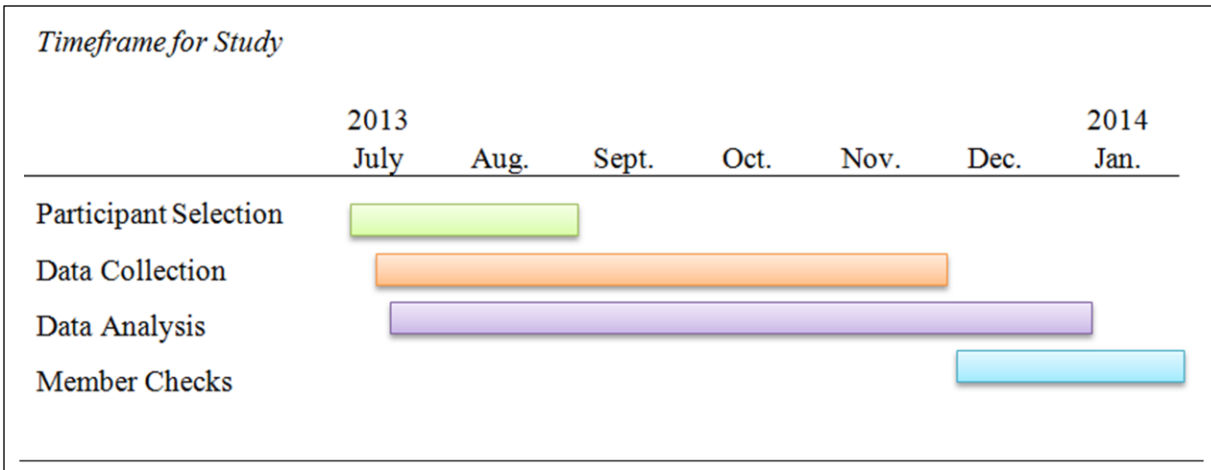

Figure 1. The study began during the summer of 2013; data collection and analysis continued through the fall 2013 semester.

that would help to answer the research questions, would be useful for prompting other

participants as well. I used the revised introduction on the first participant journal for the remaining participants and added it as a prompt on future journal entries for the participants who had already completed their first reflective journal.

Early analysis of data prior to the interview was used to develop of list of topics for exploring through interview questions. I took brief notes during the interview about points made by the participant that seemed important or comments that I wanted to follow up on later in the interview. Before ending an interview I ensured that all topics that I had listed prior to or during the interview had been thoroughly pursued. Typing the transcription for each interview provided me with an opportunity for sustained engagement with my data. As described by Gay et al. (2006) I got to know my data intimately; the participants' words resonated with me after I heard them spoken over and over during the hours I spent transcribing. During the transcription process I was also conducting preliminary analysis and began adding some codes in the margin and developing a list of the codes in my research journal. My initial list of codes grew from approximately 11 codes following a review of the transcript from the first participant to approximately 27 later in the study, as I worked on each case individually. Recognizing that my list of codes was long, included similar codes that could be merged, and some that were rarely used, I created a table to help me cluster the codes and identify emerging themes (see Table 3). I reread previous data adding the codes for the nine emerging themes along with memos. For data that was still coming in, I used the emerging theme codes and memos for identifying sub categories of information that I would want to be able to consider during future analysis. I thought that I might still need to add new codes for incoming data, but found that I did not, as I was reaching a point of data saturation (Given, 2008).

Table 3

Code Clustering and Emerging Themes

Emerging Theme	Codes
Addressing a Need	personalized learning, need, learning styles, consistency, change, assigned task, community
Audience Acceptance	audience acceptance, teacher acceptance, school culture
District Support and Requirements	legacy, political, community
Networking and Learning	professional development, previous experience, new technology expert/exploration, learning from students, participatory learning
Ease of Use	ease of use, familiar, time
Compatibility & Integrated Solutions	compatibility, integrated solutions
Money	vendor agreements/terms, economic/money
Benefits & Challenges	familiar, time, challenge, benefit, type of OIS
Instructional Partnerships	instructional partnerships, collaboration

I began writing the narrative of individual participant's experience after coding of their transcript and examining their artifacts. I used the final set of journal prompts to clarify information that had been introduced earlier and encourage the participant to provide any remaining information that might help to answer the research questions. Information received following the interview helped to fill-in details, add to the depth of descriptions, and focus my analysis on answering the research questions.

My data analysis process followed general procedures described for basic qualitative research. I engaged in a multistage process of organizing, categorizing, synthesizing, analyzing, and writing about the data, as described by Gay et al. (2006). By cycling through these stages I was able to narrow and make sense of what was revealed in the data. As suggested by Gay et al. (2006) my process involved iterative steps including reading/memoing and coding, describing,

and classifying. By classifying and coding the data, and then grouping the coded data into categories of related ideas or concepts I was able to identify emerging themes in the data (see Creswell, 2003; Gay et al., 2006).

After all data was in, had been read through multiple times and coded, and all individual participant narratives had been written I focused on analyzing the emerging themes to focus on which ones were indicative of a commonality of experience among the participants. Some of the emerging themes were not appearing in the coded data for all participants. In these cases I considered whether one of the less prevalent emerging themes was connected to another emerging theme, allowing the emerging themes to be merged into one, or whether the emerging theme did not represent a commonality of experience. My analysis of the prevalence of and connections between the emerging themes pointed to four pervasive themes that reoccurred throughout each participant's experiences and were common among all participants. Findings related to the four prevalent themes of networking and learning, district actions, audience acceptance, and ease of use and compatibility of technologies are explained following the participant narratives in Chapter 4.

Reliability, Validity, and Trustworthiness

The role of researcher as instrument in a qualitative study requires specific steps to ensure rigor in the methods used, as well as to provide consumers of the research findings with descriptions that enable them to evaluate the trustworthiness and usefulness of the results (Morse, Barrett, Mayan, Olson, & Spiers, 2002). Strategies must be employed both during and following investigation to ensure reliability, validity and trustworthiness of a qualitative study. One of the greatest hidden threats to validity is a lack of responsiveness of the investigator at all stages of the research process (Morse et al., 2002). Responsiveness of the investigator influences

the outcome of the research. During all phases of the research I remained open to new insights and was willing to relinquish any ideas that were weakly supported by the data, despite the initial promise they may have generated. Morse et al. (2002) suggest that a dynamic relationship must be developed between purposive sampling, data collection, and analysis. I was collecting and analyzing data concurrently during the study. To be responsive to new insights, I adapted the interview questions and journal prompts to individual participants' circumstances and prior responses.

During the study I kept a reflective research journal to preserve data that may be triangulated with other sources to increase the transparency and trustworthiness of the findings. Ortlipp (2008) explains the goal of the research journal is to provide a record of "gradually altering methodologies and reshaping analysis" (p. 696). Similar to Ortlipp (2008) I used my research journal to make apparent to myself and readers the thoughts and experiences influencing my decisions related to the study. The research journal provides an audit trail, as described by Merriam (2009), preserving details of when and how data was collected, the development of a list of codes used for analysis, as well as my general thoughts throughout the study. Wagner, Kawulich, and Garner (2012) suggest that providing an audit trail and using multiple methods to triangulate data adds dependability to a study.

Merriam (2009) also recommends triangulation as a strategy for increasing the internal validity of a study. Denzin (1978) explains that using multiple sources of data and multiple methods assists with identifying convergence among the research data. I collected data from multiple sources by interviewing five participants and by obtaining data from each participant multiple times and by different methods, as described in the Data Collection section of this chapter. With each participant I heard some of the same statements in the interview that were

used in their journal reflections, which is an indication of validity. Using multiple sources of data obtained by different methods enabled me to provide a rich, comprehensive and well-developed account of the phenomenon (Cohen & Crabtree, 2006). The confirmability of my findings is strengthened through use of triangulation and an audit trail (Cohen & Crabtree, 2006; Lincoln & Guba, 1985; Wagner et al., 2012). By providing readers of my research with sufficient context-rich descriptive data they may judge the transferability of the findings to other contexts (Cilesiz, 2011; Lincoln & Guba, 1985; Merriam, 2009).

As an additional measure to ensure credibility of my findings I performed member checks. Merriam (2009) describes member checks, or respondent validation, as the process of soliciting feedback on emerging findings from some participants. Member checks are important for avoiding misinterpretation of the meaning of participants' statements (Maxwell, 2005). To conduct member checks I sent each participant the narrative descriptions of my findings related to their experiences and requested their feedback. No significant changes were needed following the member checks; only two of the five participants requested minor revisions related to the wording of a quote taken from their interview.

Researcher Subjectivities and Relationship to the Topic

I have been serving as a high school librarian since 2007. The primary focus of my library program is working collaboratively with teachers to instruct students to access, evaluate, and use information in an efficient, effective, and ethical manner. During the last decade I have personally experienced changing styles of teaching and learning from both the perspective of student and teacher. The literature that I reviewed for this study reinforces what I have experienced. New instructional models are currently student-centered with increasing opportunities for personalized, inquiry-based learning. The literature also explains my

experience with some faculty who are less likely to collaborate. Reading a variety of research and professional literature has helped me to understand the learning styles of 21st century students, which include a preference for personalized learning, as well as access to information, or instruction, when and where they need it.

To help me present lessons effectively and efficiently, I produce instructional guides and videos for some of the most common lessons that I teach. The guides are used to facilitate face-to-face group instruction and for assisting students who ask questions as they work independently. Teachers indicate that the guides are useful and occasionally send their students to the library looking for a previously introduced guide. Some of the instructional guides that I create are linked from my library website; others are customized for a particular class, so teachers upload those and link from their own websites. Some teachers are more comfortable with providing instruction to their own students, but still check with me for updated versions of an instructional guide each semester. The literature also confirms that it is typical to have some teachers who prefer to provide information literacy instruction for their students by themselves, without collaborating with the school librarian.

Personally, I feel that my time has been well spent producing materials to support information literacy instruction, which is a component of a wide variety of courses. The exploding availability of Internet connected devices is making it increasingly practical and worthwhile to present these resources to my school community in online environments, either public or private. Presenting instructional resources in an online format is particularly efficient because of the ability to link from one resource to another, a property that is not shared by paper handouts of the past. Online instructional resources enable me to efficiently provide group

instruction, assist individual students with research and technology-based projects, and offer tools that may be used by other teachers to support their instruction.

More recently I have been exploring online options that offer increased opportunities for me to interact with students so I may assist them with a more personalized learning experience. Thus far, my experience in using online environments to assist with formative assessment and instructional support has been limited to collaborations with just a few teachers in my school, and our collaborative efforts are still in the developmental stage. The lessons learned from earning my undergraduate degree in economics continue to influence me as I strive for efficient methods that will save time and money. I consider economies of scale versus individual needs. How can my time be most efficiently spent providing instructional support for my students and faculty?

I began my career in education just as personal computers were being introduced in schools. I was assigned to provide instruction to both students and faculty in use of the new technology, which at the time was limited to a single room in the school. My only previous experience using a computer was during a semester of programming in which I worked from a terminal connected to a mainframe computer. So my technology skills related to the use of practical applications software, and later a variety of online resources, are mostly self-taught through books, computerized tutorials, or just exploration and experimentation. This is not always the most efficient way to learn, but it is typically necessary to be among the first adopters of a new technology. My skills have been strengthened by opportunities to teach a variety of computer courses including Computer Applications, Web Design, Computer Programming, and Digital Media. My teaching and learning experiences with technology have enhanced my understanding of a variety of design concepts. However, the goal of this study will not be to

evaluate resources, but rather to describe and interpret the lived experiences of high school librarians related to their use of online environments to provide instructional support.

The most important aspect of my role in the school's library is providing students with information literacy instruction. Professional associations direct school librarians to create a community of life-long, independent learners, and ensure that information literacy permeates student's learning, enabling students to develop a personal construction of meaning (AASL & AECT, 1998). I believe that students develop the skills to become life-long, independent learners as they work on inquiry-based assignments which require them to locate, evaluate and use information to present their own expressions of knowledge. Providing online instructional support seems to me to be an efficient and effective means to creating the student-centered, inquiry-based, personalized learning experiences today's students need to prepare for college, careers, and life-long learning.

Conducting research that is connected to my profession brings increased concerns of bias. I am not an impartial researcher without personal and professional interests in the topic of my study. Yet, my connection to the research also brings potential for developing deeper understandings that may be used to advance the profession. My experience as a school librarian will help me to understand the challenges that are encountered by others in the profession. I entered this study prepared to accept that others in my field have different priorities for their library media programs. I welcomed the new insights and perspectives that I gained from my participants. The personal subjectivities that I brought to this study may have influenced my interpretations and analysis of the data. Acknowledging these subjectivities, I have strived to fairly analyze the data and present findings.

Chapter Four

Findings

This study aimed to identify influences on the types of online instructional support that high school librarians provide. The study explored the benefits and challenges of different types of online instructional support that high school librarians provide, and participants' experiences of the relationship between the online instructional support that they offer and instructional partnerships. The study participants conveyed information related to their experiences providing online instructional support through journal entries, interviews and examples of their online instructional support strategies. I transcribed each interview into text and then coded and analyzed the interview transcripts, along with the other research data, to develop an understanding of each participant's individual experience. Each of the participants used a unique combination of tools and strategies for providing online instructional support, which I have described in individual participant narratives. As data from each participant were coded and analyzed, common themes emerged across all participants' experiences. Once saturation was reached in the data collection and analysis process, I developed descriptions of the common themes using examples from the participants' collective experiences. I present descriptions of each participant's unique individual experiences in the next sections, followed by sections with my thematic analysis of the common influences that they all experienced.

Participant 1

Participant 1 graduated with her Master's degree in Library Science in 1976. At the time of the research interview, during the summer of 2013, she had eighteen years of experience

working as a school librarian. She served as the librarian at a private catholic school for sixteen years prior to beginning her current job. During the past two school years she has worked for a small but growing charter school which is part of one of her state's largest public school districts.

Participant 1 is different from many school librarians, in that she does not see her students because she works for her district's online campus. She provides the services of a traditional high school librarian without having a physical space for a library media center. Over the past two school years, from 2011-2013, she has served students working from a desk in the main office of the school. During this time she found most of her assistance was provided to students on a one-to-one basis. The students could contact her via email or phone, by either calling or texting to a cell phone provided by the school for this purpose. She makes instructions for topics on which students commonly need assistance available in the learning management system (LMS), enabling students to find the help they need without having to contact her directly. She provides online instructional support in a variety of formats that teach students how to do things, for example, use the eBook collection or library databases, and use various software and technology tools.

Although participant 1 is a member of the school's technology team, there are some decisions in which she has no say. Many of the types of instructional support that she provides are influenced by software that was already in place before she began working for the school two years ago. For example, the district was already using D2L as the LMS for their online courses, and SoftChalk was the selected technology for creating lessons. She finds much of the software that she uses for creating instructional materials available on the district computers. One of her favorite programs for creating instructions with images and text is Hypersnap, about which she learned when she began her current job. All of the district's computers have Hypersnap

installed. She expressed her enthusiasm for the program when she explained that "it allows you to type on the picture and say 'click here' with a pointed arrow right where they're supposed to click – it's a wonderful program."

By using a variety of software, sometimes in combination, she is able to produce guides for instructing students in multiple formats, such as image and text, or video. These items are available to students through the districts LMS, so some students may find the help that they need on their own, when they are logged into their online courses. She frequently provides instruction on the things students or teachers may need to know in both a step-by-step text with images format and also a video format. She feels that this way "whichever one the student or teacher finds more useful, they can use."

All of the online instructional guides and resources that participant 1 provides for students are linked from a graphical user interface that was custom designed for the school. Links to the guides and resources are also accessible through text menus and are placed within course content. In describing the decisions that were made to develop the design that leads students to the instructional support provided by the librarian, the participant explained that, following collaborative input, the final design choice was made by administrators. School administrators wanted a coordinated, consistent look for all of the courses and resources in the online school, so they were primarily responsible for selection of the design of the user interface. Participant 1 feels that the selected design works for offering students "one stop shopping for resources" in terms of what her online media center has to offer. The participant explained that one of her guiding principles is to use: "What makes things the easiest for the students to access and use, because if it's not easy for them to access and use, they're not going to."

Participant 1 describes how her experience at a previous job has influenced her approach and understanding of students' wants and needs related to learning and library services in a digital environment. During her former job in a private school, the entire freshmen class got laptops, starting in 1999. In each of the following years the new freshmen were also issued laptops, so that within four years, every student in the school had a laptop. At that time she noticed that students stopped coming to the library. As a result, she learned that she had to "really reach out to the kids, because they thought that their laptop was the only thing they needed." For her original outreach, she started with a list of links to resources; however, she could not post passwords for subscription library databases on her webpage. The login protected LMS, used by all students in her current school, provides the advantage of allowing her to post passwords beside links to licensed information resources. This makes it much more efficient for students to access resources, which is important, because as the participant said, "kids want the simplest way to get to something."

In addition to considering what makes things easiest for students and for her work, participant 1 thinks about how to assist teachers with efficiently incorporating select resources and instructional guides from her library collection into their online course content. Instructional materials that she creates are stored in the LOR – Learning Object Repository. Recently, she has pulled the links for specific eBooks related to subject area content and made them available on files stored in the LOR; as a result, links may be placed within each course to the subject specific learning objects. When the information in an object is changed in the LOR, the updates automatically feed down in the system to the related course content areas. Formerly, she sent teachers instructions on how to link to the library resources from within their online courses, but she found that "it just didn't happen." For the upcoming school year, she has a streamlined

system in place, in which she has already inserted the subject specific library materials from the LOR in each master course. This system will automatically copy into the new online course sections that are created each semester and facilitate teachers' and students' use of the learning objects provided by the school librarian. Participant 1 explained, "My hope is this year they'll get more use, because they'll be right in the courses, where the students can get to them."

The use of LMS technologies designed specifically for supporting an online learning environment have enabled participant 1 to be more efficient and effective in making instructional resources available; however, an expanding variety of platforms used by students to access the provided resources creates multiple challenges. School administrators have set a goal for the school's online presence to have a consistent look, regardless of the platform used for access. The participant indicated that this is not easy to do. Different browsers create challenges for achieving a consistent look, so the participant needs to check the layout for a variety of browsers that students may be using on their home computers. Fortunately, participant 1 has the skills to work with html, which she learned while serving as webmaster at her former school; this enables her to edit the html code to make changes, so material is presented uniformly. She exclaimed, "It's a nightmare, because they're not all exactly the same." While using a screen share program, during our online research interview, the participant demonstrated a particular problem associated with use of different browsers. She illustrated how an instructional video did not display in the Chrome web browser without following extra steps, explaining that we would not have that problem, if we were using Internet Explorer. The extra steps required for viewing the video when using the Chrome web browser can lead to frustrations for some new users of the online instructional resources.

The online campus' BYOD (bring your own device) policy creates similar frustrations related to the variety of devices used. Students use their own computers or other electronic devices to login and access provided library resources. For basic instructions on how to use some of the purchased digital library resources on a variety of electronic devices (i.e., e-readers, tablets, or smart phones), the participant links to guides provided by the resource vendor. Problems arise when the basic instructions are not working for a student. Participant 1 said that most of the students use PCs, but some have Macs, and the district will not even allow the school to buy a Mac to be able to learn more about it. Providing students with technology assistance when they cannot access materials is "a very grey area at this point." Given the many different hardware and software combinations that a student may be using, when a problem arises it is challenging to determine where the problem lies. It may be a problem with, perhaps, the student's equipment, and as participant 1 explained, "To try and make a judgment call on how much should I do, or how much shouldn't I do, it's extremely difficult."

Much of the instructional support that the participant provides relates to accessing or using resources. For example, she assists students with installing an application, such as the Livescribe Desktop on their computer; then she must ensure that it communicates with the Livescribe Echo Smartpen that the students must use to complete various assignments. The participant is very knowledgeable about the multiple ways the smartpens are used for teaching and learning. When I asked her about her instructional partnerships with teachers in the online school, she explained that her eventual goal is to collaborate with the teachers in preparing instructional materials for their courses that will incorporate library resources to assist students with specific research assignments. She feels that increased collaboration with teachers will enhance her ability to relate to the students. She explained, however, that it is difficult to

develop a relationship with the online teachers, because they are rarely on campus. With so much to do in developing the library program since the online campus was established in 2011, her first goal had to be effectively getting the resources to the students in the easiest possible way. To assist teachers who request to reserve particular eBooks for extended class use with their online students, participant 1 has set up special circulation category in the catalog for class use, which allows for a longer checkout period. When a teacher is finished using the book, the librarian changes the circulation code back to the standard two weeks that students have to check out books.

She has found it difficult to acquire some of the eBooks that she would like to add to the collection available to students and teachers, because not all eBooks are available on an appropriate lending platform. Participant 1 said that, when viewing the books available through some popular online sources, such as Amazon or Barnes and Noble, "it looks like they have the world." After investigating the details about the ability to lend an eBook purchased from Amazon, participant 1 was disappointed, when she found that the terms for lending would not work for a library. Challenges related to the lending terms for eBooks purchased from different vendors limit the resources that she may offer to students and teachers.

Other frustrations arose from the vendor's purchasing terms, such as, when she looked at one of the options designed for providing eBooks and related services for libraries, OverDrive. She found that purchasing eBooks through this source would require a minimum annual investment that would increase over time, and at any point that the school discontinued the service they would no longer have access to any of the eBooks purchased in previous years. The participant knew that her school does not have a lot of money, so with a requirement for ongoing, and likely growing, future expenses to retain the service and all previous purchases, she

did not find this a viable option. As she explained, “The problem arises that, if it ever gets to a point where you can’t afford it and you decide to cancel the service, you lose everything; you don’t actually own those books.”

This participant spent time looking at many different providers for eBooks and found that all of them have different limitations, since different publishers allow different vendors to have access to their eBooks. She found that her best source was Follett, a company that specialized in serving school libraries and provided an integrated solution for purchasing eBooks, as well as providing a hosting service and a circulation system. She also felt confident that the vendor she selected would be in a strong position to grow the list of books that they would be able to make available for purchase, because of their strength in the industry. Additionally, she commented that she did not want to have two or three places for eBooks; “I don’t think kids work well that way.”

To provide a variety of library resources for online instructional support, however, participant 1 found a need to work with a second vendor for eBooks, due to the way that the resources would be used. She needed to distinguish between eBooks that would be available for checkout versus those that are part of the reference collection. Follett was her choice for eBooks that students checkout, such as novels. For the reference collection she had to make purchases from a second vendor, Gale, which provides access and services that are helpful to students conducting research. The vendor that she selected for building her electronic reference collection offers unlimited access to the resources, and it gives the citation for each resource, but she explained, “you can’t quote checkout a book,” instead you can send an article to yourself. Because the reference eBooks cannot be checked out, they are always available, unlike the eBooks that she purchases from Follett, which must be electronically checked out and are

available for use by only one library patron at a time. When deciding from which vendor to purchase a new eBook, she considers whether she thinks the students will want to read the whole book, or just use parts of the book for research. For the books that she thinks students will want to check out and read, she makes the purchase from Follett; books for which she feels students will only use select sections for research, she purchases from Gale. When participant 1 uses these two vendors for purchasing eBooks for her library, the books belong to the school; "you own your eBooks, they're always yours." These vendor terms make her feel that she is spending library funds on something that will provide ongoing value to support teaching and learning in her school.

During the interview, participant 1 also described some of the influences that affect which software she uses for different tasks to provide online instructional support. In some cases, software choices have already been made at the school or district level, and it is logical that all staff use the same platform for consistency throughout the school; this is the case with the choice of D2L for a learning management system and SoftChalk software for building lesson units. For other tasks, such as creating videos, she has the opportunity to work with different options and has experimented with several, including Windows Movie Maker, Captivate and Screenr. When multiple options exist, she finds that it tends to be a better use of her time to use software with which she is already familiar. She describes the feeling that

> You start all over again, … when you go into a [new] program and you look at all the things that you can do, and you have no idea where to start, … now if you could go to a class, but I don't have time to go to a class; somebody throws something at you and says, "Could you make this into a movie by tomorrow?"

In explaining professional learning opportunities, participant 1 said that her county has good training programs offered through two different approaches. They offer online classes or brief training through one to two minute videos that demonstrate how to do a specific task. The videos are available on demand; she describes the collection as "FAQs in video." Additionally, the staff of the online campus receives further training from the provider of their LMS. Within the school community, she explained, staff members work well together: "We'll have meetings and we'll share something, and sometimes things just come out over lunch … and I think that's how we learn a lot of stuff – from each other." The participant describes the staff as "cohesive in working together and helping each other out" and explained, "We all know we are in the same boat as far as learning, trying to keep up with all these new technologies." The participant described how one of the school's technology coordinators encouraged tech savvy teachers to create videos about programs that they use, as a means of introducing other teachers in the school to online programs with which they are unfamiliar, such as Glogster. The videos made by the school's teachers are put into the teacher resource center, so they may be viewed by colleagues interested in trying something new to learn about what a new application does and how to use it.

A new physical space is planned for the upcoming school year, which may lead to new relationships between the participant and the teachers and students she serves. Participant 1 will begin to work in a shared office attached to a new large room designed for facilitating productivity. The productivity center will have tables and multimedia presentation tools that online students and teachers may use when they visit campus. This participant indicated that she is not aware of another media specialist in an online school, so there is no example to follow and she is unsure of how this plan will come together. She finds her work interesting, but has learned

not to plan too far ahead with this job, because it will probably change. Hopefully, this new physical space will help her achieve her goal of increasing instructional partnerships with teachers and provide additional opportunities for her to connect with students.

Participant 2

Participant 2 began her career in education as a technology and media paraprofessional, while working toward her certification to become a library media specialist. She has worked as a school librarian since 2000 and has served at the math, science, and technology magnet high school where she has been employed for the past eleven years. She has an Ed. S. in Media and Instructional Technology and has taken courses that would qualify a certified teacher in her state to receive a certificate endorsement for online teaching; however, the state does not add the endorsement to a library media specialist's certificate. Her library has been recognized by the state for its Exemplary High School Media Program.

This participant uses a blog for the library's online presence. She describes the blog as a "one stop shop for anything media related." She started it a few years ago, when all teachers at her school were required to maintain an interactive online presence by using a TypePad blog. She prefers using the blog to a "static" webpage, because she feels that it is "easy to make changes without having a degree in html code or learning the ins and outs of web production software," such as Dreamweaver or Microsoft Expression Web. With the blog, she has the ability to make updates as frequently as she chooses. She did not have this ability with the standard webpage that she previously had for her school library; instead, she had to request that the school's webmaster update the webpage every time that she wanted to add or change content. She acknowledges that there are some limitations to the blog format, such as the inability to use

more creative fonts; however, the freedom to easily update the blog content on her own outweighs the disadvantage of limitations on creativity.

Now the blog is "the go-to spot for everything students and teachers need that is media-related." The participant also likes the blog format, because it offers interactive opportunities for students; however, she acknowledges that, although the opportunity for commenting exists, students rarely take the time to submit any comments. The participant uses a variety of applications to support online instruction, which she embeds in the blog; it includes links to research resources, Google Doc surveys, PDF documents, glogs, videos, or anything that helps students get to what they need or learn how to use it.

To assist students with research assignments she creates customized pathfinders for each assignment using Glogster. She explained that Glogster is very visual, and students are drawn to it, and the participant likes the ability to add instructional details along with links to the resources recommended for the assignment. For example, in a glog created for World History students who were assigned to write a research paper, she advises students on how to begin their research, provides basic and advanced search tips, and links to library databases and a citation tool. When a class is beginning a research project, she will present a customized glog for their assignment as a featured post on the blog for that week. She also links the glogs on a page of the library blog that organizes all of the pathfinders, so that students can locate them after the primary post changes.

Recently, the participant has experienced difficulty with compatibility between Glogster and the older versions of web browsers that her district continues to run on the school computers. The district will not update to the newest versions of Internet Explorer and FireFox, because there are some programs on the network that will not function properly with newer versions of

the browsers. Following the latest update of Glogster, the participant found that her glogs were not working well. When students used the glogs on the school computers they were getting messages to update the browser, and they had to refresh the screen over and over, which became tedious. Relief from the frustration came when the district installed the Chrome browser on the networked computers. Now the participant has to direct students to open the glogs in Chrome to avoid the problems that arise in the other browsers on school computers.

The pathfinder glogs have become an integral part of developing instructional partnerships with teachers. Sometimes a teacher approaches the participant with a project idea, and she will show them a glog that she created for another class, and they will talk about what would work for the new project, which leads to development of a new glog. Other teachers may see a glog that the participant has made, and it will inspire them to try the same research project with their class; for instance, all Honors Lit classes share the same research glog. Since the pathfinder glogs that the participant creates for different research assignments are in such demand, it would be efficient if the participant could make a copy of a glog to then adapt for a similar project. Unfortunately, the participant explained that the capability to copy a glog does not exist in the classic version of the application, which is what she must use. She noted that a newer version of Glogster is available, but she cannot use it due to compatibility issues with the older versions of web browsers that her district requires be used on the school computers. She thinks that the convenience of copying a glog may be available in the next version, which would save time when creating a glog for a new project.

In addition to creating pathfinders to assist students with locating resources, the participant has created a collection of instructional videos to explain to students the procedures for using the many library databases that are available to them for research. These videos are

posted to a separate blog, so they would not be lost among the content in the library's primary blog. Even when the participant teaches how to use the library databases in a face-to-face class, she knows that some students will benefit from the opportunity to view the information again. The videos are also helpful for students who miss class instruction sessions in the library due to absence.

Most of her instructional videos were created as screencasts using Camtasia to capture action on her computer screen along with narration to explain procedures. She creates videos to reinforce the topics of instruction that she most frequently teaches to students or uses videos to promote a resource. The participant said that the videos may be "dry," but they show students essential skills, such as how to search databases for common types of resources, such as literary criticism. In the case of a video that she creates to promote a resource, she also takes the opportunity to provide initial instruction in its use. Another situation that may inspire the participant to produce an instructional video is when she would like to give more attention to teaching something than is possible in the time that a teacher gives her to spend with students. Creating the screencasts is a time consuming process, and the participant commented that "it's not the students' first choice to go and watch a video;" however, she feels if it helps even ten people, it is worth her effort for the topics she presents.

Lately, she has begun using PowToon to create instructional videos with animated images and music instead of narration. For these videos students must watch the video closely to learn what is presented. Text callouts emphasize the key points. She thinks that the music captures some students' attention more than narration, although she acknowledges that, based on different learning styles, some students may do better with the narration. The participant noted that PowToon is an online application; therefore, it saves her the step of having to upload the

video as she must with the screencasts she creates using Camtasia. The videos that she makes with PowToon are shorter clips that are based on screenshots; she uses Camtasia for instructional videos in which she wants students to hear about what she is doing as they watch her do it.

When she needs a video to show mouse actions for using a program and wants to include narration, she uses Camtasia. The participant can record the voice narration in Camtasia, while she is capturing video of the actions on her computer screen; however, she has learned through experience that she needs to plan in advance of starting her recording session. She said, "Just like the students, I like to get in there and do," but she learned the hard way that interruptions are to be expected, and she needed to develop a process to work around distractions. She has learned to remove some of the distractions in her work environment before beginning a recording. She turns the ringer down on her office phone, closes out of her email, closes the door to the office, and occasionally hangs a sign to explain that she is recording and should only be interrupted for an urgent need. Participant 2 also described her process for developing a plan for the video:

> Before I start recording anything, I go through, and click through and navigate and think about the things that I want to highlight. Then I write out an outline, or a script, I guess, really, because that way, if I have to stop, I can pick up where I left off and know exactly what I want to do. As you're taking the video shots of the screen … sometimes it might take a few minutes for the page to load. So you're sitting there waiting, and waiting, and waiting, and waiting, for the page to load, and you're recording that, and … nobody wants that, so we … stop it here and make this one little section of the video, and then we'll start with the next section of the video.

Once she realized that she would not be able to record a full ten minute video in one sitting, she learned how to break the videos into sections. Each time the screen changes in the application she is demonstrating, she begins a new section of the video. This method also enables the participant to avoid wasting time in her videos, while a new screen is loading. Once she has recorded a video and narration, she may then go back and add callouts to draw attention to key points.

She explained that making screencast videos is challenging for several reasons. First there is the learning curve. She remembered, "It took us a while to get comfortable learning Camtasia, but we feel pretty confident with it now." Recently, she learned about PowToon, which she described as more animated. She thinks students will like it better, but because she is less familiar with PowToon, it is more challenging to create and edit the videos while she is still learning the application. Another challenge the participant described is "the need to get as much information as possible in a short clip that does not outlast the attention span of the average high school student." She finds that "students want the information in seconds, and sometimes it takes more time than that to get in all of the information needed."

The final challenge is finding the appropriate online environment for uploading the instructional videos that she has created. Although she links to the videos from the dedicated blog that she has created for the collection, she found that it was not effective to upload the videos to the blog. She explained that the files take a lot of space on the server, and they take too long to download. She finds that high school students will not wait for a file that takes a long time to download. She thought about placing the videos on YouTube, but her school district does not allow students to access YouTube; therefore, that option would make the videos inaccessible to students on the school computers. A few years ago, she began subscribing to

Screencast.com, which she selected because it is from Techsmith, the producer of Camtasia. Uploading her videos to Screencast.com and linking to them from her blog gave students instant viewing access without the need to download the videos. At that time Screencast.com was not blocked by her district; however, she recently found that the district's new web filtering software now blocks Screencast.com, so students cannot currently view the instructional videos on campus. This web filter restriction requires her to submit a request to the district to unblock Screencast.com, so that the videos will be accessible to students on campus again. Submitting the request does not guarantee that it will be granted, in which case she would need to undertake a time consuming process to transfer all of her videos to another website that is not blocked.

Despite the restricted access to sites that are blocked by the district web filter, the participant feels that, either one-way or another, students are able to access the resources that they need. The district encourages students to bring their own devices and offers them wireless Internet access via the BYOD network. Students who login to the BYOD network will encounter the same restrictions to sites, such as YouTube, that are experienced by users of the school computers; however, students who use their own service provider to access the Internet are not restricted. As a greater variety of devices are used by students to access the online resources that she provides, the participant has begun to think about how some of her materials function on different devices. She knows that all of the instructional materials that she has posted online function on either a Windows based PC or a Mac. She is still exploring other types of devices that students may use to access her library's resources. She recently began promoting use of an app for students to access library resources through an iPad, and she has not yet thought about how some of her instructional materials, such as the glogs, will run on different devices.

As she sees increased use of tablets and smart phones for accessing online resources, the participant has thought about creating an app that would present the same information and access to resources as her media center blog. One of the participant's students, while attending an honor's program focusing on technology, was beginning to create the app version of the media center blog last summer. The student created a shell that still needs to be worked on, but she did not complete the app by the end of the summer program, and it is uncertain whether she will follow through. The participant thinks that the student did not realize the complexities involved in creating the app when she took on the task.

Participant 2 has grown comfortable with the idea that, when she tries new technologies, she does not have to make everything perfect from the beginning. She remembers attending an ISTE conference and hearing Joyce Valenza speak in a breakout session about the concept that "it's okay to be beta." The participant said this thought presented by Valenza, who was doing so many different things, freed the participant "to start playing with things." Shortly after that revelation, she attended a professional development meeting for school librarians in her county. At that meeting, some of her colleagues presented new things they had learned and made them accessible by using a tiny URL, which linked to what the participant described as "some really cool tools." This is when she remembers first learning about Glogster. The participant only needs an idea to get started. She said, "I learn everything by doing it; the joke in my family is that we try it first and then we read the directions." This spirit of independent learning and freedom from concerns of perfectionism enable the participant to continually expand her media center's program to support teaching and learning.

Participant 2 is always considering the learning styles of 21st Century students. In addition to her collection of instructional videos, she seeks ways to provide students and teachers

with opportunities to interact with the library and each other in digital environments by using Web 2.0 applications, such as the library blog, Google Docs/Drive, and Wikispaces, as well as by offering assistance via email in the evening. She had hoped that students would use the commenting feature on her library blog to provide feedback; however, she found that students seldom submit comments through the blog. She found that creating surveys using Google Forms was a more effective way to increase student feedback. The forms make it easy for the students to offer input, such as letting the librarian know what Kindle ebooks they would like to have available. She has also used a Google Form in collaboration with a teacher to create an online discussion environment, where students could read each other's responses in the discussion. Following the initial collaboration with the librarian, the teacher independently continued to use Google Docs to support online student collaboration. For online professional development with teachers, the participant was excited about using Wikispaces for collaboration, but she found that the teachers did not like the interface and were reluctant to use it. The teacher's primary concern was that they would not be able to use Wikispaces with their students, because of the inability to moderate the comments that students would post. The teachers expressed that they did not want to learn Wikispaces to use just among themselves, if they were not going to be able to have their students use it. Some teachers share the participant's spirit of independent learning and explore use of technologies to support their instruction in online environments on their own, but consult with the participant when they have questions. For example, when a couple of magnet science teachers began using Camtasia to implement a flipped classroom model, they just opened the program and played with the features, and when they had a question they would email the participant or stop by the media center to ask.

Participant 2 uses multiple methods to meet students in their world by creating digital learning objects which students may access 24/7 and by offering additional instructional support through email during after school hours. She says her primary focus is "making all of the resources we have available (ourselves included) more accessible to the patrons beyond the four walls of the media center and beyond the traditional instructional day." She generally checks her email once each evening and responds to any questions that students have sent. The students know that, if their email gets to her after she has completed her evening email check, she will be available to assist them again at 7:30am the next morning, or they may try to find the answer they seek in the glogs and videos that are posted to her blog.

Participant 3

Participant 3 has been serving as a high school librarian since 2010. Her undergraduate degree in Journalism, with a concentration in Public Relations, served her well as she transitioned from a career in the business world to the role of high school library media specialist, following completion of her Master's degree in Library Media. From her previous experience in the corporate world she was already comfortable with online conferencing and webinars, and she recognized the potential of these technologies for meeting the needs of teachers and students. She explained, "I like to integrate technology into all of my lessons and provide instruction to teachers and students, but I make sure that the technologies have a short learning curve and make work easier." She is a member of several professional organizations and participates in online exchanges of ideas with other school librarians. In recent years, she has received multiple grants to provide additional financial resources for her school library, including American Library Association's Innovative Reading Grant, the Laura Busch Grant, Target Arts and Cultural Grant, and a Freedom to Read Grant. Since she does not have a support

staff in her high school library, she feels that she is somewhat "rooted" to her desk; however, she has found she may reach out to engage her students and teachers through creative use of a variety of technologies.

When she cannot make it to a classroom, she has found she may still deliver meaningful instruction by creating screencasts. She explained that, because she is unable to visit other areas of the school, she feels that recording the screencasts is the easiest way to make the information available and "walk people through stuff without having to be there." For example, one of her screencasts shows how to access a library database that is designed to support students who are writing literary analysis research papers. She demonstrates different methods for searching within the database and keeping track of articles for future reference. She also reminds students that they should be gathering the citations for articles that they will use and reveals how this may be done. Frequently, the screencasts may serve as a supplement to class instruction in the library, so students may review what was presented during class. The participant also creates screencasts to provide professional development for the teachers at her school. When she sees a need, she is quick to offer solutions. Once, when all of the copiers in the school were out of service, she thought about the technologies that teachers could use that would not require paper handouts. By creating a screencast, posting the video online, and emailing the link to staff, she was able to promptly provide teachers with a quick overview of several online technologies that they could use to engage students without the need for making photocopies. In this video, she briefly introduced her staff to options, such as Quizlet – "a flash card site" that also allows students to test themselves; Edmodo – for class discussions and posting information; Google Drive – for uploading and sharing documents or creating quizzes from a form; ClassJump – for creating class webpages; SlideShare – for uploading PowerPoints that may then be linked from

or embedded in a webpage; and BlogSpot – to support discussions online by having students post comments. The video gave teachers a quick overview of instructional ideas for using each of the six Web 2.0 applications that she introduced without too much detail about learning how to use the tool. For teachers who might like further assistance, the participant invited them to see her for individual assistance. This particular professional development video was approximately seven minutes long, but the participant has indicated that she generally likes to keep the length of her screencasts to five minutes or less.

She has found Vimeo to be a good place to upload her instructional and professional development screencasts. It has never been blocked by her district's web filters, and she feels it has a "cleaner look" than YouTube. She acknowledges, however, that having users' know where to find the videos can be a challenge. For teachers, she will generally send a link to the video in an email; however, she said that some of the teachers on her staff are not very tech savvy, and a few are "averse to even email." She also links to all of her videos from her library blog, which is accessible from the school website; however, she said that the school website is not easily accessible. The participant explained that the problem is that the school does not have a recognizable URL, such as myhighschool.com, or myhighschool.edu. She described multiple steps that a user must take to arrive at the school's website and ultimately her library blog. In seeking the school's website the user would first go to the district website and "then go to schools, and then sort through all the schools, and then find the school's website there, because the URL is … not really friendly for people who aren't very tech savvy." While the participant tries to make approximately two screencasts a month, she feels that they do not get a lot of use, because people "have to really kind of dig to find things, so it's difficult … unless I give out the URL for those screencasts specifically." Therefore, when she recognizes that the information in

a video that she has previously produced and posted would be useful at a particular point in the semester for staff, she typically promotes the video again through another email. Students are also directed to the participant's instructional videos through blog posts or pathfinders.

The participant uses social media as another means to relay the message about new videos that she has posted. She serves as the school's "communications ambassador," and she has her Vimeo account connected to the school's FaceBook page and Twitter feed. When she posts a new video in Vimeo, messages will automatically go out to FaceBook and Twitter. Those who follow the school through either medium will receive a notification stating something like "check out this new video that I just posted," along with a link to the video. She explained that "it keeps me from having to go to each of the sites and having to do everything again; so I can just send something out once." She explained that regardless of where she makes an initial post, users can get to any of her online spaces from the others.

Instructional partnerships have encouraged the participant to provide online instructional support for students. When teachers have brought their classes to the library for instruction on something, such as citing sources using MLA or APA format, the participant found that the students needed more instruction than the allotted time permitted. She explained, "I'm only given so much time, and in a school where we are focused on testing and making sure we maximize instructional time for that … research skills get kind of pushed back." She found students needed to learn technical things, such as double spacing in Word, in addition to the details of formatting a bibliography. During short sessions with classes in the library, she may introduce students to using an online citation tool, such as BibMe, and then supplement instruction by referring students to a screencast that shows them how to use Word to format their paper or offers a short overview to review how to use BibMe. By providing the additional online

instructional support, she knows that "if for some reason I've gone too fast or if for some reason they didn't get it, they can go and get that extra help, or they can go and look at it on their own."

Cost is always a consideration when the participant is choosing between different options. Participant 3 indicated that she currently prefers to use BibMe.org with students for creating bibliographic citations, because it is free. She had previously used EasyBib; however, they started to require a subscription for some features, and since she found that BibMe is still free for what they need, it is her recommendation to students. While she noted that EasyBib may be "more robust," she added that her high school students are "not really getting that deep, so BibMe is better." She regularly reminds students to cite their sources and concludes research pathfinders with a list of five basic steps to help students use BibMe.org to produce their Works Cited page.

The participant actively seeks to increase instructional partnerships with teachers by offering online support for their students' research projects even if she cannot schedule a session to meet with the class. She said she creates pathfinders for everybody explaining "if I find out by chance that a teacher is going to be doing any kind of research project, I'll just kind of offer 'do you want me to put together some resources?' and they say great." Some teachers do not have time for the librarian to instruct their class on how to effectively search for sources. Instead, the participant will create a pathfinder to recommend where students might search and what keywords to use as they search. For higher level classes, she encourages students to get some of their articles from library databases, but she said other classes are "so low level, that getting them to even understand what they would pull up from [the databases] would be a challenge for some of them." Based on the amount of usage at her school of the state funded

online library databases, she decided not to purchase additional library databases for her school, stating "I'm not going to spend the money for something that they may use every now and then."

She creates her pathfinders in a handout format for students when she presents a lesson, plus makes them available on the blog for easy access. Making the pathfinders available on the blog saves time during class, because time is not wasted by students typing in the wrong URL to get to a site; they can just click on a link. She uses SlideShare for uploading her pathfinder documents, which enables her to easily embed the document in her library blog. She has also used Google Drive for uploading pathfinders and other documents to share with students; however, she found "it doesn't look right" when she embedded documents uploaded to Google Drive into her blog. When looking at an embedded Google document on the participant's blog, it is not all visible at once; a user must scroll both vertically and horizontally to view different parts of a page of the document.

The participant works with low income, minority students and noted the existence of a fairly prevalent digital divide. Some of the students do not even have cell phones; therefore, it is important for her to provide a paper handout of the instructional documents that she posts online. She explained that even the students who have cell phones "still like to have tangibles, so I make those available, but sometimes what I will do is … put the QR code on the handout, or I'll just write the website on the handout, so they can have that and they can access more information." To create the Quick Response (QR) codes that she uses to enhance her handouts, she goes to an online QR generator and enters the web address that she wants students to view; the QR generator produces a square shaped two-dimensional barcode. The participant then inserts the QR code image in her document. She explained that the students would download a QR reader

to their smartphone, or tablet, and read the QR code through their device's camera, to link to something on the web.

When discussing QR codes, the participant explained a plan to use the codes to increase student interest in reading. She would like to have students create videos reviewing books that they have read, post the videos online, and then place a QR code on the back of each book that has been reviewed to lead other students to view the book review video. She said this is a project that she would like to work on with her book club students, but she must first increase the students' comfort level with doing the video reviews and having them posted online.

The participant sometimes learns about new applications from students. When she first saw a student using Prezi, she thought "okay, what is that?" She then learned how to use it herself. She felt that PowerPoint was "getting old," and she liked this new alternative for presenting. Once the participant started using Prezi for her presentations to teachers, the teachers started to request that she teach their students how to create Prezis to present class projects.

I asked the participant about how she decides when to make a Prezi versus when to create a screencast video. She said that she makes a Prezi when she wants to present information; for example, she may give an overview of how to take notes or an explanation of plagiarism by creating a Prezi. When she wants to show how to do something in a website or with a computer application, then she creates a screencast. Basically, she said, "If I'm trying to show something… then I will use video… if I'm telling you something, then I'll use a Prezi."

The participant likes to offer teachers suggestions for creative ways to engage students with technology to enhance learning. When she observes teachers are apprehensive about a technology that she suggests, she continues to search and offer new ideas until she finds the right fit. The participant is a fan of podcasts and has used BlogTalkRadio with a book club in the past,

but she has not found any teachers who were interested in having students create podcasts as a learning product. She feels that her teachers "don't want to invest the time that will go into a project like that." She also described why projects that produce a visual product are favored over those with an audio production. The participant said that, in schools like hers that are under close review because of Title I or AYP status, administrators want to see many examples of students' work on the walls and bulletin boards. She explained that teachers feel "if your student work is digital, you can't display it." This is why some of the teachers are reluctant to have students use Glogster or create a website and are more likely to have students produce brochures that may be "tacked to a wall." When teachers can display students' work on the walls and bulletin boards, it is easier for them to explain what they are doing to evaluators who visit their classroom.

The participant did find the perfect fit for one new audio recording technology that she shared with teachers in a professional development training which she presented at the beginning of the year. In a session entitled *Using iPads in the Classroom*, she introduced teachers to an app called Hokusai; like Audacity, it is used for recording and editing sound. The foreign language teachers now regularly have students using the Hokusai app. Students will write out a passage and then speak it in Spanish, recording it on the iPad, allowing them to record themselves and then play it back. If they do not say it right they can delete it and try it again. She explained that it saves the teacher from having to call on and listen to each student individually. The teacher has taught the students to use the Dropbox app on the iPad to submit their recorded conversations by saving the files tagged with their names, allowing her to later listen to and grade all of their conversations.

The participant has also been thinking about how to facilitate learning by connecting students with others beyond their own school through the use of online conferencing software, such as Skype. She attempted to connect one of the English teachers at her school with a teacher in Morocco, who was interested in conducting a virtual literature circle with another class. Both teachers had their classes read the same book, but not at the same time, so the plan did not materialize. She also sensed that the teacher at her school was not truly motivated to enact the plan. The participant is still open to working with teachers on organizing a literature circle to include students from other schools by using video conferencing, but she feels she would need to collaborate with "a really interested and tech savvy teacher." She said that she will definitely do an author visit this year using online conferencing. She plans to set it up as a one-to-one video chat, but she thinks that, instead of Skype, she may use Google Hangouts, because it does not require anything to be downloaded. She has already ordered a special webcam and a larger microphone to enable her to accommodate a full class and allow students to come up to the microphone and ask the author questions. She plans to review a list of about fifty authors from Kate Messner's website, which indicates that the authors are willing to do a twenty minute online visit for free.

I asked the participant whether there were any district policies she would need to address to include her high school students in an online conference or download any necessary software for setting up the event. She explained that her district had moved to an opt-out policy that would make it easier than in the past to include students in such an activity. With the opt-out policy, all students whose parents have not specifically sent a request to be excluded from such media would be able to participate in the event without any special permission.

Discussing the requirements for setting up a video chat led to conversation about the district IT support that is available at her school to provide technical assistance required for implementing online instruction. She explained that IT administrators are officially the only staff members authorized to download software to school computers. The IT administrators work at multiple schools in the district and may come to her school only a couple of times per week. The participant and teachers at her school do not usually have time to wait for the IT administrator's visit; to relieve the situation, the participant has obtained a password and downloads appropriate software that she or others require for instruction. In such cases, the participant reaches beyond her job responsibilities to provide online instructional support for her staff and strengthens her instructional partnerships with them.

There may be increased need for the professional development and technical support that she provides for the faculty at her school as the district introduces a BYOD program during the second semester. The participant has found that "sometimes you can turn the corner from engaging to distracting, and there's a fine line there, depending on the class." She described the frustrations that have occurred from trying to use the student response system (SRS), ActiVote, that the district purchased; she feels, "It takes too much time to get the teachers acclimated to it, and it is not easy, even for someone who is tech savvy, like myself, to use." It takes too long to use, "because you have to attach the student's name to a particular remote, and then you have to have that kid use that remote all the time." Once the BYOD network is in place, the participant suggests online applications will replace the need for using the SRS in many cases. She has explored online applications, such as Socrative or TweetChat, which allow students to use their cell phones or a tablet device to give feedback to prompts from their teacher. These applications allow teachers to do a quick poll to engage students in a lesson, enabling those who may not

want to raise their hand or speak out in front of everyone to participate; and, it gives the teacher a quick visual to see if students have grasped the content. The participant is very excited about bringing these options for online instructional support into her school, adding, "Most importantly, it's free, it costs us nothing!" She believes it will be easy to introduce these new tools to teachers, stating, "You have to download nothing, the learning curve is very, very… short, you can teach someone how to use it in five minutes as opposed to an hour and that is all stuff that I feel is going to make it very appealing to schools, or just to teachers who want to use something different in their classrooms." Using techniques that she has employed in the past, such as screencasting, or creating a video through her document camera to demonstrate the iPad, the participant will be prepared to provide professional development to introduce the teachers at her school to new ways to engage students through the BYOD network using the technology that is part of their daily lives.

Participant 4

Participant 4 started her career in education as a high school English teacher. To transition to the position of school librarian she earned an add-on certificate in Library Media, having previously earned a Master's degree in Secondary Education. Of her sixteen years in education, nine have been spent as a school librarian, which is the position she has held at her current high school for seven years. In recent years her program has received the state's High School Exemplary Media Program award. She stays current in the field by reading information she receives through professional learning communities, whether it is through Twitter, Diigo, or *Teacher Librarian*'s emails. She signs up for tech feeds that generate an email to her, containing ideas that enable her to constantly learn new things.

Much of her online instructional content is currently organized in LibGuides. She had always done pathfinders and used a variety of ways to lead instruction in the past, including wikis, Glogs, and Symbaloo, to direct students to academic research sources, to encourage students to utilize varied sources, rather than just Google. While she found presentations using Glogster to be beautiful, she indicated that they were time consuming to create. She found that "the kids loved them," but every time the participant needed to recreate a new poster with the same links, she had to start over. Glogster would not allow her to easily share things between glogs, so it was taking extra time to create new glogs with many of the same resources as her existing glogs. As a potentially quicker alternative, she tried Symbaloo, but she noticed that students did not like it as well. She believes that her high school students thought that "the little pictures looked elementary." Subsequently, she read about ways to provide that same type of instruction but at a quicker pace and discussed using LibGuides with another high school librarian in her district. She said "we both decided to try LibGuides, and we both fell in love with it." LibGuides enables her to work more efficiently because "each little piece or box … can be used again and again." When she creates a new pathfinder for a different class she can find the content from the boxes of a guide she has previously created and can direct LibGuides to share that content in the specified location of the new guide. A built in link checker helps keep her guides current by catching links that are no longer active. Once she started using LibGuides about three years ago she "never looked back," despite the annual subscription fee of $648. She explained why she finds this tool so valuable:

> LibGuides allows me to integrate a large variety of information sources and instructional support materials in an organized manner. Once a teacher and I have spoken about a collaborative unit and instructional purpose and standards, LibGuides' flexibility allows

> me to quickly and effortlessly create content-rich, web 2.0 multimedia guides to the most academically reliable sources that I know will yield the treasures and not the trash.

When she needs to create multiple guides that are similar but with variations for different teachers or classes, she can easily copy the original guide and then add or remove elements to customize the new version. She also likes the ability to "embed videos, RSS feeds, Diigo bookmarking links, etc. inside guides to make them more useful and attractive," with the hope that students will "choose to use the guides for their research over Google!"

Additionally, she appreciates the multiple ways that LibGuides supports collaboration, explaining that "librarians all over the world can share each other's templates." You may make your LibGuides either private or public. When another librarian has agreed to, "you can actually share a template or parts of the template over and over again." LibGuides also facilitates collaboration between students, the librarian, and their teacher through embedded forms that invite students to share their suggestions for additional resources to be included in the guide as well as other feedback. Links or comments that students make are not posted until the creator of the LibGuide has approved. The participant believes that these collaborative features make LibGuides "an online instructional portal where we can teach and guide and yet still learn" as library media specialists. She notes that the format for LibGuides is "boxy," but the many advantages outweigh the limited artistic control, especially the ability to "reuse guide templates, [and] share content and best practices with librarians worldwide."

The participant works collaboratively with teachers to make the resources that students need for research assignments easily accessible online. Instructional partnerships may start with a teacher letting the participant know of a standard that they are addressing and what documents the teacher has already produced related to an assignment. The participant will conference with

the teacher regarding how many and what types of resources students should be lead to for their research. The participant librarian then creates a LibGuide to organize the selected assignment and research resources. Once such instructional partnerships get going, word spreads among the faculty and other teachers will say "oh, can you make one like this." Initially English and Social Studies teachers were the first to express interest in collaborating, but more recently she has been approached about developing guides for Science. She will turn an assignment document from the teacher into a PDF and include it as an element in the LibGuide along with information related to recommended library databases, websites, and citation tools. She said that students are always interested in knowing which of the listed resource links were suggested by other students, so she always labels the student recommended resources. It does not require much time to clear the student submissions of suggested resources, which come in an email, related to a specific LibGuide that she has created.

The participant explained that, for science research, it is important that students are directed to up to date resources, because "science is changing every day." To easily bring the most recent scientific information to students using her LibGuides as a starting point for their research, the participant includes RSS (Really Simple Syndication) feeds from sources like Biology Today. She said that, by placing an RSS feed in a LibGuide, "it's automatically uploading and changing that little LibGuides block to the most current on that particular subject area." She explains the purpose of the RSS feeds to students, who can then see what is collecting in that area of the LibGuide; "they think it's cool, and it saves them a bit of time."

The participant uses a variety of other technologies to engage students online. As the home page of her website reminds students, the media center is open from 8am – 4pm, Monday thru Friday, but the virtual library is available 24 hours a day 7 days a week. She encourages

their interest in reading by linking to a variety of "What Should I Read Next?" resources and embedding book trailers for popular young adult books; students may also access the book trailers on their smart phone through the QR code on the webpage. Using SlideShare to embed a PowerPoint on her website, she instructs students on procedures to reset their computer login passwords and check their grades. In addition to the research assistance provided by the LibGuides she has developed for specific subjects or assignments, she provides an assortment of other resources to assist students with research, citation and presentations. If students need additional help, they are invited to ask a media specialist by submitting their question and what they have already tried, along with contact information, through a Google form.

She has worked with many different technologies in developing her current collection of online instructional support. Some technologies work for a while and then may no longer be accessible through the district's web filter. Although she said "SlideShare is a great way to make my PowerPoint's available online and embedded into my site," she cannot depend on students being able to view the material on campus, because it is frequently blocked by the web filter. Similar difficulties arise when she links to a video in YouTube. Teachers can view YouTube videos through their logins, but students cannot. She explained: "YouTube's just not going to go away; it really isn't, just because they [students] can't see it at school doesn't mean we're not using it." Students are instructed about the issues that arise due to the web filter, so they know what to expect. For example, when teaching about the blogs that students are required to create for senior project, the participant has to tell them to set up a YouTube account, if they want to embed a video in their WordPress blog. She said this is the only way to place a video in a free WordPress, so she just tells the students "okay, this is blocked at school, you won't be able to see it, but that night when you show it to your judges, we'll have them log in as teachers … and

yours will show up." She also must warn them that, if they are working with children, they may not post those videos for their project on YouTube; instead they must bring them on a flash drive. So, she explained, "we still teach with YouTube, even though it's blocked."

MediaCast is another option for teachers to post and stream videos in the classroom. It was purchased by the district to serve as a web-based electronic distribution system used for district-wide video streaming. The participant has the ability to stream videos to school computers from a cart based server. In addition to viewing videos that the district has purchased, the system may be used to stream live events in real-time to be viewed throughout the school, or they may be recorded for later viewing. Despite these capabilities, MediaCast is not the most efficient means for the participant to create and share her own instructional videos.

For creating her own instructional videos, the participant said Animotos are "fun to do," and they catch students' attention, but she also creates screencasts. The district has provided her with Camtasia, which she finds very useful when there is something that she wants to show students how to do. If she wants to show students how to use the online catalog, she will use Camtasia to create a screencast with a demonstration of where to click and add her voice to explain. Creating screencasts for routine tasks saves time, when a student has been absent and misses class instruction in the library, for example. The participant explained, "instead of them having to come down [to the library] and having to go step by step through it with just one child," the teacher can just direct the student to view the video on the library website. Another time saving feature of Camtasia that the participant likes is the ability to turn an existing PowerPoint into a screencast and add her voice to it.

In order for students to have greater access to online instructional resources when they are on campus, the district has instituted a BYLD (Bring Your Learning Device) program. The

media center only has twenty-four desktop computers and some additional laptops, so they never have enough computers for the students, according to the participant. The district has facilitated productivity among students who bring their own devices by providing all students with access to Office 365, which includes cloud based versions of Microsoft Word, Excel, PowerPoint, and Publisher. Each student has 4 gigabytes of storage in the district's SkyDrive. By logging in to the SkyDrive account associated with their school email address, students can access their files and the online applications to complete their work from any Internet connected device, either on or off campus. The participant said that using Office 365 has reduced difficulties related to the different technology platforms used by students. The participant said that the district invested in Office 365 to provide students with access to productivity software that enables them to complete their work. They realize that this solution does not help when there is a digital divide that exists and a student does not have access to a computer at home; however, it does help with students who may have Internet access through a device, but whose families "can't afford to have every latest version of Word that we do, or Publisher; so this way, they are able to keep up… As long as they can get to the Internet, they can get to it." The participant assists students with use of the SkyDrive and Office 365 by providing basic instruction as needed, combined with content area instruction for collaborative plans with teachers related to research assignments.

To share new ideas for instructional technologies about which she has learned, the participant sends out a monthly newsletter to faculty, along with the invitation "if you want to know how to use this, come see me; let's plan a lesson." The newsletter enables the participant to expand her opportunities for developing instructional partnerships. Teachers have incorporated some of the technologies that she has suggested, such as Glogster and FlipSnack,

into their assignments for students. Although the participant no longer uses Glogster for creating her research pathfinders, it is still used for students' projects, and she provides instruction to get the students started. Changes have occurred in what is available for free since she started using Glogster with teachers and their students, but she has adapted her instruction to still enable students and teachers to use the free version of Glogster. Some of the conveniences that teachers formerly had for viewing students work are no longer available for free, so students must now send the URL for their Glog to their teacher for grading. The district web filter also began placing a restriction on the length of time that students may have access to Glogster. When students go to Glogster on the school network, "it's going to show it as blocked, and then they login and say you can work on Glogster for 45 minutes." Despite the inconveniences, Glogster is still used as an option for creating online presentations of students' research.

Another option for student projects that teachers learned about through the participant's newsletter is FlipSnack, which turns JPEG files into a digital flip book. The participant found FlipSnack when searching for an online solution to assist her daughter with a class assignment; she liked FlipSnack, because it "was easy and free." By starting with tools the students were already familiar with, she realized they could simply "just upload and choose a cover." When students in a Literature class were assigned to present little books that they made, the participant taught them how to use FlipSnack for the task. After setting up an account in FlipSnack based on their school email address, students were instructed on how to convert work they had begun in PowerPoint to JPEG files, which they then uploaded to FlipSnack; they "put them in order and let the little pages flip."

A new concept that participant 4 is exploring to promote with teachers, for research based projects, is infographics; she thinks that social studies may find this a good option. The

participant describes infographics as “data visualization.” She has not started doing this yet, but plans to explore some different options, such as Infogr.am and Visual.ly. Since infographics are “a digital poster basically,” she also thinks that the same idea could be implemented using Glogster. Through her professional reading about what other librarians are doing around the country or by attending educational technology conferences, she is constantly learning of new things to try.

When considering a new online instructional technology, the participant said she always looks at cost first, but she “will pay for some exceptional online technologies, such as LibGuides or EasyBib.” She also has to consider ease of use and “look at whether or not the web filter is going to catch it.” In choosing which citation tool for which to purchase a subscription, she selected EasyBib over NoodleTools, because at the time she made her decision EasyBib offered functions that the alternative did not. She recalls, “if you had a website, and you had the URL, you could just copy the URL and paste it into EasyBib, and it would try to find that site and actually fill in the boxes for you”; then students had to “just double check and make sure everything was correct and add what was in red.” She adds, “when I bought EasyBib the first time, you could copy and paste what was already done in MLA” from a database. Neither of these capabilities was available in NoodleTools at that time; “NoodleTools always made you fill in the boxes every little bit; you could not copy and paste it.” The district purchased a subscription for students to use NoodleTools, but the participant did not like to use it, because it was not easy to use, so she purchased EasyBib for the students at her high school, and they liked it. Now NoodleTools does offer the same functions that the participant liked about EasyBib, but different teachers at her school have grown to have a preference for one of the citation tools over the other, so she teaches both. Since the two options have become more alike, she said “I may

eventually be able to get rid of EasyBib." For now, students have access to subscriptions for both EasyBib and NoodleTools, which are linked from the participant's media center website on a page dedicated to offering multiple online resources to assist with presenting research using MLA style to avoid plagiarism.

The participant's media center website has multiple webpages to organize the collection of learning objects that provide online instructional support for her high school's students and faculty. The webpages include pathfinders, videos, and links to other websites to support student learning, in addition to providing access to resources for research, which are categorized by subject. The participant is continually learning and trying new techniques to see what works with students and with teachers, which she realizes is not always the same. Her goal is for online instruction methods "to be clear, informative, user-friendly, collaborative, and creative." Beyond supporting students and faculty, the participant provides links to information useful to parents, including a guide to FaceBook and the recommended FaceBook privacy settings for teens. Participant 4's website has something for all stakeholders, including a Twitter feed embedded on the home page, so all remain informed about current activity in the media center. It is clear to see why her media center program was recognized as exemplary in her state.

Participant 5

Participant 5 earned an Ed. S. in Instructional Technology in 2009 from a State university through an online program. She has served as a media specialist for 14 of her 19 years as an educator. The participant has worked at her current high school for 15 years and said that her job has expanded from media specialist to include what she views as four different jobs: Response-to-Intervention (RTI) coordinator, technology coordinator, grant writer, and media specialist. Due to tight budgets, her school has not filled vacant positions when faculty members retire or

leave, and those who remain must fill in the gaps. She no longer has a media clerk as she once did and has taken on extra roles to support students and teachers at her high school. Much of the online instructional support that this participant provides is related to the annual grants that she writes and administers.

She said that each year she takes about four weeks to focus on grant writing. When her grant applications are funded, she is then responsible for administering the grant. As part of the Striving Readers Grant, her school is receiving $250,000 to implement a plan for improving students' reading levels. With input from her literacy committee, the participant wrote the school's 35-page literacy plan as part of her grant application, which was then rolled into a system-wide application. The district had to compete at the State level to win a portion of Federal grant funds that the State had won. The system is receiving a total of $1.1 million. As an initial requirement for administering the grant, schools are required to assess students' Lexile reading levels using the Scholastic Reading Inventory (SRI). The district purchased the SRI program for $25,000 to host on their servers, rather than pay an annual fee to use the program hosted on Scholastic's servers, because they felt that this would enable them to develop a sustainable program once the grant funds were spent. The participant said this way they would be able to use the SRI in future years without incurring further expense. She explained that the school has received Title 2D grants for years and that she has learned from experience; she added, "with this grant we're not purchasing anything that we have to pay yearly, that we can't possibly fund after the grant." At the beginning of the school year, the participant had to screen all tenth and eleventh graders at her school, using the SRI to collect baseline literacy data; incoming freshman were screened during eighth grade.

The school continually uses data to drive improvement. As stated in the school's literacy plan, they intend to improve literacy by "screening, diagnosing and prescribing literacy instruction to help identified students overcome specific weaknesses within a Response-to-Intervention (RTI) model." As the RTI coordinator, the participant has about eighteen students on her case load. She has to check their grades and assignments and call parents as needed. She trains teacher cadets to serve as peer tutors and said that she thinks the relationship between the student and teacher cadet is going to be as important as the help, because she believes that many of the RTI students have a confidence problem. The teacher cadets are older students who have been selected from AP and Honors classes. In addition to helping RTI students succeed in their classes, part of her role as RTI coordinator is to help struggling readers improve their literacy skills and increase their scores on the SRI. In search of some online instructional support to assist struggling readers, the participant went to a regional education agency for an introduction to the reading support software options offered by six different vendors. She described Scholastic's Read 180 program as "this super, wonderful, interactive online program for students to login and read, and there's video that pops up, and there's vocabulary, there's a dictionary, the thesaurus … it's just a totally interactive package." The cost of the program, however, was prohibitive, given the number of students that would actually use the program; she recalled that it would cost about $52,000, and commented "that's a fifth of my grant!" Instead she found a solution, ReadingMate, which she could purchase as an add-on to the Study Island software that was already used in her district. To pilot test the effectiveness of ReadingMate with her students, she purchased ten licenses for $400. This package enables her to have struggling readers work on computers to build their reading skills. The SRI will be used frequently to measure progress, and if ReadingMate proves successful in increasing students' SRI scores, the school will roll it

into the Study Island subscription for future school years. Some of the RTI students work on math skills with their peer tutor during sessions in the library under the participant's supervision. Students who are identified as needing remediation are pulled out from their elective classes twice a week. During this time, they receive help from a peer tutor and spend about thirty minutes using remediation software, such as Study Island or USA Testprep to strengthen their skills.

Another major responsibility which stems from administering the Striving Readers Grant relates to the participant's role as the school's technology coordinator. When the participant wrote the grant application, she received advice from a contact at the State Department of Education to include the purchase of Apple products in the plan, because she was told that this would make it more likely to be funded. The school's literacy plan states that they will utilize "new technology to reinforce reading, writing and speaking skills across-the-curriculum by allowing instant access to resources moving towards a one-to-one student/device ratio," and the grant application specified that the funding would be used to purchase class sets of iPads. The participant explained that, while her district superintendent wanted the district to get the grant, the technology department does not support Apple products, so she is responsible for purchasing, maintaining and dealing with all issues related to the use of the iPads. The school must spend the grant funds over a period of five years, so the participant decided to pilot test two class sets of iPads and a few more for checkout during the first year; that way, if the iPads do not work out well, they still have grant funds left to try something else.

Two tech savvy English teachers are piloting the iPad program. The participant prepared the 75 mini iPads by syncing them one-by-one with a MacBook. The iPad cart that would have made syncing a class set easier was not available from her vendor at the beginning of the school

year. The cart is currently on order and will allow her to sync 30 iPads at a time for future updates. Twenty apps were installed on each iPad. They decided to go with all free apps, because purchasing apps for each individual iPad becomes costly. After initial set up of the iPads, the participant has turned over the reins to the two teachers who were selected by the Literacy Committee to receive the labs for use with their classes. She wants the teachers to take ownership of the project, so she allows them to select what they want. She said that the two teachers who are piloting the iPad labs are "extremely motivated about getting the tools in the students' hands," explaining that they spent countless hours during the summer working on lesson plans which engage students with the iPads. They developed QR codes to tape on the desks so students would be able to quickly access online resources. Currently the teachers are researching which app they would like to use to allow the iPads to function as a student response system (SRS). Once the teachers let the participant know which app they want added to use the iPads as a SRS, she will take care of acquisition and installation.

The pilot teachers will be working on incorporating use of the iPads into their curriculum throughout the year. According to the plan for the grant, the pilot teachers will deliver a professional learning session to the rest of the faculty at the end of the school year. They will let other teachers know what to expect if they have the opportunity to work with an iPad lab the following year. The participant has spent $80,000 of the grant funds during the first year and if the iPads work out she will purchase additional class sets and carts for the following year. According to the participant, the Literacy Committee "wants to make it like an application; you apply to get a lab in your room for a year." From the current grant, the school will be able to purchase five classroom sets of iPads. If the pilot test teachers do not recommend the purchase

of additional iPad sets, the participant will look into other options, such as “Chromebooks or Androids,” explaining that “the teachers don’t have a lot of patience with glitches.”

In addition to the time that the participant devotes to writing grants to attract extra funding to support 21st century teaching and learning at her school, she must also follow through with administering the terms of the grants received. She researches the appropriate technology to be purchased, places the orders, prepares the equipment for use by teachers, and also must prepare for audits related to grants from the State. She will soon be audited for spending related to the Striving Readers Grant and must be able to account for the expenditures and inventory of equipment purchased with the grant funds.

Grant funds may only be used for specific types of purchases, such as computer devices and software. The participant explained that these funds may not be used for improving infrastructure. The district has recently started a Bring Your Own Technology (BYOT) initiative, and the school’s existing wireless infrastructure is not capable of supporting the increased number of devices in use, especially in the areas where classes are using the iPads. In one area they have 60 iPads attempting to use one access point. A quote for upgrading the school’s wireless infrastructure to support 600 devices is $125,000; therefore, they need to be strategic about where in the building they use the class sets of iPads for them to work effectively on the wireless network, because the district cannot afford to make the technology infrastructure upgrade at this time.

Concerns about the budget arose again, when the participant discussed considerations related to building the library’s collection of digital books. The participant said that she is thinking about making her media center totally digital within the next few years. She feels that the library’s print collection is out-of-date, and she said that, for research, “students typically do

not choose print materials over digital content." She has begun to explore the options for purchasing eBooks and has decided, for nonfiction books that the students are likely to use within a class, she wants unlimited access. Purchasing fiction works as eBooks will come later. Right now, the participant said that the higher-level readers at her school have their own devices for reading eBooks, and "they just by pass our media center." She explained that, if a book comes out, and a student who owns his/her own device is interested in reading it, the student will just go to Amazon and download it that day. As a result, she finds that it is mainly the low socio-economic students, who do not have devices, who come to the library to check out fiction. While she has begun to explore the different options for purchasing digital books, she does not really know how much she will be able to spend to begin building the collection. For the past six years, her media center budget has been frozen or lost; she thinks that the last budget that she saw three years ago was $5,000. Now she is no longer given a budget number for the year. When she asks about her budget, she is told "just turn in the purchase orders for what you *really* need." The principal tells her "get exactly what you need, don't get anything extra."

She continues to explore the eBook options offered by different vendors and thinks about where to start. She wonders about purchasing eBooks from the primary vendor that she has been working with, Follett, because she uses their online catalog, Destiny, which she says does not make it easy to incorporate eBooks purchased from another vendor. When considering the price difference for an eBook that may be checked out to one patron at a time versus the capability to be used by an unlimited number of patrons simultaneously, she thinks it costs about five times as much for each title. She expects to start with purchasing digital books for one of her teachers who is moving towards a paperless environment "to try to see if it works and how it works." The AP History teacher with whom she will work for the initial selection of her library's digital

books has been using a learning management system, MyBigCampus, with his students. The participant thinks that this class, with higher-level learners who are already familiar with the online learning system, will be a good option for starting to use unlimited use digital books.

The district purchased the subscription to MyBigCampus last school year for teachers to begin managing classes online. At this point, it is only being used by a few teachers of higher-level learners, such as computer classes and AP US History. The participant said that two teachers in her school use it full time, and "other teachers are slowly trying to get acclimated to it." She explained that teachers distribute assignments through the system, and students submit their work within it. The teachers who use it daily are no longer photocopying; they are teaching in a paperless environment. Although the participant said that she usually learns new programs before the teachers use them, she said that MyBigCampus is user-friendly, and the teachers who have begun to use it did not need any help. According to the participant, the teachers who are currently using the system tend to have higher-level learners in their classes, and once they have a good feel for how to use it effectively, then it will probably be pushed down to classes with struggling students. She mentioned that some teachers have expressed that they would like the participant to get materials set up for them in MyBigCampus and get the students started on using the system and then they will use it; but, she is not sure how soon she will be able to do that for them.

As an alternative to using MyBigCampus, some of the teachers use Facebook groups to communicate electronically with their students. Teacher logins have been cleared in the web filter to allow Facebook access; students may not access it on school computers but typically have access on their phones or at home. The participant said that the superintendent supports use of closed groups in Facebook to facilitate communication and create a record of the messages

that are sent and received. The participant explained that teachers "can actually register and record the students have received the message." When a student claims he/she did not know something was due, the teacher will open the Facebook log and say, "yes you did, you logged into Facebook, and you saw the message."

In addition to blocking student access to Facebook on the school computer network, the web filter prevents students from accessing email. The participant explained that they are a small district and only have one technology person to support all four schools in the district, and they do not have different filter settings for schools according to levels. The restrictions that are placed on web access to protect elementary students are also in place on the high school's computers for student logins. Due to district web filter restrictions, students do not have access to Yahoo email or Gmail on school computers, so the school tried using Gaggle, an email system designed specifically for use with students in a protected environment. Given restrictions set by the district, the participant said, "that was the only way that students were going to be able to use email at the school;" however, the teachers did not find it useful. The participant said the teachers "would rather use a program that is 'all-inclusive' with cloud options, blogging, and interactive communications." She said that Gaggle "was just too much work for what it was, MyBigCampus is so much better." There are times when a student still needs to access an outside email account, like when they need their SAT password to register for a test. The participant said, "we just try to get around things, if we know the superintendent would approve," so in such a case, she will enter her login password to bypass the student login restrictions on the computer and provide students access to their email accounts to check their SAT passwords. She said that, with the district's restrictive computer settings, they feel like their "AP students sometimes get the short end of the stick."

Other web filter restrictions on the district's computer network block access to YouTube when a student is logged on to an Internet connected device on the district network. Teachers can access YouTube when they are logged on to the network. If teachers want to display a YouTube video, they may use Apple TV to connect their device to the projector for the class to view. Apple TV is not available in all classrooms, but some teachers have it, and the participant expects to get it for the teachers using the iPad labs. She said that it will be a learning curve to figure out how to make it all work together. When she needs assistance learning about new technology, the participant prefers reaching out through her professional network, rather than formal professional learning, stating, "sometimes I go to the Ed Tech conference, but mainly I just Google, or call another school system and just network." She also learns from students; she explained that the students who are peer tutors taught her how to use Apple products, because they were the first to have the devices. For advice from other professionals, she said that she knows a colleague in her region who stays on top of the latest instructional technology trends, and she occasionally asks him "what's up next on the horizon?" Ultimately, by collaborating with the teachers at her school, they learn together by trial and error, teaching each other and sharing what they know.

The participant has established strong collaborative instructional partnerships with English teachers, co-teaching students MLA. For instructing ninth graders in the requirements of MLA citations, they have a systematic method which is "totally off the Internet." She describes their method as very controlled. Students are given printed copies of the articles that they are to use for their citations, and the participant explained, "The English teachers and I know every piece of research." This method allows the teachers to be diligent about plagiarism and paraphrasing. Tenth grade English classes are less controlled. They are required to checkout

one book and use two library database resources that provide a citation. The tenth grade students are instructed to use OWL at Purdue to get information about the proper format for their Works Cited. The participant works mainly with ninth and tenth grade English classes on these lessons. By senior year, the English teachers put instructional materials online and students are prepared to work more independently on their research.

The increasing number of responsibilities that the participant has taken on has turned her focus to setting up systems that get students and teachers started and then empowering them to function independently. During various parts of the school year, different elements of her job become her primary focus, such as assessing reading skills with the SRI at the beginning of the school year, then coordinating the RTI program's peer tutors, and setting aside time to devote to grant writing in the spring. All of these roles require the participant to explore online instructional support options for teaching and learning. With all of the different jobs that the participant does to meet the needs of her school, she wonders, "Am I doing a good enough job at any of the jobs that I'm doing, or am I just hitting the tip of the iceberg?" She said that it is difficult to become an "expert" on all of the different tools that teachers may choose to use, especially when teachers use technologies that "are not universal to the school." At times, she feels that the role of school librarian is becoming more of a technology position. At this point, the participant's primary contribution to providing online instructional support at her school is through attracting funding and then researching options for purchasing and supporting technology for 21st century teaching and learning. Her goal is to develop sustainable programs that last beyond the funding period of a grant to support teachers in their work with students as well as the struggling learners in her RTI program.

Thematic Analysis

Participants in this study used a variety of strategies and tools to provide online instructional support. An analysis of the experiences described by the participants related to the online instructional support that they provide revealed that there are several common influences that all of the participants have encountered. All participants were influenced by insights and information gained by taking advantage of opportunities for networking and learning. All participants' experienced district influences that had impact on the online instructional support that they provided; sometimes district actions facilitated the participants' efforts, and at other times, obstacles were presented. All of the participants were influenced by their intended audiences' acceptance of the online instructional support provided. Ease of use and compatibility of different technologies used were considered by participants from both their own perspective and that of their library patrons.

Money was not found to be an influence on many of the types of online instructional support the participants provide, although for some participants, on some decisions, money was a consideration. Some district level actions provided resources that supported the participants' efforts, while, at other times, restrictive protections were in place that hindered the participants' efforts. In the following sections the common themes of networking and learning, district actions, audience acceptance, and ease of use and compatibility of technologies are explained along with examples from the participants' experiences.

Networking and Learning

The processes by which the participants gained their knowledge and skills to provide different types of online instructional support had many similarities. During the interviews, all of the participants discussed methods by which they network and learn to keep up with new

technologies that enable them to provide online instructional support. While the participants have varied approaches to how or with whom they network, they all described networking relationships as an important part of their ongoing professional learning. All participants expressed learning through multiple methods that were frequently informal and independent. They learn from other school librarians, independent exploration, vendors, and sometimes students in their school.

Networking exposes school librarians to new ideas and assists with problem solving. Participants all mentioned professional conferences or organizations that introduced them to new ideas that they later explored on their own and implemented at their school. The participants described a variety of networking opportunities, such as attending conferences or local professional meetings, participating in professional networks online, reaching out to another professional, and encountering others on a casual basis. Participant 5 described how she was inspired by a school librarian who conducted a breakout session at a national conference to try new things without worry that the results would be perfect. She was then in a very receptive frame of mind when she was introduced to several new instructional technologies at a meeting of school librarians in her school district. These networking experiences led the participant to try some of the technologies that have since become staples of the online instructional support that she provides.

Other participants discussed how collaboration with colleagues in their school led to the search for a solution to meet a specific need. Multiple participants talked about learning from each other in reference to colleagues within their school. As participant 1 stated, “We are in the same boat as far as learning;” she discussed being part of the school’s tech team. This participant described receiving more formal technical training than was mentioned by other

participants, which is not surprising, given her unique situation of serving a fully online program. She also described in-house methods by which staff members collaborated to facilitate each other's learning about new online instructional technologies.

Participant 5, who works in a small rural district, reaches out to other professionals in her region of the state when she knows that someone else will already have worked through implementation of a program that is new to her school. Connecting with other professionals in her personal network saves her time. When she implements a new program, she contacts someone who will be able to provide advice to ease the process or resolve problems. Her contacts may be educators in other school systems or representatives of the vendors from whom she purchases resources. She also relies on contacts from her network to learn about new innovations. She has a regional contact that stays current on the latest trends in educational technology and is just a phone call away.

A couple of the participants specifically mentioned that they originally learned about something new from their students. For example, participant 3 first saw a student using Prezi. She asked the student about what she saw and then learned to use it on her own. Participant 5 recalled having students teach her how to change settings on iPads when she first received them. Other participants discussed the methods that they employ to involve students in participatory learning. Participant 4 explained how students could submit suggestions for resource links to be added to her LibGuides; she mentioned that, during lessons, students were interested in knowing which of the existing links were recommended by other students. Participatory learning opportunities seemed to be a work in progress in some cases. Participant 2 noted that, while students have the ability to post comments on her blog, they rarely take advantage of the feature. Participant 3 described a plan to have her book club students create video book reviews that

other students would be able to access from a QR code that she would place on the book or a display. She explained that she had not yet put the plan into action, because she needed to work with her students to increase their comfort level with creating and posting the videos.

Much of the participants' learning of the skills required to implement the different types of online instructional support technologies that they use is through independent efforts. Participants reported professional reading to learn more about ideas inspired through listservs, RSS feeds, or other information streams. To learn something new, some participants explained that they start by Googling to find further reading or an instructional video. Some participants just jump in and "play" with a new tool and look for help if they get stuck, describing this type of learning as through trial and error.

Three of the five participants indicated having experience that may have contributed to their preparedness to take on the learning required to provide online instructional support. Participant 1 had previous experience working at a private school during the school's implementation of a one-to-one laptop initiative. Participant 2 had taken graduate courses focused on methods for online instructors, and participant 3 had previous experience in the corporate world, where she became familiar with technologies that she has implemented in her school library program. The two participants who did not indicate having experience that would predispose them to learning about new technologies were not hindered from providing online instructional support by the lack of prior related experience.

While details of their experience vary, all of the participant school librarians indicated that networking and ongoing learning influenced the types of online instructional support that they provide. All learned about the tools that they use through a combination of collaborative and independent initiatives. Networking assisted the participant school librarians with ideas

about what technologies to use and how to use them to support instruction. Networks that contributed to the participants' learning about new tools included professional organizations, local educational contacts, vendors and students. Learning the details required to fully implement a new online instructional support technology most often required an additional independent learning effort on the part of the participant.

District Actions

Some of the influences on the types of online instructional support that the participants provide are dependent on the school district in which they work. Decisions at the district level impact library staffing, budgets, available software and applications, acceptable use policies, and website access, all of which influence online instructional support. Although there were differences in their experiences, all participants explained instances of district actions impacting their online instructional support. Some district level decisions helped the participants in their efforts to provide online instructional support, while other actions of the district created obstacles that participants needed to work around.

Three of the participants mentioned limited library staffing, due to budget constraints. Two of the participants had no support staff in their libraries. Participant 3 used online instructional support strategies, such as screencast videos as a means of compensating for her reduced ability to move about the school. She said that she felt rooted to her desk, since she worked alone in the library, but the instructional videos that she created enabled her to reach students, even when she could not go to their class. Participant 5 described extra roles that she had taken on, beyond those traditional for a school librarian. One of the extra roles that she talked about was serving as the coordinator for a remediation program; she discussed applications that she uses to provide online instructional support for the students in the program.

Since district funds are very limited, these participants are very cost conscious when considering different options. Participant 5 explained how she pilot tests new programs or equipment purchases by limiting the initial amount she spends and evaluating effectiveness before acquiring larger quantities. For example, she only purchased ten licenses to a program to support reading remediation; if she finds the program increases student achievement in her pilot group, she will purchase additional licenses for the next school year.

Some of the online instructional support that participants provide is carried out using software that was supplied to all schools in the district. Participant 1 indicated that the learning management system and unit design software that she works with to organize her online instructional materials was selected by the district before she began her job as an online school librarian two years ago. She explained that, for some applications, it makes sense to have all of the staff using the same platform for consistency. Participants commented that it made it easier to provide the staff with technical assistance, when they all use the same applications, and that, when the district selects applications, they ensure that new purchases are compatible with their existing technology. In another case, the district purchased a solution that could be substituted for something the participant had annually subscribed to for her library from a different vendor. Participant 4 had subscribed to EasyBib for her library patrons; later, a district wide subscription was purchased for NoodleTools. The participant indicated that, after a period of transition, she would probably stop renewing her library's subscription to EasyBib, since it was basically duplicating the county's purchase of a citation tool.

The participants indicated that they also used software or online applications beyond those provided by, or supported by, their district; complications would sometimes arise from these independent selections. Several of the participants discussed how they use Glogster, a free

online application for designing digital posters. Participant 2 frequently used Glogster to create pathfinders to guide students through their research assignments. When Glogster updated their interface, participant 2 suddenly found that her glogs were not working properly on the school computers; this was because the district runs older versions of Internet Explorer and FireFox web browsers on the school computers. The district explained that they continue to use the older web browsers, because they are compatible with other applications that the district schools are using. The district will not use more current browsers, until all systems that they have in place will work with the newer versions, and they did not expect that change in the near future. Finally, the district installed a current version of a third browser, Chrome, on the computers, which resolved the problem with the participant's glogs.

Participant 2 also experienced similar frustrations related to the instructional videos that she posted online. She knew that her district blocked students from accessing YouTube videos on the school computers, so she identified an alternative site for hosting the screencasts that she created. She purchased a subscription to screencast.com to host all of the videos that she created, using Camtasia. Students were able to easily view the videos on school computers without needing to download or encountering any blocks from the district's web filter. One day she found that the district web filter had started blocking the videos on Screencast.com, requiring further work on her part to once again make her videos accessible to students on campus.

All participants described experiences in which their district web filter blocked access to an online tool that they would like to use for instruction; several specifically mentioned YouTube. In each case, the participant developed a means to work around restrictions to accomplish their instructional goal. Participant 4 explained how she instructs students to incorporate videos that they upload to YouTube in their Senior Project presentations. She

explains the process to the students, telling them that they will need to complete steps at home and on the night of their presentation, a teacher will logon to the computer so that the web filter will not block the video. In another district, participant 3 found Vimeo to be the solution for uploading her instructional videos without encountering blocks.

In deciding what technology to purchase with grant funds, participant 5 also encountered a situation where she was allowed to make a selection for her school that was not supported by her district technology department. She selected to purchase classroom sets of iPads, but her district does not provide technology support services for the devices. Although she was permitted to make the purchase, she had to take responsibility for operating and maintaining the devices. She turns to the vendor or networks with others, when she needs technical assistance with the iPads.

All participants also mentioned district policies that enable students to access their school's wireless network with their own technology devices. Various names are used to describe these policies, such as Bring Your Own Learning Device (BYOLD), Bring Your Own Technology (BYOT), and Bring Your Own Device (BYOD); all starting with "Bring Your Own." Participant 4 explained that allowing students to bring their own technology alleviated the problem of not having a sufficient number of computers in her library to meet student demand. Participants explained that students using their own devices on the school's wireless access points encounter the same web filter restrictions as they would using a school computer. Limitations to students' use of their own devices include that the students cannot connect to the school printers and they are using the software that is available on their own device. Participant 4's district provided a solution to ensure that all students have access to basic productivity software by subscribing to Office 365, which gives them access to online versions of Word,

Excel, PowerPoint, and Publisher from any Internet connected device, on or off-campus. Some of the participants did not express encountering any challenges related to implementation of the BYO policies; however, a couple of the participants mentioned issues that their schools were still trying to resolve. Participant 5 explained that the wireless infrastructure in her school was not sufficient to support the demand in some areas of the building and that upgrading the network would be very expensive. The online school librarian, Participant 1, said that it is not clear how much technical support she should provide for students who are having issues with their own computers.

The participants all described advances in access to online learning resources supported by their school district. They also all had experienced obstacles that they had to work around to provide online instructional support through self-selected strategies. Participants' specific experiences varied, but all included descriptions of how the district helped their online instructional support efforts by providing some of the resources that they use and, at times, hindered efforts with restrictive policies. The participants understood that the restrictive policies that occasionally blocked some of their online instructional support efforts were in place to protect the students and the school's equipment. Participants expressed appreciation for the support provided by their district and an ability to devise alternate routes to achieve a goal when obstacles were encountered.

Audience Acceptance

All participants expressed that the online instructional support that they provide was, at times, influenced by how well it was received by users. Some of the participants' online instructional support efforts are designed to assist students, while others are designed with teachers in mind, either as professional development or as a means to facilitate the teachers'

instruction. Participants indicated that online instructional support efforts are only effective when the intended audiences are receptive to the format in which it is offered. As participant 4 explained, what works with students may be different than what works with teachers, and as multiple participants suggested, there may be different preferences among the groups of teachers and students with whom a school librarian works.

To address the varying preferences for the different format in which online instructional support may be offered, participant 1 presents instructional aids in multiple formats. She often offers online instructions in both a step-by-step guide with images and text, as well as by posting a video demonstration. This way her patrons may choose to use whichever format they find most useful. Participant 3 found that her students liked to have a tangible handout with an overview of instruction that she presented when they visit the library for a research assignment; however, she explained the benefits of online formats for presenting an instructional guide, such as the ability to easily follow a link. Considering both student preference and convenience, participant 3 produces her instructional guides in a format that will work well both in print and online.

The participants explained how they were influenced by the preferences of teachers when deciding about different online instructional support options that they implemented. Participant 3 mentioned that it was difficult to interest many of her teachers in having students create a digital online product for an assignment, because the teachers preferred that students create something that could be easily displayed in the classroom, such as a brochure. Participant 4 explained that she had become accustomed to providing bibliographic instruction using EasyBib, yet the district subsequently began providing a subscription to NoodleTools. As a result, some

teachers preferred that she use NoodleTools with their classes, so she tailored her instruction to each teacher's preference.

Sometimes the participants used an online tool for instructional support and found that the format was not well received by the teachers or students with whom it was used; in these cases, the participant discontinued using the technology and sought a different solution for future instruction. Participant 2 explained how she was initially excited about using Wikispaces for collaboration with teachers, but the teachers did not share her enthusiasm for the tool. The teachers indicated to the participant that they did not like Wikispaces' interface, and they did not want to learn to use it, since it could not be used by their students, due to the inability for the teacher to moderate postings. On her library blog participant 2 offers opportunities for students to comment, but she said that they rarely submit a comment through the blog; instead, she found that students are more likely to enter information when she links to a Google form. Participant 4 recalled using Symbaloo and discovering that her high school students did not care for the format, which had an elementary look to it; as a result, she tried another tool which presented the information in a format that was more appealing to the high school students.

Many of the tools that the participants tried and later abandoned were free online applications, which gave the participants freedom to experiment without concerns of wasting money. Sometimes decisions need to be made that involve considerable expense, which requires a more careful process for making selections. Participant 5 wrote and administers a sizable grant that was awarded to her school. She discussed committee involvement and pilot testing procedures that she follows to guide how she spends the grant funds to provide online instructional support. After spending a fraction of the grant to pilot test the effectiveness of the equipment that she purchased, participant 5 then planned to decide whether to purchase more of

the same equipment to be used by other classes, or whether she should search for a better solution.

Participants all described instances of how the online instructional support that they provide is influenced by the acceptance of their intended audience. Multiple participants indicated that they sometimes offered instructional information in more than one format, in order to appeal to individual user's preferences. Participants expressed a desire to accommodate users' preferences for use of a particular format or specific application to provide online instructional support. When an instructional support format or specific application was not well received by the intended audience, the participant abandoned it in favor of a more appealing solution.

Ease of Use and Compatibility of Technologies

Participants were influenced by the ease of use of some of the online instructional support technologies that they encountered. Sometimes the ways in which different solutions could be used together facilitated ease of use for either the participants or their patrons. Participants had to consider ease of use for themselves in terms of learning of a new technology and efforts for development and maintenance of learning objects. For their patrons, the participants had to consider ease of use in terms of accessibility and time savings through work reduction. Whether the focus was on ease of use for the participants or their patrons, compatibility of different technologies sometimes influenced the participants' choices.

One area for which multiple participants discussed their search to find a solution that would integrate well with the other systems that they have in place was the selection of vendors for eBooks. Participant 1 explained her extensive research into the different options for purchasing and lending eBooks. She found that not all eBooks are available on appropriate lending platforms for a library. Eventually she selected to work with two key vendors that

provided eBooks that could be integrated within the online catalog and database subscriptions that she already used. She explained that she felt that it would be easiest for students to have a minimal number of places to search for eBooks, but that she needed two different options because of the different lending arrangements and types of books available through different vendors. By selecting vendors who provided other resources that her library already used, she found integrated solutions that were easy to use, for her and library patrons. Participant 5 was still in the process of making decisions about building her library's eBook collection. She also indicated that she was inclined to begin purchasing eBooks from the primary vendor that she already worked with for other library resource. She said she heard that it would not be easy to incorporate eBooks into her online catalog, if she purchased them from a different vendor. The concern of being able to make eBooks available through the library's online catalog would affect ease of use for both the participant in managing library resources and for library patrons using those resources.

Another area in which participant 5 found that an integrated solution was her best option was in selecting an online instructional support package for improving student achievement in reading. She explored different options and had to consider price along with ease of use. Using a system that she could purchase as an add-on to software that was already used in her district provided an economical, integrated solution that was easy for her to implement and students to use.

In some cases it is easiest when all staff use the same platform for consistency throughout the school. Participant 1 explained how providing resources to students through the schools learning management system made her work easier, enabled her to reduce work for teachers, and facilitated students' access to resources. By designing instructional materials in software that

integrated well with the LMS, it made it easier for the participant to distribute the materials for use within each online class. Her school has created a learning object repository (LOR). When objects are revised in the LOR, the updates automatically appear in associated course content areas. To make library resources easily accessible for students without placing extra work on the teaching staff, the participant has embedded links to relevant library resources within each of the online course shells that are used to begin each new semester. Since these links to library resources are inside the password protected LMS, the participant can further ease student access by posting passwords beside links to licensed information resources, which she would not be permitted to do on a webpage.

Participant 2 explained that she tried multiple solutions to make it easy for her students to access the instructional videos that she produced. Some web hosting solutions were blocked by the district's web filter and would not provide students access to the information on campus. Other options required that the video be downloaded to be viewed, which was too time consuming. She found that using Screencast.com to host her videos gave her students the ease of access she sought for them. Participant 3 favored Vimeo as an easy solution for hosting her instructional videos. Vimeo provides the ability to have messages automatically go out to her FaceBook and Twitter accounts, which provides those who follow the school through either medium to receive notification and a link to any new video she uploads. Use of these social networking applications makes it easier for the participant to promote use of instructional resources and increases opportunities for students to access the materials.

Participants all seemed to come up with their own unique combination of technologies that worked well with in their school environment and for producing and sharing different types of learning objects. Through exploration, they found the different combinations of technologies

they used to produce a learning object. Use of multiple applications enabled the participants to create text and image based instructional guides or to produce and upload a video and to organize all of their instructional materials for students to access. One participant explained that, when she had an option of using something new or working with a format with which she was already familiar she would usually use the familiar format, because it was easier for her to work with and was thus the more efficient choice. Similarly, another participant explained the lack of ease in trying a new method for making instructional videos. Although they used different tools for creating their online learning objects, multiple participants mentioned the ability to make a change that would automatically update in all of their related learning objects as an important feature that made their work easier. Participant 4 explained how the ability to share elements between different LibGuides saves her from having to repeat the same tasks over and over again.

Participants described some of the challenges they encountered in using some applications, as well as issues of incompatibility between different technologies. When technologies did not work well together, the participants continued to seek alternative combinations to accomplish a task. For example, Participant 3 found that Google Docs embedded in her blog required users to scroll horizontally and vertically to view all parts of the document; this was not a user friendly format, so she tried something else. Participant 4 was creating many pathfinders using Glogster, but she found it to be inefficient, because she had to start each new Glog from the beginning, so she searched until she found LibGuides as the solution for easily building new pathfinders based on existing guides.

All participants indicated that they were influenced by either ease of use or compatibility of different applications or both, when selecting the programs or online tools that they used to provide online instructional support. While participants were excited to report that some of the

tools that they find effective are available online for free, others paid for subscription services that they found made their work easier or facilitated student access. Commercially produced integrated solutions were commonly found to be most efficient for certain online instructional support tasks, such as purchasing and hosting eBooks. When selecting online instructional support strategies based on ease of use, participants considered efficiencies for both their own work load and the work that teachers or students conduct using library resources.

Summary of Thematic Analysis

The technologies and strategies used by participants to provide online instructional support varied; however, among their differing experiences, there were common themes about influences on the types of support that they provide. Networking and learning experiences enhanced the participants' ability to provide online instructional support. District level decisions, policies, and purchases influenced the participants' work. Participants were responsive to audience acceptance of the strategies that they implemented and changed course when a strategy was not well received. Participants were often influenced in their choice of tools used to provide online instructional support by the tool's ease of use and compatibility with other technologies. Money was discussed as a consideration in some decisions made by some participants, but it was not a major influence on many of the online instructional support strategies that the participants implemented.

All participants were clearly influenced by opportunities for networking and learning. Networking and learning that took place through either formal or informal processes introduced the participants to new ideas to enhance their ability to provide online instructional support. A spirit of independent learning was also expressed by the participants, which enabled them to

continually advance their awareness of resources and tools, as well as develop skills required to provide online instructional support.

All participants described experiences that were influenced by district level actions. In some cases district actions supported and enhanced the participants' ability to provide online instructional support, such as through provision of useful software or subscriptions to online tools. In other cases, the participants' efforts were hindered by districts actions that created obstacles that blocked some of the participants' self-selected strategies for offering online instructional support. Participants appreciated the support that they received from their districts and understood the reasons behind some of the obstacles that they encountered due to district level actions. When participants encountered obstacles, they pursued alternate solutions to accomplish a task.

All participants indicated that the online instructional support strategies that they implement are sometimes influenced by their intended audience. Some online instructional support is targeted toward students, while some is directed towards teachers. In either case, strategies that were not well received were either revised or abandoned. Changes in user's preferences over time also led to changes in the strategies used by the participants.

All participants described experiences in which the online instructional support that they provided was influenced by ease of use of a technology. Sometimes ease of use of a tool was dependent on the compatibility of different technologies. Ease of use was considered both from the perspective of the participant who was offering the online instructional support and from the perspective of users, that is, students and teachers. In some instances, participants found commercially available integrated solutions provided the greatest ease of use for themselves and users.

Money was not discussed as a major influence on many of the online instructional support strategies that participants implemented. In the cases where money was discussed as an influence, the participants views varied. Two participants expressed concerns over limited budgets. Four of the participants discussed purchasing some solutions to assist with their online instructional support strategies. When purchasing resources or tools to provide online instructional support, participants were looking for a combination of value and convenience. One participant described concerns over vendor terms that would require a minimum annual expense in order to retain access to eBooks purchased in previous years. She did not feel that this arrangement was a good investment of her library funds and found another vendor with more favorable terms. Multiple participants described solutions that they were willing to pay for because of the conveniences provided for either themselves or their library patrons.

The strategies and tools used for online instructional support by the participants in this study varied, but all participants described experiences related to some common influences. The participants advanced their knowledge and skills to provide online instructional support through networking and learning. They worked within their existing district environment, which sometimes supported and sometimes hindered their efforts to provide online instructional support. All participants worked at finding workarounds when they encountered obstacles, whether the obstacles were due to restrictive district policies or compatibility of different technologies. Participants were influenced by the ease of use of a technology, which was enhanced when the technology was compatible with other technologies that they used. Ease of use and compatibility of different technologies were important, both from the perspective of the participants' work and their library patrons' experience. Participants were all influenced by their intended audiences' acceptance of the online instructional support provided, and participants

adapted their strategies according to audience acceptance. Money was not a major influence in many of the participants' decisions related to providing online instructional support; however, at times decisions were made based on financial considerations.

Chapter Five

Conclusions, Implications, and Recommendations

This research study was designed to fulfill a need to provide high school librarians with information about online instructional support that is relevant to their positions in traditional high schools that are being transformed by new educational initiatives. A review of literature revealed that use of online instructional support is relevant for school librarians, but while the topic has been researched at the post-secondary level, research of online instructional support provided by high school librarians was not found. Use of online instructional support may resolve concerns of collaborating teachers who feel that they do not have the time to bring classes to the library for instruction (Hardesty, 1995), and it may provide a more effective way to reach 21st century digital learners (Lambert, 2012; Manuel, 2002; Meister & Willyerd, 2010b; Mestre, 2010; Rosen, 2011). This study was designed to expand current literature by exploring the experiences of high school librarians who are adapting traditional library instruction to satisfy the learning styles of 21st century students, by using online instructional support to expand their school library programs. The study focused on librarians' experiences providing online instructional support, their perceptions of the challenges and benefits of different types of online instructional support and their experiences of the relationship between online instructional support and instructional partnerships. The results of the study provide new information that may serve as a guide to high school librarians who are new to implementing these strategies or for any educators interested in developing a deeper understanding of influences on the types of online instructional support that are, or may be, provided by high school librarians.

This qualitative study explored experiences of high school librarians related to their use of online environments to provide instructional support. The study sought to discover influences on the types of online instructional support provided by high school librarians. Inquiry focused on the participant librarians' perceptions of the benefits and challenges of implementing different types of online instructional support. Additionally, the study investigated the participants' experiences of the relationship between the online instructional support that they provide and instructional partnerships.

The research was conducted using qualitative methods for data collection and analysis. Merriam (2009) notes that a basic, interpretive study is the most common type of qualitative research conducted in applied fields of practice such as education and is the most appropriate type of qualitative research for applied fields. Constructionism underlies what Merriam calls a basic qualitative research study. Individuals construct reality through interactions within their social worlds. Constructivist research methods result in interpretive understanding or meaning related to a certain situation (Mertens, 2009). According to Crotty (1998), meanings are constructed as people engage with the world they are interpreting. Analysis of the data in a qualitative research study involves identification of recurring patterns, or themes, that characterize the data; findings are the identified themes supported by the research data from which they emerged (Merriam, 2009).

Data for this study were collected through semi-structured interviews, participant journals and examination of artifacts. The participants were selected by means of purposive sampling through a professional listserv in a southeastern state that provides strong support for its library media programs. Interviews were conducted online, recorded, and then transcribed for analysis. Interaction between the researcher and participants was ongoing through the fall semester of

2013, as the participants responded to journal prompts and submitted artifacts representative of the online instructional support that they provide. Data analysis began from the initial interaction with participants and was ongoing throughout the study. Codes were developed to identify important elements in the data, during multiple cycles of reading through the data and memoing. Throughout the data collection and initial analysis phases, the list of codes grew, and I reflected on commonalities between the experiences of the participants. Case-by-case analysis of each participant's experience was conducted until data saturation was achieved, then codes were clustered to identify themes that were common among all participants and related to the study's primary research question. The primary research question for the study was: What influences the types of online instructional support that high school librarians provide? The secondary research questions used to provide additional focus for the scope of the study were: (1) What do high school librarians perceive as the benefits/challenges of different types of online environments which may be used to provide instructional support? and (2) What are high school librarians' experiences of the relationship between the online instructional support that they provide and instructional partnerships? The following sections include general findings from the study that respond to each of the research questions, a general discussion of the findings related to some of the issues that were revealed in the literature review, implications and suggestions for key interest groups, and suggestions for further research.

Conclusions: Relating Findings to the Research Questions

Final analysis of the data collected from the five high school librarian participants revealed commonalities among their experiences that provide answers to the research questions. Relevant findings are explained below in relation to the research questions.

What influences the types of online instructional support that high school librarians provide?

Experiences described by the participants indicate that there are multiple influences on the types of online instructional support provided by high school librarians. Common influences that impact the types of online instructional support that the participant librarians provide are: opportunities for networking and learning, school district actions, audience acceptance, and the ease of use and compatibility of technologies. These influences may affect the focus of the school librarians' efforts, as well as their choice of strategies and the technologies that they use. Most of the participants focused primarily on providing online instructional support through learning objects that students could access at the point of need. The primary focus for one participant was on selecting and introducing systems to support teachers and students in effectively using online instructional resources and applications. Regardless of the school librarian's focus, all participants' experiences exhibited common influences.

Innovative ideas that led to the online instructional support strategies that the participants provide evolved from opportunities for networking and learning. Participants learned about new applications, strategies, and approaches to teaching and learning by taking advantage of formal and informal channels for professional development. Networking, by attending conferences or local professional meetings, participating in professional networks online, reaching out to another professional, or encountering other educators on a casual basis, introduced the participants to new technologies and strategies for using online environments for supporting teaching and learning. An independent spirit of learning aided the participant librarians in following through with the additional learning that was required to implement new innovations. The participants used a variety of strategies to learn about using new applications and

technologies, including reading through tutorials, viewing instructional videos found on YouTube, just "playing" with a new technology, and reaching out to a member of their personal learning network who might provide quick advice.

District level actions sometimes assisted and sometimes hindered the participants' efforts to provide online instructional support. Districts facilitated the school librarians' implementation of online instructional support by providing applications that were used universally throughout the district. When all students and teachers in the district use a common set of applications the librarians' do not need to learn different solutions that serve the same purpose, as occurs when they assist students and teachers who select their own options. All participants mentioned a district policy that supported students bringing their own technology. In some cases these policies were newly implemented or about to be implemented. The district that had been supporting a bring your own technology program the longest gave all students access to Office 365, which provided all users with a common platform for productivity applications, regardless of the device that they used. This action by the district facilitates the school librarian's efforts to provide online instructional support by enabling her and all patrons to focus more on content learning, as they work in a consistent online environment that is familiar to all and accessible from any Internet connected device. District actions that created obstacles for the librarians were due to restrictive protections that interfered with student access to online applications, which would support teaching and learning. The participants understood the need for the restrictive protections and with extra effort were typically able to design a workaround to accomplish instructional goals.

Some of the participants' online instructional support efforts were designed to assist students, while others were designed with teachers in mind. The participants were all attentive to

how well their support strategies were received by the intended audience. In addition to listening to verbal feedback from students, some participants used online formats for soliciting student feedback. The librarians adapted their online instructional support strategies when they were not well received by the intended audience. In collaborating with teachers this sometimes meant using different, but similar, solutions to match individual teacher preferences. Despite the extra effort required on the participants' part, they were willing to provide online instructional support in a variety of formats to appeal to additional library patrons.

When participants were making decisions related to technologies they use to provide online instructional support they were influenced by ease of use from both their own perspective and that of students and teachers. In some cases the ways in which different solutions could be used together facilitated ease of use; thus, compatibility of different technologies sometimes influenced the participants' choices. When commercially available integrated solutions provided sufficient conveniences, some of the participants were willing and able to pay for subscription services.

All participants indicated that some of the online instructional support tools that they find effective are available for free. A couple of participants described one or two decisions that they made for which money influenced their choice. In these cases the participant was considering long term value for the funds that they would spend. These participants explained that they wanted to invest money in programs that would be sustainable from year to year; they were concerned about gaining lasting value that would not require expensive ongoing costs. One participant explained her strategy for piloting programs involving purchases that required a large investment of funds.

Other influences that affected the types of online instructional support provided varied among participants. Several of the participants explained that the online instructional support strategies that they used were influenced by their students' learning styles. For example, one participant discussed her efforts to condense instruction in the videos that she produces, because she felt that students would not watch videos that took too much time. Another participant explained her school's goal of designing a consistent look for the interface of the online instructional environment used for accessing her library resources, regardless of the device that a student may use.

While each participant experienced some unique influences that affected the online instructional support that they provide, they all described experiences that point to several common influences. Networking and learning are keys to the participants' ability to use innovative techniques to provide online instructional support. District actions enhance the participants' online instructional support efforts when they provide resources that become familiar to students and faculty, but some district actions create obstacles due to restrictive protections that limit access to freely available online resources. All participants indicated the importance of being responsive to audience acceptance of the online instructional support strategies used. Ease of use and compatibility of different technologies were important from the perspective of both library patrons' experience and the participants' work. Overall, similar experiences among the participants indicate that common influences such as opportunities for networking and learning, school district actions, audience acceptance, and the ease of use and compatibility of technologies, affect the focus of the school librarians' efforts, as well as their choice of strategies and the technologies that they use to provide online instructional support.

What do high school librarians perceive as the benefits/challenges of different types of online environments that may be used to provide instructional support?

Many of the benefits and challenges of the different types of online instructional support that the participants provide are related to ease of use and audience acceptance. Through networking and independent learning, the participants find ways to work through challenges that they encounter to provide worthwhile online instructional support that is beneficial for teaching and learning. When necessary, they develop workarounds to overcome obstacles presented by restrictive protections from district level actions, such as access blocked by a web filter or the inability to download applications to a school computer. Below I present benefits and challenges of common types of online instructional support provided by the participants.

***Instructional guides*.** The participants described a wide variety of technologies that they have used to create instructional guides, or pathfinders, for online environments. Much of the information included in their online instructional guides is presented in the form of text and images. Creating instructional guides for online environments provides the added advantage of the ability to link to other resources. One participant specifically mentioned that her students liked receiving a hardcopy of her instructional guides, so she designed materials that would work well in both print and online formats, using applications such as Word, Adobe PDF, Google Drive, and SlideShare. She recognized that face-to-face instruction was much more efficient when students could just click on a link from her guide rather than depending on each student typing in a URL to access a recommended resource. The participant learned that she had to check that the different applications she was using would work well together for online display.

Other participants cited different benefits and challenges that their application of choice provided. A couple of participants noted how students were attracted to the visually interesting

format of the instructional guides that they created using Glogster, which also allowed the participants to embed videos. However, both of these participants acknowledged experiencing some frustrations when using the application. When participants needed to create a new glog that was similar to one that they had previously produced, they had to build the new glog from scratch, which was time consuming. Additionally, both of the participants also mentioned that at some point students experienced difficulties accessing Glogster on the school computers.

One participant found LibGuides provided the solution to the inefficient process of having to create each new instructional guide from the beginning, as she had previously done using Glogster. She explained that LibGuides enabled her to "quickly and effortlessly create content-rich, web 2.0 multimedia guides." She appreciated the capability to embed videos and RSS feeds in her LibGuides, as well as the multiple ways that LibGuides supports collaboration. LibGuides enables the participant to share elements of one LibGuide that she has created within her other guides, and when she updates the element in one place, all instances will receive the changes. She may collaborate with librarians around the world, by using LibGuides that they have chosen to share as part of the guides that she customizes for her students. By submitting suggestions through embedded forms, students also become collaborators in identifying useful resources to be added to the pathfinders she creates using LibGuides.

For the participant who serves as the librarian for an online school, instructional guides assist many of the students to independently learn about accessing the library resources. When students contact her by phone, text, or email with a question, she can frequently direct them to one of her instructional guides for detailed assistance. She and other participants mentioned that for some things they may link to resources created by others. The greatest challenge for the

librarian of the online school is meeting the school's goal of ensuring that things have a consistent look regardless of the platform used by a student.

Instructional guides benefit teaching and learning by reinforcing lessons taught in the library or serving to provide instruction for students who do not have an opportunity to visit the library for a lesson. Depending on the technologies used online guides may be created to include multimedia content and use features that facilitate content update. Challenges for school librarians who are creating instructional guides are presented when technologies used do not facilitate sharing of elements in one guide with another, when a combination of technologies used do not work well together, or when the online environments used become blocked by school web filters or are inaccessible from some devices.

Videos. Participants described multiple benefits and challenges related to using videos for online instructional support. One participant explained that creating screencast videos provided a partial solution to problems arising from the limited staffing in her library. She felt that creating screencasts was the easiest way for her to present information when she could not make it to another part of campus to deliver instruction. Even the participants who were able to provide in library instruction believed that the instructional videos that they created provided useful reinforcement for students and saved teacher and librarian time, because they reduced the need for redelivering instruction to students who were absent during a lesson. Participants stated that they felt screencast videos were useful for presenting instruction when they needed to show students how to use applications or resources.

Challenges encountered by participants using videos for online instructional support related to personal learning, development time, video hosting, and accessibility. Participants discussed the learning curve required when they initially began using various applications for

creating videos, such as Camtasia, PowToon, or Windows MovieMaker. Even once they were familiar with a program or application, preparing to create a new video required advanced planning for a script, screenshots, and some distraction free time to record the video. Participants described challenges related to different hosting options for posting their videos online, such as download time, file size requirements, costs, and accessibility to students. District web filters would sometimes block access to videos that had been uploaded to a site that had previously been accessible to students, creating additional work for the participant to make the videos remain available to students working on campus.

eBooks. Participants were at different stages of incorporating eBooks into their collections, but all described the options they had considered. The benefits and challenges of purchasing eBooks varied depending on the vendor they were purchased from and licensing agreements. The librarian for the online school had done extensive investigation into the different options for purchasing and hosting eBooks and learned that not all eBooks are available on a lending platform that works for libraries. Ultimately, all of the librarians who were purchasing eBooks needed to consider whether to purchase an eBook on a platform that would be available to an unlimited number of users simultaneously or to only one user at a time.

For eBooks that many students would need to access, such as those used for research assignments, the participants made purchases from a vendor that provided eBooks on an unlimited use platform to build the library's reference collection of eBooks. Students usually view the reference eBooks on a computer. The eBooks purchased on the unlimited use platform are accessed by searching a database. This format is beneficial to students who are conducting research on a specific topic. Contents of the eBook are delivered to the student in the form of an article, which may be a chapter from the book. Additionally, the database delivery method for

eBooks purchased in this format provides students with the advantage of a citation that they may use to document their research references.

For eBooks that students would be interested in checking out for leisure reading, such as a novel, the participants purchased eBooks from a vendor that provided an attractive electronic format, accessible from a variety of devices. Participants explained that these eBooks cost less than the reference eBooks, but they may be checked out by only one user at a time. Fewer of the participants were purchasing this type of eBook. A couple of the participants expressed concern over student access to these eBooks, which users would typically view on an electronic reader or tablet computer. One participant explained that the students in her school who owned the devices to read books on this lending platform would just purchase and download books that they wanted when they wanted them; the students who could not afford to do this do not have their own electronic reading devices and are the ones who more frequently visit her library to checkout traditional books for leisure reading.

Learning management and interactivity with students. Each of the participants has gained experience using technologies for facilitating and managing student learning or interacting with students. The participants' experiences with technologies for learning management and interacting with students were limited and varied widely, but revealed some of the benefits and challenges that school librarians may encounter when providing this type of online instructional support. Four of the five participants work in traditional high school libraries where most of their interaction with students is face-to-face; however, all use some means of gathering information from students through online applications. The participants receive feedback or questions from students through online forms, commenting features on blogs, or email. Participants in the traditional high school libraries report that these opportunities

are not widely used by students. The online school librarian is most frequently contacted by students via email. None of the participants reported being overwhelmed by interaction with students through options for online contact; in some cases, the challenge seemed to be encouraging students to take advantage of opportunities for online interaction with the library.

Participants each had some experience with technologies for managing student learning through courseware, tutorials, or student response systems. The participants frequently experienced these technologies as instructional partners with content area teachers, and their own use of these technologies was in most cases limited. The online school librarian had the most experience working with a learning management system (a.k.a. courseware), in which she learned to efficiently place links to relevant library resources within each online course shell. By providing easy access to library resources in the content area for online courses, she hopes to increase usage of the resources by students and teachers. She explained the advantage of being able to place passwords adjacent to links to subscription resources when posting items within the login restricted environment of the school's learning management system.

One participant provided online instructional support for teachers by setting up class sets of iPads with educational apps. She explained how the students could then communicate with their teacher and peers through the Edmodo app. The participant librarian encouraged the teachers who use the class sets of iPads to choose the apps they would use with students, explaining that she felt teachers would be more likely to implement use of the tools if they had a sense of ownership. The participant also played a role in selection and implementation of other technologies to support learning in her school. For example, she was responsible for the purchase and administration of the Scholastic Reading Inventory to identify students in need of remediation. She then selected a remediation solution to assist students who were identified as

struggling readers; part of the solution for struggling readers involved use of a computer tutorial. In seeking these solutions to support learning in her school, the participant learned about different pricing structures and sought solutions that the school could financially sustain over time.

A couple of the participants linked to forms from their library webpage or blog to encourage student input or questions. For example, using a Google form one participant invites students to contact her with a question and information about what they have already tried, along with their contact information, she then follows up with the student through email. Another participant described the frustrations that teachers at her school encountered using the expensive student response systems that had been purchased. Once her school gets their BYOD network in place, she plans to suggest some free online solutions, such as Socrative or TweetChat, for the teachers to allow students to provide responses using their own devices. She feels that the online options will be easy for teachers to work with, but acknowledges that they may not provide the security of the protected and private environments offered by more expensive solutions.

The participants' varied experiences with technologies used for interacting with students and managing learning represent much potential benefit to teaching and learning. Participants' experiences with these technologies indicate that school librarians may use these technologies to enhance interaction with students and increase opportunities for instructional partnerships with teachers. These seem to be the technologies with which the participants have had the least experience, but which represent an area that will be of growing importance as use of online learning environments expands at the high school level.

What are high school librarians' experiences of the relationship between the online instructional support that they provide and instructional partnerships?

The participants' experiences indicate that the online instructional support that they provide is sometimes influenced by instructional partnerships; at other times, it inspires new instructional partnerships. Several participants described creating research pathfinders as an integral part of developing instructional partnerships with teachers. The cyclical influence in the relationship between online instructional support and instructional partnerships was evident in participants' experiences of developing customized research guides for class assignments. Following collaborative consultations with a teacher, participants created pathfinders to guide students to academically reliable sources for their research. Participants used their application of choice to produce the guides, but made decisions in partnership with the teacher about details to be included in the guide, such as how much and what types of information to give students and what should be left for students to find on their own. Customized online instructional materials that were used successfully with one class became examples that inspired other teachers to collaborate with the participant librarians. One participant explained that word spreads and teachers request, "Can you make one like this?" Some teachers decide to replicate a class assignment that has been featured in a research guide created for another class; in such cases, the librarian may work with a new class using the existing instructional materials that she has created.

Participants explained that when collaborating with a teacher, they may have more information to present to students than their allotted time allows; this scenario has inspired creation of some of their online instructional materials. One participant explained that, when teachers brought their students to the library for instruction on a topic, such as citing sources using MLA or APA, she found that students needed more detailed instruction than could be covered in the time allotted. To accommodate this situation, she presented brief lessons to

introduce students to the process for obtaining their reference citations and then referred them to a screencast that she created to show them technical details for proper formatting in Word. Some of the online instructional materials that she creates provide an overview of lessons that she presents to classes that visit the library. By making the information presented in a lesson available to students online, she knows that the students will be able to get help if they missed, or did not understand, instruction during the session in the library.

Even when teachers do not bring their classes to the library for instruction, participants actively seek to develop instructional partnerships by offering online support for students' research projects. One participant explained that, if she finds out that a teacher is doing a research project, she will ask if the teacher would like her to put together some resources. When they accept her invitation, she creates a pathfinder to recommend where students might search and what keywords to use as they search. The librarian working for the online school explained that it is difficult to develop instructional partnerships with teachers, since they are rarely on campus. She has recently embedded links to relevant library resources within each online course and hopes that this will inspire future collaboration with teachers; she believes developing instructional partnerships with teachers will enhance her ability to relate to the students.

Participants described some experiences in which they learned about new technologies or resources from students and then used that learning to build instructional partnerships. One participant observed a student using an interesting online presentation application that she had not seen before. After she observed the student using Prezi, she began to use it in her presentations to teachers; some of the teachers then asked the participant to teach Prezi to their students. Another participant explained that students who owned iPads taught her how to change settings and use them when she received the first set of iPads for her library; she was then

prepared to work as an instructional partner with the teachers who were using the iPads with their students.

As the participants work on developing instructional partnerships with teachers, they try to offer teachers suggestions for creative ways to engage students with technology to enhance learning. One participant does this through a monthly newsletter. The newsletter enables the participant to expand her opportunities for developing instructional partnerships by describing new instructional technologies and inviting teachers to plan a lesson with her. When the participants suggest ideas for using new online instructional technologies to teachers, they are attentive to how teachers respond to the ideas. One participant acknowledged that establishing instructional partnerships is not easy, and they do not always work out. She explained that when she observes that teachers are apprehensive about a technology she suggests, she continues to search and offer new ideas until she finds the right fit. Finding a new application that appeals to teachers then generates new instructional partnerships.

Discussion

This study employed qualitative methods to explore influences on the types of online instructional support that high school librarians provide. The findings are viewed through the theoretical lens of constructivism and the conceptual framework lens based on the National Educational Technology Plan (NETP). The constructivist lens focuses on lived experiences of participants who engage in the world they are interpreting (Crotty, 1998; Gay et al., 2006; Merriam, 2009). As a constructivist researcher, I sought to make sense of the subjective meanings of individuals to find a pattern of meaning for the group of participants, as described by Creswell (2003). Through the conceptual lens based on the NETP, I focus on the participants' implementation of "learning resources that exploit the flexibility and power of

technology to reach all learners anytime and anywhere" (Department of Education, 2010), by examining different types of online instructional support the participants provide. I used a rigorous process in search of commonalities of experience (Eichelberger, 1989). Using an inductive analysis process, as described by Gay et al. (2006), I narrowed the data into key groups to identify themes regarding the commonalities among participants' experiences. The inductive qualitative analysis process results in a constructed interpretive understanding related to the participants' situations, thus results are not generalizable (Mertens, 2010). To assist readers who wish to determine if the findings may be transferable to their setting, rich descriptive details of the participants' experiences have been included in chapter 4. In this section I will discuss my key findings and constructivist interpretations of the data from this study in relation to the literature that I reviewed in chapter 2.

The AASL (2009) emphasizes the school librarian's primary roles as leader and instructional partner. Recognizing information literacy and technology skills as central to learning in the 21st century, school librarians are called "to model emerging technologies to reach learners, and to create virtual 24-7 access to the school library" (AASL, 2009, p. 16). By taking advantage of networking and learning opportunities to grow professionally, the participants in this study were able to respond to the AASL's (2009) call to focus on their role as instructional partners and support the 24/7 learning environments that 21st century students expect. The participant librarians are assisting their schools in using technology to provide learning resources to students anywhere and anytime and to allow for learning experiences to be personalized, as is envisioned by new educational initiatives called for by the U.S. Department of Education (2010). Sigman (2008) indicated the need for school librarians to devote continued time and effort to improving their technology skills to offer effective support to 21st century students; her findings

suggest that this is facilitated by increased incidences of technology training for school librarians. As Sigman suggests is needed, the participants' in my study exhibited a commitment to ongoing learning that enabled their technology skills to evolve along with advances in the technology that is available to them; however, my participants displayed a strong ability to learn independently, rather than the need for technology training as reported by Sigman. The participants frequently used networking and other professional learning opportunities to learn about the existence of new technologies and strategies to incorporate into their online instructional support practices, but much of the new technology skills that they acquired were learned through independent endeavors. The spirit of independent learning that was exhibited by the participants supports past findings that the ability for continuous learning and working independently may be more important than specific skills when hiring librarians (Tennant, 1998) and that much of the librarian's growth in technology skills comes from experience and on the job learning (Riley-Huff & Rholes, 2011).

Participants in this study experienced successful instructional partnerships and found that, as suggested by Cooper and Bray (2011), word of successful collaborations spread, leading to future opportunities for additional collaboration. When they encountered teachers who were having students work on a research assignment, the participants offered the teacher online instructional support whether or not the teacher brought the class to the library for instruction. The participants' openness to offering different types of instructional support to accommodate teachers' preferences enabled them to establish instructional partnerships with an increasing number of faculty members. This study's participants did not express any of the frustrations in their efforts to collaborate with faculty that were formerly described by Hardesty (1995). While this study did not gather data from teachers, as did Hockersmith's (2010) study of library

collaboration, the artifacts and experiences of my participants indicate that the school librarians in the study were successful in establishing instructional partnerships and were more than resource managers, contrary to findings reported for Hockersmith's study.

Flexibility is key for enabling school librarians to provide leadership as instructional partners in student-centered, 21st century learning environments (AASL & AECT, 1998; Rix, 2012). Professional literature for school librarians explains librarians' needs for flexibility in terms of scheduling, freedom to move about the school, and the ability to adapt the library's physical and virtual spaces for varied learning experiences (AASL, 2009; Creighton, 2007; Marcoux, 2010; Rix, 2012; Sullivan, 2011; Wallace & Husid, 2012). Results from this study indicate that, in addition to giving school librarians flexibility, librarians may make the online instructional support that they provide appeal to more teachers and students by offering flexibility in their approaches. Participants in this study offered multiple options for online instructional support, using different applications and formats to accommodate the preferences of teachers or the learning styles of students. The participants recognized when a new strategy or technology that they used was not well received by the intended audience and revised their practices according to feedback. This matched the process of closely monitoring initial efforts in the development of online instructional resources and expecting them to require revision that was previously suggested by Williams (2012).

As had been reported in findings from previous research, participants in this study noted that some teachers prefer to implement inquiry-based learning approaches involving library research without the assistance of instruction from a librarian (Cannon, 1994). Participants established collaborations with these teachers by using online instructional support strategies, such as creating a pathfinder, to provide guidance for students conducting research, even when

the teacher did not want to take time for a class visit to the library for a lesson. Participants described some of the same benefits of using online instructional support that were reported in the findings of previous studies, including: the ability to reach a larger number of students (McClure et al., 2011), enable students to become independent learners (Su & Kuo, 2010), and enable the librarian to provide instruction despite reduced library staffing (McClure et al., 2011). There appear to be a few differences in the online instructional support experiences of the participant high school librarians compared to those of post-secondary academic librarians described in the literature. The high school librarians who participated in this study experienced challenges related to district actions that blocked use of some online applications and resources. This concern was not evident in the literature that I reviewed about post-secondary academic librarians' experiences with online instructional support; further, the extent of the restrictive protections encountered by the high school librarians varied by school district. When challenges arose, the participants were resilient and found alternative solutions to accomplish their instructional goals. Another point of difference between the post-secondary academic librarians and the participant high school librarians is related to the use of online environments for providing direct instruction. Research literature includes descriptions of techniques used by post-secondary academic librarians for providing direct instruction using online environments such as a blog or by serving as an embedded librarian in an online environment, by monitoring a discussion board for example (Bottorff & Todd, 2012; Coulter & Draper, 2006). The participant high school librarians had little instructional interaction with students in online environments, with the exception of email requests for help. Instead, most of the participants' attention was focused on development of learning objects that empowered students to learn anytime and anywhere. Some of the learning objects that participants developed facilitated face-to-face

instruction using online resources and then served to assist students as they continued their research. There may also be a difference between the level of collaboration with faculty for librarians at the high school level versus the post-secondary level, based on the experiences described by the participant high school librarians compared to research literature about post-secondary academic librarians. Participants' discussions of the research guides that they develop with teachers for particular class assignments may point to a higher level of collaboration and instructional partnerships occurring at the high school level as compared to the post-secondary level, given McGuinness (2006) reported that academic librarians have difficulty developing relationships with faculty to integrate information literacy instruction into undergraduate curricula.

Findings from this study apply only to the group of five high school librarians who participated in this study. The general characteristics and relationships described are not intended to be applicable to all high school librarians, but may be comparable to the experiences of other high school librarians who provide online instructional support. Based on the low number of responses to a call for participants on the statewide library media listserv, there may only be a small percent of high school librarians who are currently incorporating online instructional support strategies into their library media programs in the state in which the study was conducted. The National Education Technology Plan expresses concern that many existing educators do not have a strong understanding and ease with using technology (Department of Education, 2010). It is hoped that findings from this study will encourage more school librarians to expand their efforts to use online environments to support learning beyond the physical space of the library and hours of the school day. Laurillard and Masterman (2010) suggest that technology enhanced learning may help in meeting political and fiscal demands on education.

Developing an understanding of influences on the types of online instructional support provided by high school librarians who are actively using online environments to provide instructional support may help to shape policies and practices, enabling more school librarians to expand their library programs to support the 24/7 learning environments that 21st century students expect.

Implications and Recommendations

The AASL's description of the multiple roles of a school librarian provides a guide for those in the profession; however, as school librarians fulfill their many roles, they may be influenced more by local circumstances than by the guidelines of a professional association. When school librarians focus on their role as instructional partners serving 21st century schools, it would be beneficial for them to determine how they may provide online instructional support for students in their community. Today's learners are accustomed to having information available whenever and wherever they want it (Kazakoff-Lane, 2010) and prefer active learning experiences with the option for instruction at the point of need (Lambert, 2012; Manuel, 2002; Mestre, 2010; Rosen, 2011). For those who aspire to lead change in their schools, it is important to identify issues that may influence changes, examining both potential supports and/or barriers that might affect desired changes (W. K. Kellogg Foundation, 2004). Understanding the key influences that have affected the types of online instructional support provided by the high school librarians who participated in this study may assist others to lead change that may expand library programs in their schools, beyond the physical space of the library and hours of the school day. Findings from this study may be useful to administrators, pre-service and continuing education programs for school librarians, practicing school librarians, and teachers interested in expanding their collaborative relationship with their school librarian. Implications and recommendations are presented for each of the four groups.

Administrators. It may be effective for administrators who are trying to hire or inspire school librarians to encourage them to take advantage of opportunities for networking and learning. When hiring, they may wish to ask applicants about their professional network and pursuit of continuous learning. Supporting the findings of Tennant (1998), findings from this study also suggest that when hiring librarians the ability for continuous learning may be more important than specific skills. Given that some of the participants in this study had no prior experience that contributed to their preparedness to take on the learning required to provide online instructional support, it seems that the ability to learn new skills and strategies while on the job is of greater importance than a prerequisite skill set. To facilitate continued learning, administrators may provide support to their school librarians pursuing opportunities for networking and learning by encouraging and funding attendance at professional conferences, as well as providing technologies and an environment to facilitate online networking. In most schools, where there is only one librarian, providing opportunities for professional networking with other school librarians may be vital to helping the librarian focus on new ideas to update the school's library media program. Schools are increasingly using online environments for teaching and learning by implementing new instructional models such as the flipped classroom (Fulton, 2012). To keep pace with these changes, school librarians may require training on the use new technologies and instructional strategies and on new approaches to collaborate with teachers in online spaces. Learning from peers who are further along in implementing new ideas is a powerful driver of change (Fullan, Cuttress, & Kilcher, 2005).

In addition to providing in-service training, district actions, such as providing use of key applications to support online instruction (e.g., a learning management system or cloud-based productivity applications) may provide the benefit of reducing time spent by the school librarian

learning multiple systems to support many different applications selected by individual teachers. When a school or district is considering the purchase of site licenses for applications or systems to support online instruction, however, it is advisable that pilot testing be conducted before making a decision that requires incurring a major expense. To increase effectiveness, pilot testing might consider multiple measures, including user acceptance of a technology and technical issues.

Pre-service and continuing education programs for school librarians. Given that this study and others have found that much of the librarian's growth in technology skills comes from experience and on the job learning (Mestre, 2010; Riley-Huff & Rholes, 2011), training programs for school librarians may incorporate elements in their programs to provide students with experiences to interact and collaborate in online environments and to prepare them for providing such services on the job. They may consider including components in their coursework that require online interaction between students and instructors, beyond correspondence through email, to model effective use of online environments for supporting teaching and learning. This may be accomplished through discussion boards in a learning management system or by using social media for educational purposes, such as by establishing a closed group in Facebook.

Considering survey results by Riley-Huff and Rholes (2011) on librarians and skill acquisition, along with findings from this study that much of the participant librarians' technology skills were developed through independent efforts following ideas sparked through networking, education programs for school librarians may want to infuse technology into their coursework and requirements for graduation. Students in school librarian training programs may benefit from having multiple assignments that require creation of instructional support materials

that the students publish online. To prepare school librarians for being open to feedback and attentive to audience acceptance, students in school librarian programs might learn to use online tools for gathering responses and receive feedback from peers on some of their work. Students may create online portfolios with a variety examples of the products they have created using 21st century technologies, including items such as screencast videos, research pathfinders, technical instruction guides, and Web 2.0 tools used for data collection supporting a participatory culture. New graduates from school librarian training programs who are first entering the profession may be facing a challenging job search due to tightening school budgets and reduced staffing. Preparing these graduates with evidence of their strong skills in the use of technology for instruction and collaboration may provide them with an advantage in the job market over librarians who have been in the profession for many years (see Deyrup & Delozier, 2001; Riley-Huff & Rholes, 2011).

Practicing school librarians. Networking and ongoing learning help to prepare practicing school librarians to implement new technologies and strategies to provide online instructional support for 21st century students. As a result of new ideas learned through professional networking, librarians may be the first to introduce a new application in their school. By introducing new teaching and learning approaches to faculty, school librarians have opportunities to serve as leaders and develop instructional partnerships; however, being the first to introduce use of new instructional technologies in a school may present some challenges. Before using a new application or technology for instruction, the librarian should test the new resource for compatibility with what is already in place on school computers. Many free tools are available online that support instruction and engage students, but some online resources may be blocked by the school district's web filter or may not be compatible with the software on

school computers. Some resources are available for teacher logins on school computers, but not for student logins.

With the wide variety of online tools available to support teaching and learning, it may be more productive for a school librarian to select a few tools that serve different purposes and promote the use of the selected technologies for supporting online teaching and learning activities. Focusing on a limited number of applications will enable the librarian to develop expertise with the selected tools. Additionally, using familiar applications will increase the amount of instructional time that may be spent addressing content area standards. By using online learning objects to teach basic procedures, more of the librarian's time may be spent on assisting students with personalized instruction related to inquiry-based research, which appeals to the learning styles of 21st century students.

Lecture has been found to be an ineffective instructional technique (Lambert, 2012); instead, current student populations prefer active learning experiences with the option for instruction at the point of need (Lambert, 2012; Manuel, 2002; Mestre, 2010; Rosen, 2011). Alternatively, developing online instructional support materials, especially videos, is time consuming. Thus, to reduce unnecessary work, school librarians may collaborate within their professional networks to share the instructional materials that they create, especially those that may be designed for use in more than one library. Similar to the ANTS Project described by Kazakoff-Lane (2010), professional organizations of school librarians at the district, state, or national level might develop a collection of online instructional materials to support information literacy. High school librarians may wish to begin their collection with instructional materials related to locating, evaluating, and using information, including proper formatting for academic research papers. A number of online resources may already exist such as the Purdue Owl

website for instructions on formatting research papers (Purdue University, 2014). A participant from this study found, however, that her high school students did not know how to adjust settings in their word processing software to produce the correct format; to assist her students, she created a video that might benefit students at many other schools, if they were able to find it. School librarians need not each create such materials, but they may all make such online instructional support easily accessible to their students. Once a well-organized, general collection of quality online instructional materials for school libraries is available to serve many schools, individual school librarians will have more time to focus on customized instruction for their school community and individual students.

School librarians who are focusing on using online instructional support as a means of expanding instructional partnerships within their school may use a variety of approaches to promote information about their successful collaborations. Newsletters offer opportunities to provide a tempting description of a new instructional application that may attract teachers to collaborate with the librarian who is prepared to facilitate use of the new resource. School librarians may conduct professional development sessions for teachers in their school to provide brief demonstrations of new applications and inspire teachers with ideas for incorporating their content area standards into technology-infused, inquiry-based learning. Examples of successful collaborative lessons and the related student work may be organized in an online portfolio to be used as a tool for establishing further instructional partnerships.

Teachers interested in expanding their collaborative relationship with their school librarian. Developing instructional partnerships is a high priority role for school librarians, who are eager to assist faculty and students with inquiry-based learning using 21st century technologies and strategies (AASL, 2009). Teachers may discuss their ideas for inquiry-based

assignments with their school librarian, or ask the librarian to suggest ideas for a particular unit of study or content area standard. When desired, teachers might ask the librarian if online instructional support can be provided, which may take multiple forms. School librarians may prepare online research guides with links to useful resources and tips on how to use the resources, including suggested keywords to use to search for information. In some cases, the librarian may provide the teacher with a link to an electronic reference book that may be useful for their course. Collaboration between teacher and librarian may lead to development of lessons and activities that are brief or extend over multiple sessions in the library with students completing work, both during and outside of class time. Requesting that online instructional support materials be made available for lessons presented in the library may assist students who need reinforcement or those who have been absent. Instructional support materials that students may refer to following a lesson can be customized through collaboration between the librarian and teacher, or the materials may be presented in a general format that applies to a variety of lessons.

Suggestions for Future Research

This qualitative study explored the lived experiences of high school librarians related to use of online environments to provide instructional support. The study sought to discover influences on the types of online instructional support provided by high school librarians. Inquiry focused on the participant librarians' perceptions of the benefits and challenges of implementing different types of online instructional support. Additionally, the study investigated the participants' experiences of the relationship between the online instructional support that they provide and instructional partnerships. Analysis of the results indicated some common influences on the different types of online instructional support provided by the participants, but

also leads to questions requiring further explorations. Due to the low number of names recommended in the state-wide search for high school librarians implementing online instructional support, a future study may explore: *To what extent is the wider population of school librarians providing online instructional support?* Since this study examined the topic from the perspective of the high school librarian, yet found that audience acceptance influences the online instructional support that is provided, others may add to findings from this study by considering: *What further types of online instructional support might teachers welcome from school librarians?* or *What influences teachers' and students' acceptance of an online instructional support approach?* Given this study's finding that district actions influence the online instructional support provided by high school librarians, but that there were differences between the district level access restrictions experienced by the participants who were from five different school districts, further research may explore: *How and why do restrictive protections vary between school districts?* Further research to explore these and other questions may produce additional insights that will increase opportunities for school librarians to establish strong instructional partnerships that support teaching and learning in online environments.

A survey could be conducted to explore the extent to which the wider population of school librarians is providing online instructional support. Such a study might be conducted on a small or large scale. A small study within one's own school district may explore the number of links that each school library has to online instructional materials, identify what items have been locally created to support online instruction, and which items may be shared between libraries. To extend the results of this study, a state or national level a survey could explore school librarians' perceptions of their role in providing online instructional support and request links to examples of the support they provide, if any. Since findings from this study suggest that

networking and learning are common influences on the types of online instructional support that are provided by school librarians, survey items may also gather data about respondents' opportunities for and participation in networking and learning activities.

At the local level, research might be conducted to determine teachers' interest in receiving online instructional support that may be provided by their librarian. Different types of online instructional support described in this paper may be used to establish a semi-structured interview guide to begin exploration. Interviews may be conducted with a sample of faculty members from different content areas to develop an initial needs assessment for the school or district. Using initial results for the needs assessment, a survey may be developed to implement with the full faculty to prioritize the needs and invite further items for consideration. Conducting a local study of teachers' interests and needs related to online instructional support may assist school librarians in promoting their services and identifying faculty who are open to establishing or increasing instructional partnerships.

To learn more about audience acceptance, school librarians may conduct action research to explore influences on teachers' and students' acceptance of different types of online instructional support. An additional focus may include how teachers and students use online instructional resources that are provided by the school library. Interviews and online feedback forms linked from the point-of-use of an instructional resource may be helpful for gathering data. Understanding influences on audience acceptance and how provided resources are used may assist the librarian in focusing development efforts for further online instructional support or enhancing what is already in place.

Since findings from this study indicate that online access restrictions vary between school districts, policy makers or professional organizations may seek to understand how and why

restrictive protections vary between districts, resulting in greater limitations for some students' access to online instructional resources. Research to identify variations in restrictive protections between districts may be conducted by designing a study of district chief technology officers' understanding of legal requirements influencing their district's acceptable use policies, which determine restrictions on the use of school computers. The Consortium for School Networking (2013) published a guide to help districts implement policies that support digital, participatory learning. The consortium's guide *Rethinking Acceptable Use Policies to Enable Digital Learning: A Guide for School Districts* may be helpful for developing a research instrument for the proposed study or alternative research related to influences on school districts' policies.

Multiple forces, financial, political, and societal, are leading to increased use of online environments in support of teaching and learning. To remain relevant, school librarians must establish their roles in supporting instruction in online environments; in the words of Gordon Gee, echoed by the ACRL (2009), the choice is "reinvention or extinction" (Gee, 2009, p. 18). Continued research will be needed to guide policies and develop practices that enable all school librarians to use online environments to effectively support teaching and learning.

Reflection

Conducting this qualitative research study has been a growth experience for me personally, professionally, and as a researcher. The work has been challenging and rewarding. Challenges arose from trying to schedule meetings with other busy professionals, including my participants and committee members. I understood the demanding schedules that we are all working under and appreciated the time that all those involved made available to be part of this study. I also knew that, without periodic contact, participants would be distracted by the many other things in their busy lives and easily forget about the next step of their involvement in the

study. I found that balancing patience and persistence allowed me to eventually accomplish goals. I am truly grateful to my participants, from whom I learned so much. They are an inspiring group, who are leading the way for others in the profession to serve the needs of 21st century students, form instructional partnerships with faculty, and assist their schools in meeting new education initiatives. I was pleased that multiple participants expressed that they found their involvement in the study to be a positive and professionally beneficial experience, as it inspired reflection on their practices.

Gathering extensive data through semi-structured interviews led me to strengthen multiple skills, including listening, avoiding interruption of the speaker, and use of technologies to preserve detailed data. As I personally transcribed the interviews, I learned how much is missed during conversation when we are unable to review an interaction by listening to and even viewing a recording. Not only did I clearly hear words that I had at first misunderstood during the interview, but I could also see participants' expressions that I had not noticed during the interview. As I worked on documentation and analysis of the data, I refined my organizational skills and learned to develop more through explanations of my processes, findings, and thoughts. As a result of all of the writing that I have done for this study and my doctoral course work, I feel more prepared to coach others in need of encouragement to complete their own writing. I now hope to be of greater support to students at my high school who are working on assignments or application essays and to community members who are seeking advanced degrees. I look forward to sharing what I have learned and furthering my professional growth through continued networking and learning.

In Conclusion

Individual cases examined in this study are not intended to produce generalizable knowledge; however, they provide examples documenting what is possible for high school librarians seeking to provide online instructional support. Analysis of the commonalities and differences in experiences of the five participants uncovered themes which may apply to other school librarians working under similar circumstances. Rich description was provided regarding each of the participants' experiences in order to enable other librarians to consider the possible transferability of the concepts presented to their own instructional context.

Networking assists school librarians with ideas about what technologies to use and how to use them to support instruction; however, much of the learning that the participants described required the school librarian to take the initiative to engage in an independent learning effort to prepare for implementation (see *Figure 2*). Given the clear influence that networking and learning had on the practices of the participants in this study, it appears that ongoing participation in networking and learning activities is vital to continual growth of the profession and will help school librarians to lead implementation of the vision described in the National Educational Technology Plan (NETP). The participant librarians assist their schools in using technology to provide learning resources to students anywhere and anytime and to allow for learning experiences to be personalized, as is envisioned by new educational initiatives called for by the U.S. Department of Education (2010).

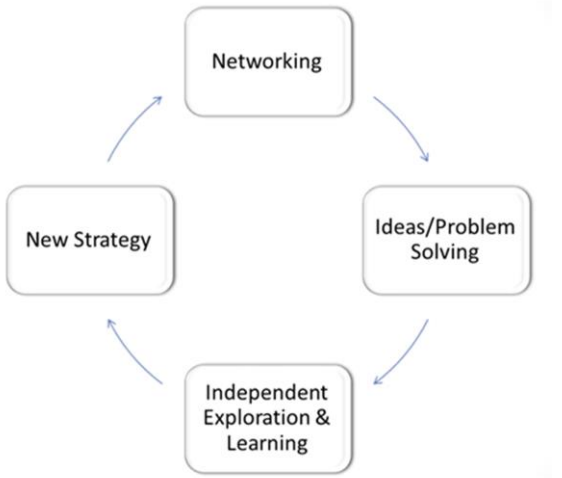

Figure 2. A cycle of networking and learning influences online instructional support.

This study found that district level actions influenced the types of online instructional support provided by the participants. Decisions at the district level affect library staffing, budgets, available software and applications, acceptable use policies, and website access, all of which influence librarians' ability to provide online instructional support. Some district level decisions helped the participants in their efforts to provide online instructional support, while other actions of the district created obstacles that participants needed to work around (see *Figure 3*). District actions that helped the participants included providing applications that were consistently used school-wide by students and teachers, ensuring compatibility of technologies, and implementing BYO technology device policies that tended to increase the number of devices available for on campus use. District actions that hindered the participants' efforts to provide online instructional support included reductions in staffing, web filters that blocked or limited access to online instructional resources, and continued use of old browsers on school computers that led to problems with some applications. Other school librarians providing online instructional support may also experience this dichotomous relationship of experiencing support in some cases and restrictions in other cases related to online access. Librarians who wish to request that their district lift some of the restrictive protections that limit their students' access to

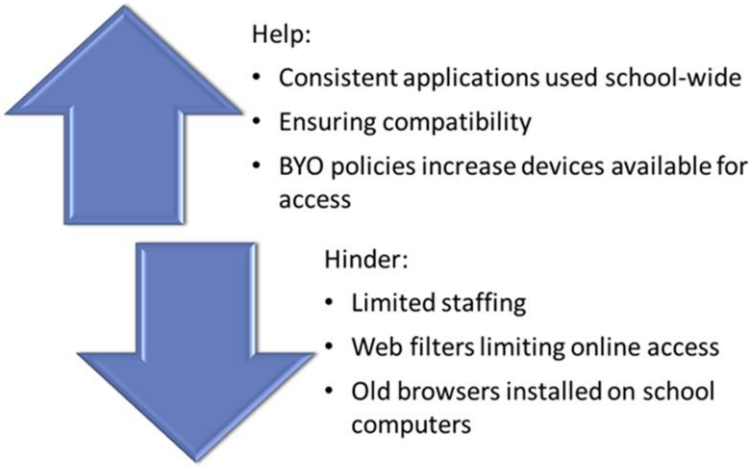

Figure 3. District actions influence online instructional support.

instructional resources may use the vision of education described in the NETP to support their requests for increased levels of access to resources that may improve student learning.

This study's findings that audience acceptance influences online instructional support relate to the known preferences of 21st century students for personalized learning (Costello et al., 2004; Sheesley, 2002). The NETP recommends that educators use technology to reach all learners and provided personalized learning experiences (Department of Education, 2010). The willingness to adapt strategies to appeal to the preferences of students and teachers enabled the participants to establish strong instructional partnerships. Participants offered some online instructional support in multiple formats to please different members of their school community, by addressing different learning styles and teacher preferences. The participants recognize the challenges of developing collaborative instructional partnerships and were flexible in the approaches that they used to satisfy the preferences of different teachers and students in their schools. Recognizing the importance of audience acceptance, participants indicated that they changed or abandoned strategies that were not well received by the teachers or students for whom they were intended. Practicing librarians may find increasing expectations in their schools' for accommodating a variety of preferences in terms of providing online instructional support through their library program to serve all learners anytime and anywhere.

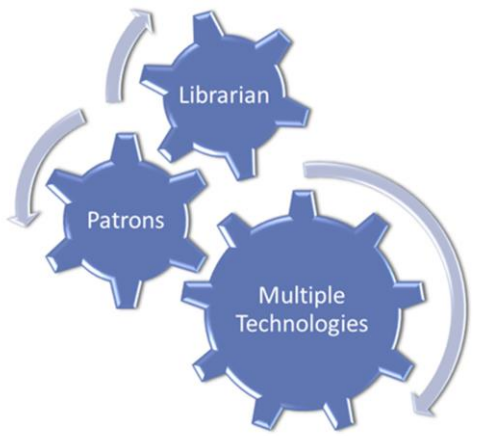

Figure 4. Ease of use of technologies is viewed from multiple perspectives; compatibility of different technologies affects ease of use.

Ease of use and compatibility of technologies were found to influence the online instructional support provided by participants in

this study. Participants viewed ease of use from multiple perspectives (see *Figure 4*). The participant librarians considered ease of use for themselves in terms of learning of a new technology and efforts for development and maintenance of learning objects. They consider ease of use for patrons in terms of accessibility and time savings through work reduction. Compatibility of technologies facilitates ease of use. Participants determine how well resources work together, considering the compatibility of devices, applications, and resources, such as eBooks. Benefits and challenges of the different types of online instructional support that the participants provide are often related to ease of use and compatibility. Participants explained some of the challenges that they had to overcome to effectively implement some of the technologies that they use for online instructional support. Initial learning curves led some participants to frequently use applications with which they were already familiar. Beyond the learning curve required for implementing a new application, the participant needed to check that it was compatible with technologies that were already in place on their school computers or that it integrated well with other applications. Working with applications that were provided by the district to all schools reduced issues related to compatibility of technologies and facilitated collaborative work, since more staff members were familiar with the district supported applications. Compatibility issues were usually related to use of online applications that the participants selected independently. Some applications were caught by the district web filters. Other applications worked well individually, but did not always produce the desired result when one item was embedded in another. Participants learned through experience and eventually found workarounds for all obstacles. Benefits from different types of online instructional support enabled participants to efficiently provide instructional resources that empower students to learn independently 24/7, as envisioned by the NETP (Department of Education, 2010).

Practicing school librarians may find that focusing efforts on a few online technologies that may be used to support instruction of multiple content-area standards may be a more effective and efficient use of time than trying to implement too many new tools, requiring more effort spent on learning about the technology than curriculum standards.

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Appendix A: Listserv Post for Identifying Participants

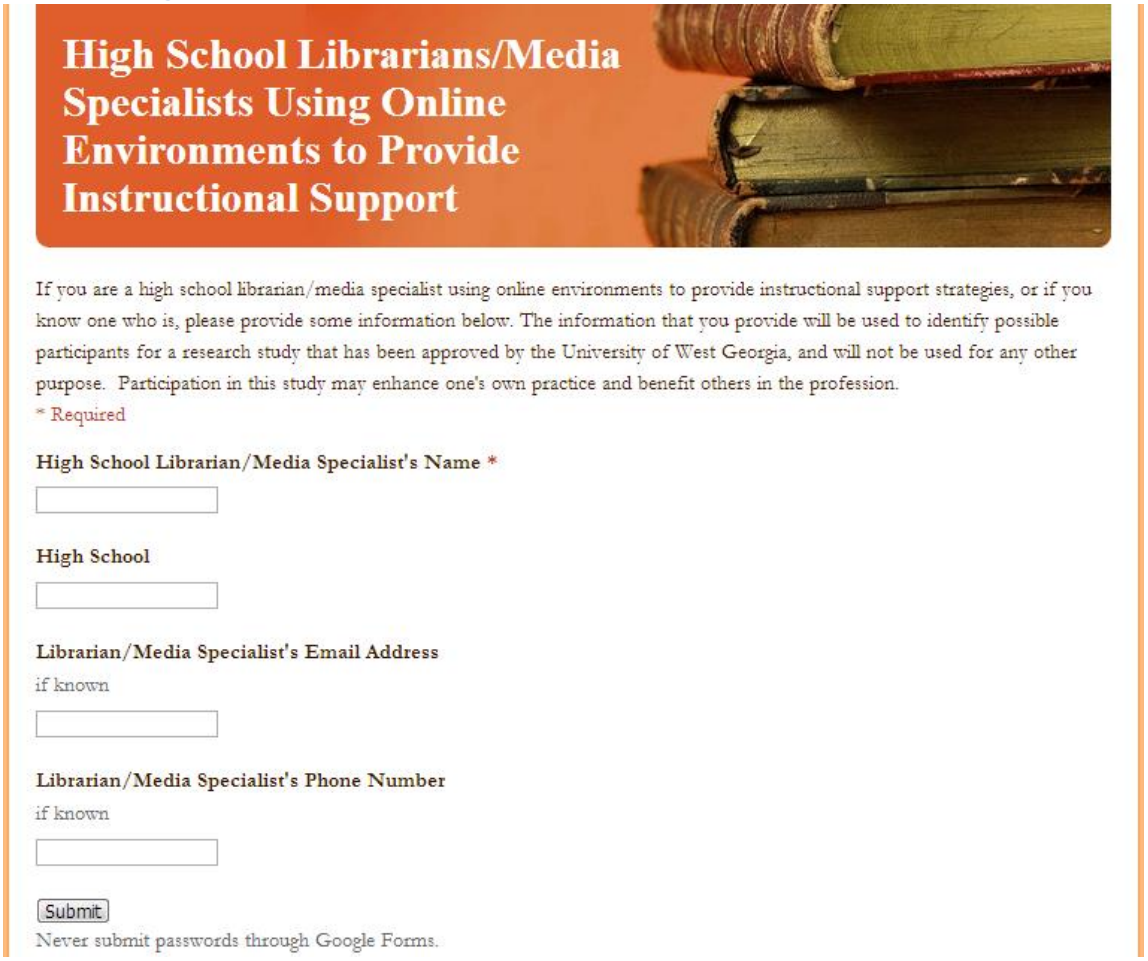
High School Librarians Using Online Environments to Provide Instructional Support

Do you know any high school librarians who are using online environments to provide instructional support? There are a variety of ways that librarians may accomplish this including:

- text/image based instructional guides
- instructional videos/screencasts
- interactive tutorials
- serving as an embedded librarian on a class discussion board
- use of any other web-based technologies for providing either direct or indirect instruction to individual students or groups (e.g., video conferencing, IM or email)

If you are a high school librarian implementing one or more of the above instructional support strategies, or if you know of a high school librarian who is, please complete the brief form linked below. The information that you provide will be used to identify possible participants for a research study which has the potential to benefit the profession.

Link to Google form (pictured below)



High School Librarians/Media Specialists Using Online Environments to Provide Instructional Support

If you are a high school librarian/media specialist using online environments to provide instructional support strategies, or if you know one who is, please provide some information below. The information that you provide will be used to identify possible participants for a research study that has been approved by the University of West Georgia, and will not be used for any other purpose. Participation in this study may enhance one's own practice and benefit others in the profession.

* Required

High School Librarian/Media Specialist's Name *

High School

Librarian/Media Specialist's Email Address

if known

Librarian/Media Specialist's Phone Number

if known

Submit

Never submit passwords through Google Forms.

Appendix B: Initial Email to Possible Participants

Hi ____,

I am a high school library media specialist and doctoral student at the University of West Georgia. I am conducting research for my dissertation and your name appears on the list of those recommended for possible participation in my study. I hope that you will share your experience with others by participating in the study.

The research study focuses on high school librarians/media specialists who are providing online instructional support for 21st century students. Whether simple or complex, general purpose or specific to a class, all types of online instructional support provided by school librarians/media specialists are relevant to this research. I commend you for the leadership that you have shown in the profession, by implementing instructional support through online environments. Your name was submitted in response to a post on a professional listserv, seeking to identify high school librarians/media specialists who may contribute beneficial information to others in the profession through this research.

This research study, which has been approved by the University of West Georgia, will seek to identify influences on the different types of online instructional support provided by high school librarians/media specialists. I hope that you will consider participating in this study to expand the knowledge base for your profession. To receive further information regarding procedures for the study, please respond using the form linked below, or by replying to this email.

Thank you for your time and consideration.

Link to Google form
(pictured on next page)

Sincerely,
Valerie Bryan, Ed. D. Candidate
University of West Georgia

High School Librarians/Media Specialists Providing Online Instructional Support

Congratulations on your leadership in taking the initiative to provide online instructional support for 21st century students, and thank you for considering participation in this study. This research, which has been approved by the University of West Georgia, will focus on different types of online instructional support, whether simple or complex, provided by high school librarians/media specialists. Your reflections and participation in this study may enhance your own practice and benefit others in your profession.

Please respond to the items below to be contacted with further information regarding procedures for the study. Your participation at any point in the study is voluntary. The information that you provide will be used to identify possible participants and will not be used for any other purpose.

Name

High School

Email Address

Phone Number

Please contact me about the possibility of participating in this study.

- Yes
- No

Continue »

Types of Online Instructional Support

Whether simple or complex, general purpose or specific to a class, all types of online instructional support provided by school librarians/media specialists are relevant to this research.

Please list the technologies that you use to provide online instructional support.

(e.g., PDF, email, Edmodo, screencasts...)

Please list some of the topics of instruction that you support using online environments.

(e.g., evaluating sources, use of...)

« Back Submit

Never submit passwords through Google Forms.

Appendix C: Participant Journal Prompts

1st Reflection (beginning of study, after receipt of participant's signed consent form)

Thank you for agreeing to participate in this research which is designed to yield information to help others in your profession. To allow me to prepare for our initial interview please begin your reflective journaling by responding to the three prompts below.

You have indicated that you use tools facilitating direct instruction and/or digital learning objects to provide online instructional support. You have noted that you have experience using the following technologies for supporting instruction:

- *List of items received from the participant's response to initial inquiry*

1. Please explain which of these technologies you find most useful or beneficial for providing online instructional support, and why. You may describe the benefits of more than one. (*If possible also provide a link to one of the instructional resources that you use, which features a technology that you find among the most useful or beneficial.*)

2. Please explain which of these technologies you find most challenging to use for providing online instructional support, and why. You may describe the challenges of more than one. (*If possible also provide a link to one of the instructional resources that you use, which features a technology that you find among the most challenging to use.*)

3. Please list any other technologies that you are interested in using but have not yet implemented:

2nd Reflection (before interview)

1. What has kept you from using (*response to item 3 above*)?

2. Please list any technologies that you have previously used, or attempted to use, to provide online instructional support for which you found the challenges of use out weight the benefits.

Thank you for the reflections and examples that you have provided thus far! I will be contacting you soon to schedule our interview.

3rd Reflection (following interview)

1. Thank you for the insightful information that you provided during our initial research interview. **If** further reflections occur to you regarding the responses that you gave, please record your thoughts here. The study seeks to explore what influences the different types of online instructional support that high school librarians provide.

2. To add greater detail to the study, please send three examples of the online instructional support that you have implemented as part of your library program. As we discussed, use the **guidelines for examples of online instructional support** (see Appendix E) as you select your examples.

Examples and any supporting descriptions may be linked or inserted below, or you may send them by email to BryanClass@gmail.com, if that is more convenient.

Example 1

Example 2

Example 3

4th Reflection (following analysis of all previous data)

1. Reflecting on the weeks which have passed since our interview, please describe any instructional partnerships that have influenced additions or updates to the online instructional support provided by your library program.

2. *customized prompts dependent on results of analysis*

Appendix D: Semi-Structured Interview Guide

Semi-Structured Interview Guide: School Librarian's providing Online Instructional Support

Tell me about the types of online instructional support you provide through your school library program. (Note lists of technologies and topics in the table below.)

Questions and prompts were customized based on responses received from previous data collection.

Cycle through for various technologies and/or topics:

1. You mentioned (technology/topic), what led you to start using/doing that?
2. What benefits are achieved by using/doing… (technology/topic)?
    a. How do you measure the benefits? (*if applicable*)
3. What challenges did you, or do you encounter using/doing… (technology/topic)?
4. How have instructional partnerships influenced your use/creation of (technology/topic)?
5. How has use of (technology/topic) influenced your instructional partnerships?

Professional Information

Years as an educator:

Years at current school:

Years as a school librarian:

Highest degree held:

Majors/Specializations for degrees:

Other info:

Technologies	Topics

Appendix E: Guidelines for Examples of Online Instructional Support

Please send **3 to 5 examples** of the online instructional support that you provide for your high school community. When selecting the examples that you will send, it will be helpful if you submit items that represent a variety of the **different technologies** that you use, **and topics** that your instructional support covers. Your examples may include **online instructional resources** that you have created, or materials created by others that you link to from your library website and which you use with your students and faculty to provide instructional support. Lists of possible types of examples and formats which you may submit appear below.

Examples of different technologies used may include:

- text/image based instructional guides
- instructional videos/screencasts
- interactive tutorials
- a class discussion board
- use of any other web-based technologies for providing either direct or indirect instruction to individual students or groups (i.e., video conferencing, email, rss)

Examples of different topics of instruction may include:

- research strategies
- citation formatting
- use of production or presentation software (i.e., *Windows Live Movie Maker*)
- evaluating online sources
- use of online applications (i.e., *Google Docs*, *VoiceThread*, or *Glogster*)
- any topics that are related to the instructional goals of your school library program, including in-service training for teachers implemented by the school librarian using an online environment

Examples may be submitted in the following formats:

- hyperlinks, along with any necessary access information
- samples of text-based, personalized online instructional support
    - forward an email
    - paste excerpts from an online discussion board into a *Word* document
- screenshots
- other representations
  Please contact me if you have any questions about a particular format.

Please feel free to provide descriptions along with your examples, although this is not necessary.