School Librarians as Technology Integration Leaders: Enablers and Barriers to Leadership Enactment

Melissa P. Johnston
SCHOOL LIBRARIANS AS TECHNOLOGY INTEGRATION LEADERS:
ENABLERS AND BARRIERS TO LEADERSHIP ENACTMENT

By:

MELISSA P. JOHNSTON

A dissertation submitted to the
School of Library & Information Studies
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Degree Awarded:
Summer Semester, 2011
The members of the committee approve the dissertation of Melissa P. Johnston defended on April 20, 2011.

________________________
Nancy Everhart
Professor Directing Dissertation

________________________
Brenda McMahon
University Representative

________________________
Melissa Gross
Committee Member

________________________
Marcia Mardis
Committee Member

Approved:

________________________
Corinne Jorgensen, Director, School of Library & Information Studies

________________________
Lawrence Dennis, Dean, College of Communication and Information

The Graduate School has verified and approved the above-named committee members.
ACKNOWLEDGEMENTS

There are many I need to acknowledge who have each in their own way contributed to making this dissertation possible. I am very lucky to have such a strong support system at Florida State University’s School of Library and Information Studies and at home that have all contributed to supporting me through this endeavor.

I am truly grateful to my mentor and committee chair, Dr. Nancy Everhart, for the opportunity to embark on this great adventure. Thank you for your faith in me, for pushing me to strive higher, for your continued guidance, and your constant support! This dissertation would not have been possible without you!

The wonderful members of my committee have served as guides, mentors, role models, and friends in this process. I owe many thanks to Dr. Marcia Mardis, for serving as a role model, for making me question and think beyond the obvious, and always having just the Creswell reference I needed! I am indebted to Dr. Melissa Gross for opening up the world of research methods to me, sharing in my enthusiasm, and always making time to answer my questions. Finally, I owe sincere thanks to Dr. Brenda McMahon, who expanded my thoughts on education leadership theory and made me extend my limited view to think about the many facets and underlying issues of educational leadership.

There are several who have contributed to this process that I want to acknowledge and express my thanks. I am thankful to Dr. Bowie Kotrla for her statistical help, SPSS and Excel guidance, and for always making time to listen and help me. I am in awe of her statistical knowledge and know I still have much to learn. My sincere gratitude goes to Dr. Chuck McClure for keeping me on the right track, making me question policy and recognize its importance as a driving force behind everything, and for all his wonderful real-world advice. Thanks go to my friends Nicole and Lauren; we have been through it all together and even mean girls need friends sometimes! Thank you both for all your support, keeping me informed, and being the best proofreaders I know. I look forward to our future collaborations!

I also want to acknowledge all my family and friends, you all know who you are, who understood when I missed events, listened to me, and worried about me, but yet always had words of encouragement and praise that kept me going. I am indebted to my former principal, Beth Kieffer, who exemplified distributed leadership in practice and truly enabled me as a leader. Finally, I have to thank Larry, who without his never failing support none of this would have been possible. Thank you so much for always having confidence in me and for the sacrifices you made, including giving up new tech gadgets for just a little while – I know it was the ultimate sacrifice for you!
This dissertation is dedicated to all the amazingly strong women leaders in my life that have inspired me and served as great mentors. Especially my grandmother who always told me that I could do anything and be anything I set my mind to, but always knew I would be a librarian.
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ABSTRACT

The highly technological environment of 21st century schools has significantly redefined the role of school librarians by presenting the opportunity to assume leadership through technology integration. School librarians are continually directed to evolve as leaders in order to address the needs of today’s learners and ensure that they are equipped with the knowledge and skills they need to succeed in the 21st century. Despite the abundance of literature that has suggested the need for and the importance of school librarians to be a proactive leaders in technology integration, this role is one that has been ignored in the research arena and left undefined for school administrators, teachers, and the school librarians themselves, leading to uncertainty concerning how school librarians enact this role in practice.

The purpose of this study is to identify the enablers and barriers that accomplished practicing school librarians, or those who are National Board Certified, experience in relation to crafting a leadership role in technology integration. Based on a distributed leadership theoretical foundation that necessitates understanding how aspects of a situation can enable or constrain teachers in assuming a leadership role (Spillane, 2006), this study is guided by the proposition that there are factors that can enable or constrain leadership enactment. Findings indicate that the proposition is supported in a school library context in that the identification of these enablers and barriers does contribute to the understanding and definition of this leadership role for school librarians.

Existing unused data from two open-ended questions found at the end of a nation-wide survey of National Board Certified school librarians conducted by the PALM Center at Florida State was examined utilizing secondary data analysis. Since this study serves as the initial investigation of the enablers and barriers the use of open-ended questions allowed participants to identify enablers and barriers with out imposing any preconceived categories to limit their responses. The responses were analyzed to identify the enablers and barriers, as well as relationships to the respondent’s level of involvement in technology integration leadership. Participant responses were coded and categorized based on a teacher leadership framework,
Zinn’s *Four Domain of Supports and Barriers to Teacher Leadership* (Zinn, 1997).

Findings indicate that the most frequently occurring enablers facilitating accomplished school librarians’ technology integration leadership are a supportive principal, opportunities for leadership role and responsibilities, the desire to make a difference for students and teachers, professional development opportunities, and a sense of obligation to get involved. While the barriers identified most frequently as constraining technology integration leadership are time, exclusion from a leadership role and responsibilities, lack of funding, and inadequate staffing.

Enablers unique to school librarians discovered include: support from professional organizations, support from district library administrators, serving in a dual role as school librarian and technology specialist, and technology expertise. Also resources such as a flexible schedule, a full-time clerk, funding for technology and digital collections, up to date functioning technology equipment, and technical support were found to enable school librarians in technology integration leadership. While barriers identified by school librarians involve: competitive relationships with instructional technologists, lack of support at the district level from a library administrator, and lack of technology expertise. Also resources such as a fixed schedule, inadequate staffing, lack of funding for technology and digital collections, out of date technology equipment, and lack of technical support were found as barriers.

This study addresses a gap in the existing school librarian research by examining the leadership roles and the leadership practices of the school librarian in technology integration within a teacher leader framework and the resulting adapted framework, *Johnston’s Domains of Enablers and Barriers to School Librarian Technology Leadership*, is a contribution to the school librarianship literature as a framework for future research examining the leadership roles of the school librarian. The identification of the enablers and barriers that accomplished school librarians experience enacting a leadership role is valuable information for school library preparation professionals in order to better prepare future school librarians to assume an active leadership role, contributes to the understanding of this role, and serves as a foundation on which to build research-based strategies to support practicing school librarians seeking to overcome barriers, and conversely, distinguishing those factors that enable this vital role to be achieved in practice.
CHAPTER 1
INTRODUCTION AND STATEMENT OF THE PROBLEM

The changing information landscape and highly technological environment of 21st century schools has significantly redefined the role of school librarians. Technology has become a crucial element of teaching and learning and school librarians, as information specialists and educators, have the potential to lead through technology integration. Technology is transforming not only access to information, but also the skills needed to interact with and utilize it as well. School librarians have a vital role to play in developing students’ 21st century skills that will enable them to use technology as a tool for learning and ensure they are prepared to succeed and participate in a digital society.

As technology permeates teaching and learning, school librarians are continually directed to assume a leadership role in integrating technology in schools from professional standards and guidelines, as well as from theorists and researchers in this area (e.g., Everhart & Dresang, 2006; Hanson-Baldauf & Hughes-Hassell, 2009; McCracken, 2001; Shannon, 2002). School librarians are in a unique position, due to knowledge of pedagogical principles and curriculum, paired with technology and information expertise, to serve as a leader and valuable asset through making meaningful contributions toward the integration of technology. Despite the demands and opportunities for school librarians to accept critical technology leadership responsibilities, many school librarians experience difficulty enacting this role in practice due to the confusion and ambiguity surrounding school librarians’ role in technology integration.

Advances in online and digital resources have resulted in the evolution of the concept of information literacy to include the “new literacies” that go beyond simply knowing how to use technology tools to also include understanding how to apply them in learning. This shift has moved information literacy to the forefront in education, and presents the opportunity for school librarians to enact a leadership role within their schools through technology integration (Asselin, 2005; Hanson-Baldauf & Hughes-Hassell, 2009; Hughes-Hassell & Hanson-Baldauf, 2008). Yet,
Despite the demands for school librarians to accept these technology leadership responsibilities that have become mandatory in this age of information and digital resources, school librarians experience difficulty enacting this leadership role (Asselin, 2005; McCracken, 2001; Shannon, 2002, 2008).

This evolution of the role of school librarians is present in the standards and guidelines that define and guide practice for school librarians. The guidelines from the American Association of School Librarians (AASL) (2009), the National Council of Accreditation of Teacher Education (NCATE) (American Association of School Librarians & National Council for Accreditation of Teacher Education, 2003), and the National Board for Professional Teaching Standards (NBPTS) (2010), all mention the role of leadership, especially in the area of technology integration, when defining the responsibilities of school librarians. Most recently in 2009, American Association of School Librarians released new guidelines for school library programs that reiterate the belief that school librarians should act as leaders within their school communities to ensure that learners are equipped with the skills and knowledge they need to succeed in the technological society of the 21st century. Yet, the broad and general nature of these standards and guidelines offers little practical guidance for practicing school librarians, who need more clarification and role definition, along with explicit techniques or strategies for enacting the leadership role.

The U.S. Department of Education National Center for Education Statistics (NCES) defines technology integration as:

the incorporation of technology resources and technology-based practices into the daily routines, work, and management of schools. Technology resources are computers and specialized software, network-based communication systems, and other equipment and infrastructure. Practices include collaborative work and communication, Internet-based research, remote access to instrumentation, network-based transmission and retrieval of data, and other methods. This definition is not in itself sufficient to describe successful integration: it is important that integration be routine, seamless, and both efficient and effective in supporting school goals and purposes. (U.S. Department of Education, National Center for Education Statistics (NCES), 2002, para. 3)

The key to technology integration in education is that technology is used to enhance the learning experience and develop learners’ thinking skills, not as an add-on or afterthought (Hew & Brush, 2007). Yet, teachers, even in schools and districts committed to technology integration, still
struggle with effectively integrating technology and teaching practice remains largely unchanged (Consortium for School Networking, 2004; Cuban, Kirkpatrick, & Peck, 2001). School librarians are in positions to lead through modeling and partnering with teachers to guide instructional design and offer expertise on the integration of emergent technologies to create engaging and relevant learning experiences for students (AASL, 2009; Asselin, 2005). Yet, despite the valuable contributions school librarians can make in implementing technology integration initiatives, they remain untapped resources, due to the indefinite nature of this role.

Regardless of the abundance of literature suggesting the need for and the importance of school librarians to be proactive leaders in schools, this role is one that has been ignored in the research arena and left as undefined for school administrators, teachers, and the school librarians themselves. This is extremely apparent in the research, which ignores defining and explaining the technology integration leadership role and its enactment for practicing school librarians, resulting in a lack of understanding and uncertainty for practicing school librarians in how to enact this role (Asselin, 2005; Callison & Tilley, 2001; Everhart & Dresang, 2006; Everhart, Mardis, & Johnston, 2010; Shannon, 2002, 2008; Vansickle, 2000).

**Statement of the Problem**

Although there are demands and opportunities for school librarians to accept this critical technology integration leadership role, there is a lack of research and theoretical foundation to guide the enactment of this role. The ambiguity surrounding the technology integration leadership role has led to school librarians who are uncertain how to and ill-prepared to enact this vital role. In order to encourage and support school librarians in assuming a leadership role in technology integration, research is needed to learn more about the technology integration leadership practices of school librarians who are currently successfully enacting this role, more specifically, the study of enablers and barriers to successful technology integration will provide a concrete roadmap for the profession.

**Research Purpose and Research Questions**

The overall purpose of this research is to investigate the enablers and barriers that
accomplished practicing school librarians, defined in this research as those who are National Board Certified, experience in relation to enacting a leadership role in technology integration. There are school librarians who perform this role and are quite successful, yet there are many school librarians who do not. This research investigates the practices of those who have met the rigorous standards of National Board for Professional Teaching Standards certification, those school librarians who have demonstrated “essential knowledge, skills, dispositions, and commitments that allow them to practice at a high level” (National Board for Professional Teaching Standards, 2001, p. v) and are assumed to be experts in their field, including technology integration.

This research is based on an educational leadership theoretical foundation, distributed leadership theory, which proposes that there are aspects of a situation that can enable or constrain teachers in assuming a leadership role. Whether or not this proposition is supported in a school library context has not been determined and is an over-arching purpose to this research. Finally, this study seeks to address the dearth of empirical research on the leadership role of school librarians especially in the area of technology integration in order to contribute to the larger knowledge base within the school librarianship literature, as well as the educational leadership literature.

The specific purpose of this research is to identify what is enabling those most accomplished school librarians, to thrive in this role, as well as the barriers they face. The National Board for Professional Teaching Standards (2010) defines “accomplished library media specialists [as] visionary leaders in their schools and in the profession” (p. 14). An additional purpose is to categorize and examine the relationships between the identified enablers and barriers and level of involvement in technology leadership by accomplished school librarians. In order to investigate these enablers and barriers, this research addresses the following research questions:

RQ1: What enablers or supporting factors do accomplished school librarians perceive in enacting the role of leader in technology integration?

RQ2: What barriers or constraining factors do accomplished school librarians perceive to enacting the role of leader in technology integration?
RQ3: What is the association between accomplished school librarians involved at a high level in technology integration leadership and the identified enablers in comparison to the other participants?

RQ4: What is the association between accomplished school librarians involved at a low level in technology integration leadership and the identified barriers in comparison to the other participants?

The researcher utilized pre-existing survey data that addresses the enablers and barriers accomplished school librarians perceive when enacting technology integration leadership practices. Technology integration leadership practices, for the purposes of this research, are identified as those found in the School Library Media Specialist Technology Integration Survey (PALM, 2009) (Appendix A).

**Significance of the Research**

The changing information landscape of the 21st century and advancing technologies necessitate that school librarians evolve as leaders in order to address the needs of a new generation of learners. The need to ensure that students are equipped with the skills and knowledge they need to succeed in the technological society of the 21st century presents an opportunity for school librarians to become vital pieces of the teaching and learning process. This investigation contributes to further definition of school librarians’ role in technology integration and supports practicing school librarians in their enactment efforts.

While there is limited research on school librarians’ role in technology integration and separate research on the leadership role, there is little empirical research that combines the two areas to examine school librarians as technology integration leaders. The research-based literature from the two peer-reviewed journals of school librarianship offer fewer than 10 articles that specifically address the topic of leadership over the past 15 years. Therefore, this research addresses this void and contributes needed information about the technology integration leadership role and practices of school librarians. The identification of the factors that support or impede enactment of a leadership role in technology integration informs practice and furthers the understanding needed to enact this role successfully. This research provides support for school
librarians in searching out those factors that enable enactment and in identifying the barriers that must be overcome in order to achieve this vital role in practice. Additionally, this research benefits library education preparation programs in preparing future school librarians for a leadership role in the integration of technology.

A compilation of recent state studies (Scholastic, 2008), makes the connection to an understanding of the role of the school librarian by the principals and teachers and successful school library programs. Unfortunately research has shown that an extremely limited number of principals even recognize that school librarians should take on a leadership role (Hartzell, 2002; Oberg, Hay, & Henri, 2000; Smith, 2006). This study, based on educational leadership theory, illuminates the role of school librarians in technology integration in an educational context and contributes to a better understanding of the technology integration leadership role of school librarians for school administrators and teachers.

This research contributes to the relevant literature of school librarianship, instructional technology, and educational leadership, more specifically the ever-growing body of distributed leadership research. Educational leadership perspectives are shifting to a distributed leadership model that includes and values teacher leadership (Lieberman & Miller, 2005). There is an emerging body of literature that is investigating this theory as it applies to the teacher leader, but there is more research needed to investigate distributed leadership and its implementation. This dissertation is guided by a distributed leadership theoretical foundation, but applied in the context of the school librarian as a teacher leader. Furthermore, Zinn’s (1997) teacher leadership conceptual framework of enablers and barriers is applied in the context of the school librarian as a teacher leader in technology integration. Currently there is very little research that examines the leadership role of school librarians and currently no research that examines school librarians’ leadership practices within a teacher leader framework. School librarians walk within two worlds, that of librarianship and that of education, this research informs the relevant literature in both areas.
Assumptions

1. This research assumes that the leadership practices of school librarians are essentially those of teacher leaders and hence the application of an educational leadership theory and teacher leadership conceptual framework.

2. National Board Certified school librarians have documented accomplishment in meeting the rigorous standards of the National Board for Professional Teaching Standards, especially Standard V: Leading Innovation Through the Library Media Program. This is a voluntary process; therefore this research assumes that these school librarian participants want to be leaders.

3. The participants in this research have demonstrated their technology integration abilities along with other areas of expertise through successfully meeting the rigorous standards established and ratified by library and teaching professionals; therefore these educators are assumed to be experts in their respective fields, including technology and leadership.

4. This research assumes that the study participants answered the survey questions truthfully.

Overview of Theory

Heck and Hallinger (1999) identify many areas of need or “blank spots” in educational leadership research. One prominent area relates to describing how principals, along with other school leaders, work together to “create and sustain the in-school factors that foster successful schooling” (p. 141). Spillane, Halverson, and Diamond (2001) propose their distributed leadership perspective as a means of in-depth analysis of the practice of school leaders and believe that there is a need to “observe from within a framework if we are to understand the internal dynamics of leadership practice” (p. 4). This theory, the concepts and propositions it contains, and the research evolving from it present a means for exploring and analyzing the leadership activities, actions, and role of school librarians.

The ever-evolving complex technological environment of 21st century schools and the new leadership capacities that accompany it have signified a paradigm shift in leadership (Anderson & Dexter, 2005; Kowch, 2009). The most contemporary interpretation of distributed leadership theory from Spillane (2006) defines leadership as “the activities tied to the core work
of the organization that are designated by organizational members to influence the motivation, knowledge, affect, or practices of other organizational members as intended to influence their motivation” (Spillane, 2006, p.11) and leadership practice as “the activities engaged in by leaders, in interaction with others in particular context around specific tasks” (p. 5). Spillane, Halverson, and Diamond (2004) base their interpretation of distributed leadership on two assumptions: school leadership is best understood as “practice distributed over leaders, followers and their situation and incorporates the activities of multiple groups of individuals” and the leadership function is “stretched over the work of a number of individuals and the task is accomplished through the interaction of multiple leaders” (p. 20). This perspective asserts that leadership is about more than just people in formal leadership positions and attempts to acknowledge all, formal or informal, who participate in leadership practice (Spillane, 2006).

In a distributed approach, Spillane (2006) asserts that it is necessary to start by examining leadership practices and then to explore interactions among leaders, followers and their situation. A fundamental proposition of distributed leadership is that “the situation is not simply a context within which school leaders practice; it is a defining element of practice” (Spillane, 2006, p. 22). Aspects of the situation define leadership practice and therefore it is necessary to understand how these aspects enable and constrain leadership practice.

Spillane proposes his descriptive distributed leadership theory as an analytical framework and as a diagnostic tool to help practitioners understand school leadership practice (Harris & Spillane, 2008). Distributed leadership shifts the focus of analysis from leaders to leadership activity (Gronn, 2000; Spillane et al., 2001, 2004). This lens expands the study of leadership to elements beyond the characteristics and beliefs of individual leaders to include the leadership practices of multiple individuals, both formal leaders and informal leaders (Spillane, 2006). In the case of this research, these informal leaders are teacher leaders. Teacher leaders are those teachers that assume informal and formal leadership responsibilities outside the classroom, create a participatory environment where all learn from each other, and engage with others in working together for student learning (Barth, 2001; Elmore, 2000; Harris & Muijs, 2005; Katzenmeyer & Moller, 2009; Little, 2003; Spillane et al., 2002; York-Barr & Duke, 2004). Teacher leadership goes beyond the scope of the teacher leading students in a classroom; teachers are empowered within a culture of learning, taking authority from pedagogical expertise, and focusing on improving instruction and student learning (Murphy, 2005; Smylie, Conley, & Marks, 2002;
York-Barr & Duke, 2004). Distributed leadership provides a solid theoretical foundation for research on leadership practices and can illuminate the multiple dimensions of leadership that occur in a school. The concepts and propositions in Spillane’s interpretation of distributed leadership theory serve as the impetus for this research, form the theoretical basis for this research, and guides this study from research question development through data analysis.

**Overview of Conceptual Framework**

There is a dearth of research examining school librarians’ role in technology integration and leadership. Therefore, in order to investigate the enablers and barriers to enacting the technology leadership role it is necessary to examine research from the field of education, specifically in the area of teacher leadership. This research is most relevant to the topic of school librarians as technology leaders due the informal nature of this leadership role as compared to the formal leadership role of the school administrator.

Teacher leader research provides a wealth of investigations that seek to identify what enables some and deters others from enacting a leadership role in schools, but much of it is conducted in very specific situations, such as small case studies, and in a variety of school contexts (Birky, Shelton, & Headley, 2006; Buckner & McDowelle, 2000; Harris, 2004; Katzenmeyer & Moller, 2009; York-Barr & Duke, 2004). Zinn’s (1997) research on the study of enablers and barriers to assuming leadership responsibilities resulted in a classification system that categorizes both enablers and barriers into four domains. Zinn (1997) argues that there are four domains within which these enablers and barriers are clustered: “(1) people and interpersonal relationships, (2) institutional structures, (3) personal considerations and commitments, and (4) intellectual and psychosocial characteristics” (p. 243) and each domain contains indicators of enablers and barriers. Zinn (1997) also finds that factors that act to enable leadership in one situation can conversely act as a barrier in another.

Zinn’s framework, uniquely developed through research investigations of teacher leaders, also proposes that teacher leadership is a practical endeavor and therefore any descriptions of enablers and barriers must be grounded in everyday practice. In order to investigate the barriers and enablers to the leadership role for school librarians, it is necessary to review and extrapolate from education research, specifically in the area of teacher leadership since no research exists in
this area for school librarians. This research, as that of Zinn (1997), focuses on the everyday practices of technology integration leadership by school librarians. This framework is most relevant and applicable to this study of school librarians as technology integration leaders; due to the informal nature of the role and the expectation for school librarians to essentially act as teacher leaders in the area of technology integration, it is assumed that the factors that can both enable and constrain teacher leadership are the same factors that impact school librarians in enacting a leadership role in technology integration. Therefore, this conceptual framework was paired with the theoretical foundation for the purposes of this research.

**Overview of Method**

The research design consists of how the researcher collects, analyzes, and interprets the data in his or her study (Creswell, 2009). The collection of new data is not always a necessary step in the research process. It is sometime possible to examine a new research question using previously collected data, or through secondary analysis. This research utilizes secondary analysis of survey data as the method for investigating the leadership role of school librarians in technology integration.

Original survey research rarely uses all of the data collected and this unused data can provide answers or different perspectives to other questions or issues (Clark & Maynard, 1998). It is considered prudent practice to examine what research others have previously conducted in the specified area of interest. This should include related and supporting literature, but also consider previously collected data on the topic to be investigated (Clark & Maynard, 1998; Dale, Arber, & Procter, 1988; Doolan & Froelicher, 2009). As a result of an in-depth review of the literature and previous research, it was found that research by the Partnerships Advancing Library Media (PALM) Center at The Florida State University (FSU) examining the technology leadership practices of school librarians could provide data to adequately address the research questions.

In order to ensure congruency, appropriateness, and quality of the primary study and the resulting dataset, the researcher employed Stewart and Kamins’ (1993) evaluative process before finalizing data selection. There are unique methodological considerations when utilizing existing
Secondary analysis is an empirical exercise carried out on data that has already been gathered or compiled in some way, but it is a flexible method that can be utilized in several ways. The secondary analyst researcher makes interpretations, draws conclusions, or gains knowledge different from those in the original inquiry (Hakim, 1982). In this research the researcher utilized pre-existing survey data as a way to find meaningful answers to different research questions than were asked in the original research (Doolan & Froelicher, 2009; Jacobson, Hamilton, & Galloway, 1989; Magee, Lee, Giuliano, & Munro, 2006).

**Summary**

This chapter introduced this dissertation to investigate school librarians as leaders in technology integration and the factors that enable or impede the enactment of this role for practicing school librarians. The roles of school librarians are ever changing and the role of leader in technology integration has emerged as a necessary role in today’s technologically rich K-12 environment. Yet, this role and the ambiguity of how to enact it are issues for practicing school librarians. To address this problem, this study identifies and explicates the enabling and impeding factors most frequently experienced by accomplished school librarians enacting this role in order to guide school librarians in how to overcome these barriers and recognize those factors that can enable them to successfully enact this role in their practice and also better prepare future school librarians for a leadership role in technology integration. This chapter also included an overview of the distributed leadership theoretical foundation that guides this research and the conceptual framework that was used for the classification of the enabling and impeding factors, both of which are taken from the field of education. Finally, this chapter included an overview of the secondary survey analysis method that is utilized in this study.
CHAPTER 2
LITERATURE REVIEW

There is a dearth of relevant research-based literature that investigates school librarians and technology integration leadership. Yet, there is a wealth of research in the areas of educational technology integration, educational technology leadership, and teacher leadership that can be drawn from and applied to the leadership role of school librarians. Due to the ever-changing nature of educational technology, for relevancy and currency this review is limited to the past 10 years of research in this area. The terminology of this dissertation utilizes the most recent American Association of School Librarians adoption of the title “school librarian” (AASL, 2010). Yet, at times this body of literature includes the terms “school library media specialist,” as that was the official title prior to 2009, and the internationally accepted title of “teacher librarian,” but for the purposes of this study, these terms are considered synonymous with school librarian. This review of the relevant literature is divided into three main areas by topic and further divided into sub-topics as related to this research:

- **School librarians as leaders in technology integration**: The first section examines the limited literature and research that investigates school librarians as leaders in technology integration, including the evolution of this role, the increasing leadership directive, and the emerging necessity of this role.

- **Distributed leadership theory**: This second section of this review focuses on distributed leadership theory, presenting an overview of the theory, a detailed discussion of Spillane’s distributed leadership theory, and concludes with an examination of the relevant empirical research.

- **Enablers and barriers to teacher leadership**: This section briefly examines the connection between distributed leadership and teacher leadership, extrapolates from education research to examine factors that enable and deter teacher leaders in enacting a leadership role, and explains the conceptual framework chosen for analysis.
The demand for school librarians to embrace the leadership role in technology integration is becoming more pronounced as technology permeates the teaching and learning environment at an exponential rate. The first section of this review examines this directive and its evolution through examining the various international and national standards and guidelines that direct school librarians to be technology integration leaders within their schools. Justification for school librarians enacting a leadership role in technology integration was investigated through a review of the limited research in this area, including the impact on students and the necessity of the expectations of the new literacies. However, since there is a lack of research-based literature in this area, literature from the field of education, including educational technology, technology leadership, and educational leadership are drawn upon and applied to school librarians.

The field of educational leadership contributes a wealth of theories and models for the leadership role in schools. While there has been no specific theory developed for the school librarian as an educational leader, the theory of distributed leadership is applicable to this role. This dissertation is guided by the concept that school librarians are serving in a teacher leader capacity within schools. Distributed leadership theory proposes that there can be many leaders within a school based on expertise; this research assumes school librarians as leaders in technology integration due to their unique expertise. Therefore this section examines the various theories and models of distributed leadership and the theoretical basis of distributed leadership. A detailed examination of the most contemporary model of this theory, Spillane’s perspective of distributed leadership, is presented and followed by a review of relevant research through an examination of the patterns of distribution and the limitations of this theory.

The third section of this literature review focuses on a proposition taken from Spillane’s distributed leadership theory - that there are certain factors and situations that can enable or deter teachers from enacting a leadership role - which provides guidance for this dissertation. School librarians are teachers, and it is this teaching role that places them in a teacher leader role within the school building. This research therefore assumes that school librarians’ leadership practices are essentially those of teacher leaders. The literature from teacher leadership provides a connection to illustrate how distributed leadership practice can operate in a school and a brief review of related literature illustrates this connection. In recent literature, teacher leadership has been conceptualized as a distributed form of leadership that involves interactions among formal and informal leaders within a particular situation over time to influence change. This
dissertation is guided by the concept that school librarians operate as teacher leaders within schools and that there are certain factors that do enable assuming a technology integration leadership role, while other factors constrain assuming this role. Zinn’s *Four Domains of Supports and Barriers to Teacher Leadership* (1997) provides a conceptual framework, which serves to classify and examine enablers and barriers to leadership by teacher leaders; this is explained by supporting research from the field of education. The review concludes with a summary of the key themes from the research and the implications for this research.

This review of the relevant literature serves to document not only the lack of research in this area, but also to justify the purpose and the importance of studying the leadership role of school librarians in technology integration. This review of current literature and research from the fields of school librarianship and education gives context for this study and the findings from this review guide this research.

**School Librarians: Leaders in Technology Integration**

School librarians are expected to accept and fulfill numerous roles in their daily practice; one of these roles is that of a leader, especially in the area of technology integration. The ever-changing and advancing environment of 21st century learning has necessitated this evolution of school librarians and presents opportunities for leadership. Despite the demands for school librarians to accept the technology leadership role that has become mandatory in this age of information and digital resources, the literature in this area is limited and the majority is practitioner-based, lacking empirical research investigations.

This section includes an overview of the leadership role of school librarians in technology integration by examining the demands from the literature and professional guidelines that continually direct school librarians to assume a leadership role in their schools. It is of value to understand why the role of leader in technology integration has emerged, where it comes from, and its evolution, in order to understand the relevance of this dissertation. Despite the demands for school librarians to accept the technology leadership role that has become mandatory in this age of information and digital resources, there is an extreme lack of research-based strategies for the enactment of this role for school librarians.
This section also examines the literature and the research that documents the impact of this role for students and teaching colleagues, including instruction, collaboration, and professional development, all of which are facets of the technology leadership role. Finally, this section concludes with an examination of school librarians as leaders in technology integration for teachers and for 21st century learners.

The Leadership Directive

Defining the various roles of school librarians has been the subject of much debate and research throughout the past decades. Rapid advances in technology throughout the 1990s led to more confusion on the ambiguous roles of school librarians (McCracken, 2001). In 1998, an updated version of *Information Power: Building Partnerships for Learning* (AASL & AECT) defined the school librarian as an “advocate for integrating information literacy skills in instruction of the curricular areas” and that “as a leader the school library media specialist promotes the use of technology” (p. 54). Yet, the mention of technology in these standards is still quite limited to technologies as sources of information, and there is no mention of how to utilize technology in instruction or in meeting the needs of students. While these guidelines were generally well received when written, there was still much disparity in the implementation and enactment of this role in practice.

The American Association of School Librarians Strategic Plan (2005) defines the primary goal as: “to achieve universal recognition of school library media specialists as indispensable educational leaders.” This goal, paired with concerns about the relevance of the 1998 standards in a rapidly changing world of technology and information, led the American Association of School Librarians to publish a new set of student learning standards. The *Standards for 21st Century Learners* are meant to serve not only as benchmarks for learning, but also as a framework for designing information literacy instruction (AASL, 2007). Todd (2008) notes that these standards provide a stronger focus on the role of school librarians in the formative education process, indicating a fundamental shift in instruction, moving beyond helping students find information, to helping them engage with it in critical ways to build a deep level of knowledge. *Empowering Learners: Guidelines for School Library Media Programs* (AASL, 2009) soon followed to provide direction in creating school library programs for the 21st century and reiterate the emphasis on leadership. The “school library media program is built by
professionals who model leadership and best practices for the community to ensure that learners are equipped with the skills and knowledge they need to succeed in the technological society of the 21st century” (p. 45). School librarians are charged, “to play a leading role in weaving such skills throughout the curriculum so that all members of the school community are effective users of ideas and information” (AASL, 2009, p. 46). It is this “weaving” or the integration of technology into the curricular areas where school librarians, based on their knowledge of pedagogical principles and school curriculum, technology expertise, and collaborative experience, can serve as leaders and valuable assets to their schools (Asselin, 2005; Neuman, 2004; Vansickle, 2000). These standards further assert that with the changing information landscape of the 21st century that includes interactive technologies and a participatory culture, school librarians must evolve as leaders to address the needs of this new generation of learners. Providing leadership in technology integration for the purposes of learning is paramount and clearly evident in these guidelines and places the responsibility for leading this movement - to prepare learners for participating and succeeding in future global society - with school librarians. Leadership plays a prominent role in these new guidelines and is representative of a larger directive for the school librarian profession in general to accept, embrace, and enact a leadership role, especially in the area of technology integration.

The National Council for the Accreditation of Teacher Education also frequently mentions leadership and technology when describing the standards for the preparation of future school librarians. These standards seek to “to prepare candidates for service and leadership as school library media specialists” (AASL & NCATE, 2003, p. 3). These standards were last revised in 2001 and do not reflect the currency of the American Association of School Librarians (2009) and National Board for Professional Teaching Standards (2010) standards, yet still there is evidence for the demand that school librarians “provide leadership, instruction and collaboration in the use of instructional and informational technology” (p. 6). It is apparent that school librarians must move beyond the role of provider of technological resources to leading the utilization or the integration of these resources for learning. The National Council of Accreditation of Teacher Education (AASL & NCATE, 2003) standards also assert, “the effective school librarian will exhibit leadership skills among colleagues, leading from the middle”, as they position themselves to be recognized as teacher leaders (p. 33). In order to define the technology role, the National Council of Accreditation of Teacher Education standards
go further in an attempt to distinguish it from the role of the instructional technologist stating that “school library media specialists do collaborate with teachers to help them incorporate technology into the teaching and learning process and they do possess instructional design skills” (p. 33) along a unique expertise in relation to information literacy and locating information resources.

The National Board for Professional Teaching Standards recently updated their standards (2010) and defines “accomplished library media specialists [as] visionary leaders in their schools and in the profession” (p. 14). The National Board of Professional Teaching Standards school media specialist standards (2010) define leadership as:

- inspiring others to work together toward a common goal, which is integral to developing successful library media programs. Leadership entails the willingness to serve as teachers and learners who listen to and act upon ideas from students, library media colleagues, subject-area teachers, and administrators. Visionary leadership requires sustained professional commitment, innovation, and thorough knowledge of opportunities and challenges facing the library media profession. Risk taking in its many forms is central to effective leadership. Accomplished library media specialists are leaders who move library media programs and the profession forward. Working from local to global communities, accomplished specialists build relationships with organizations and stakeholders to develop effective library media programs and advocate for learning. Accomplished library media specialists strengthen library media programs by assuming responsibilities of instructional, administrative, and professional leadership. (p. 14)

These recent standards provide the most current and in-depth definition of the leadership role in regards to technology integration by recognizing that technologies are more than just resources, but tools that can be utilized by school librarians to connect and create meaningful instruction.

These standards position school librarians as “curriculum specialists and technology experts” who can model technology integration and serve to provide professional development, and therefore leadership, in the integration of technology. Additionally the National Board for Professional Teaching Standards presents the integration of technology as a specific individual standard rather than interweaving it throughout, stating that “accomplished library media specialists use technologies effectively and creatively to support student learning and library media program administration” (2010, p. 22). These standards portray school librarians that
utilize technologies in their own instruction and also teach others of their potential for teaching and learning through ties to instructional goals and curricular areas. Additionally, school librarians’ role in relation to new technologies and teaching of the ethical responsibilities that come with them is described. In this thorough description of school librarians’ role in technology integration, a clear picture of school librarians as leaders in these efforts emerges. This document is the best description that school librarians have to date as to their role in technology integration and the role that becomes apparent is one of leadership.

Most recently, in response to the demand for further definition of the role of school librarians in technology integration, International Society for Technology in Education (ISTE) released an advocacy statement: The Role of School Librarians in Promoting the Use of Educational Technologies (ISTE, 2010). This declaration reaffirms the assertion that school librarians are in a unique position to serve as leaders in technology integration efforts within their schools. The assertion is that since school librarians collaborate with teachers of all grade levels and all subjects, they possess the curricular and pedagogical knowledge to lead students and teachers in the effective use of technology for instructional purposes. Further defining the role of school librarians are statements that school librarians are:

- instructional leaders in their schools who serve on curriculum, school improvement, and planning committees, frequently provide professional development to their colleagues in areas related to instructional and technology resources, teach a wide range of local, state, and national curriculum, information literacy, and technology standards, … and serve as the primary technology ‘integration specialist’ in their buildings. (p. 1)

In defining technology integration responsibilities, there is a strong leadership presence:

School librarians support the use of technology throughout the school by working closely with the school’s technology coordinator or fill the role of technology coordinator when a separate position does not exist; serve as information literacy and educational technology specialists in their schools; address educational technology and information literacy skills instruction embedded in the curriculum; provide technology training for teachers, administrators, and parents; work with teachers, counselors, and administrators to prepare students to succeed in higher education, the work place, and in society; help students develop important digital citizenry attributes to demonstrate responsible use of
information and technology; provide leadership in the development of local information and technology literacy standards. (ISTE, 2010, p. 1-2)

This specific listing and identification of responsibilities is an initial step in the investigation of this emerging role.

The leadership directives from international and national organizations demand and document need for school librarians to lead efforts of technology integration, yet the broad and general nature of these standards and guidelines offers little practical guidance for enactment. Practicing school librarians need more specific role definition along with explicit techniques or strategies for enacting the leadership role in technology integration. This research serves to further the understanding of the technology leadership role for practicing school librarians.

Through investigating current practices of accomplished school librarians, this research identifies what is enabling some to thrive as technology integration leaders and what is constraining others. The identification, classification, and explication of these enablers and barriers serves as a foundation on which to build research-based strategies to support practicing school librarians in understanding how to enact this vital role.

**Technology Leadership**

Technology is transforming not only access to information, but the skills needed to interact with and utilize it as well. School librarians are responsible for developing “information skills that will enable [students] to use technology as an important tool for learning” (AASL, 2009, p. 13). In the ever-changing and highly technological environment of 21st century schools it is critical for school librarians to assume a leadership role in the integration of these technologies to partner with teachers to address the needs of the 21st century learner (Farmer, 2005; Kuhlthau, 2010; Vansickle, 2000). This new breed of learner requires new skills and knowledge to ensure that they are equipped with the skills and knowledge they need to succeed in the technological society of the 21st century (AASL, 2009).

The changing information landscape of the 21st century, which includes interactive technologies and a participatory culture, requires that school librarians evolve as leaders to address the needs of this new generation of learners. Education research illustrates that utilizing technology effectively in the classroom can improve students’ critical thinking skills, improve standardized test scores, provide numerous innovative educational opportunities, increase student
motivation, and enhance the overall learning experience for students (Hew & Brush, 2007). In modeling and partnering with teachers, school librarians can guide instructional design and offer expertise on the integration of emergent technologies to create engaging and relevant learning experiences for students (AASL, 2009; Asselin, 2005; Vansickle, 2000).

**Leading teachers.** The key to technology integration in education is that technology is used to enhance the learning experience and develop learners’ thinking skills, but it must be aligned with the curriculum of the school and integrated into instruction, not as an add-on or afterthought (Hew & Brush, 2007). Modern educators must strive to incorporate higher-level thinking skills, or the new literacies, into the curriculum to prepare students for living and working in the 21st century. Yet teachers, even in schools and districts committed to technology integration, still struggle with effectively integrating technology and teaching practice remains largely unchanged (Brush & Sayre, 2007; CoSN, 2004; Cuban, Kirkpatrick, & Peck, 2001; Hew & Brush, 2007; Staples, Pugh, & Himes, 2005).

The role of school librarians is now one that emphasizes teaching information skills, both to students directly and, more importantly, in collaboration with other educators. School librarians serve as instructional partners in the process for teaching the new literacies by working with teachers to model and partner in guiding instructional design and offering expertise on the integration of emergent technologies to create engaging and relevant learning experiences for students (AASL, 2009; Asselin, 2005). School librarians are in the unique position in that they have a broad view of the school curriculum and can serve as leaders in collaboration between teachers in multiple grade levels and subjects.

Students cannot be expected to benefit from technology if their teachers are neither familiar nor comfortable with it. Teachers need to be supported in their efforts to utilize technology through professional development opportunities. Ongoing professional development is necessary to help teachers learn how to use new technologies, but this must go beyond just using technology, expanding to learning the instructional strategies needed to integrate technology into their teaching, including practical applications (Ertmer, 2005). Classroom teachers need assistance in harnessing the new technology for both teaching and learning (Anderson & Dexter, 2005; Banister, Ross, & Vannatta, 2007; Brush & Sayre, 2007; Ertmer, 2005; Eteokleous, 2008; Shattuck, 2010) and as a staff developer, school librarians are the professionals in schools who can lead the effort to integrate resources and technologies.
effectively into all disciplines across the curriculum and at every grade level (Asselin, 2005; Duke & Ward, 2009; Vansickle, 2000). Leadership includes establishing partnerships with classroom teachers to learn and grow together in technology through facilitating group learning, engaging in collaborative group planning, communicating (listening and questioning), participating in professional learning communities, as well as helping develop a shared educational vision (Lambert, 2003a). “Leadership is about contributing to, learning from, and influencing the learning of others. But it is also about creating the opportunities for others to learn” (Lambert, 2003a, p. vii).

Todd’s (2005) review of current educational leadership literature indicates a change in focus from authority-centered definitions to a learning-centered model that focuses on “the leading of learning” (p. 1). Effective learning leadership integrates three crucial dimensions: (a) collaboration, (b) experimentation with practice, and (c) collecting and using evidence grounded on a framework that involves critical discussion and reflection (Todd, 2005). School librarians can act as agents of change to support, encourage, assist, and facilitate the adoption of technologies into daily practice through leadership activities (Branch & Oberg, 2001; Hughes-Hassell & Harada, 2007).

The National Educational Technology Standards for Teachers (NETS) state that “effective teachers model and apply the National Educational Technology Standards as they design, implement, and assess learning experiences to engage students and improve learning; enrich professional practice; and provide positive models for students, colleagues, and the community” (International Society of Technology Education, 2008, para. 1). These standards include “facilitate and inspire student learning and creativity, design and develop digital-age learning experiences and assessments, model digital-age work and learning, promote and model digital citizenship and responsibility, engage in professional growth and leadership” (ISTE, 2008, para. 1). Yet, teachers continue to feel ill prepared to incorporate computers in their instruction (Anderson & Dexter, 2005; Banister et al., 2007; Bull et al., 2007; Duke & Ward, 2009; Ertmer, 2005; Hernandez-Ramos, 2005; Lemke, Coughlin, Garcia, Reifsneider, & Baas, 2009; Shattuck, 2010; Torres & Mercado, 2006). Today’s constantly emerging technologies have the capacity to leave teachers feeling unprepared and schools need technology leadership in order to enable educators to incorporate the most appropriate technology in an efficient and meaningful manner (Asselin & Dorion, 2008; Duke & Ward, 2009; Ertmer, 2005; Glazer et al.,
Research indicates that the effective use of technology can result in higher levels of learning, but the education system has not evolved or adapted to make the changes required to use technologies effectively in learning (Lemke et al., 2009).

Although teachers are excited about the potential instructional benefits of digital resources, many are overwhelmed by the complexity (Oberg, 2003); therefore it is up to school librarians to provide professional leadership in the adoption and use of information technologies. Absence of technology leadership can leave teachers with inadequate knowledge, as well as a lack of confidence, that prevents them from embracing new technologies (Williams, 2004). The constantly changing and evolving nature of the new technologies may pose the greatest challenge for teachers. However, school librarians as technology leaders can keep staff abreast on new technologies, facilitate teacher understanding, and through staff development training, help teachers understand the importance of integrating information technologies across the curriculum. This does not imply that school librarians are the sole technology trainers, but act as a catalyst for change by leading staff development for teachers across the curriculum and the grade levels.

The recent explosion in digital information has allowed school librarians to enhance and expand their collections to include those in digital or electronic formats to enable students to become active consumers of knowledge. Yet, not all teachers cope well with technological changes in the school culture and “some teachers have concerns and feelings of incompetence about adapting to new instructional styles involving use of electronic resources such as the Internet and information databases” (Williams, 2004, p. 2). Teachers’ backgrounds and previous training affects their comfort level in the use of digital resources. Williams (2004) finds that teachers prefer one-on-one instruction and group or classroom instruction by the school librarian to receive information about multimedia resources in the school and that they would use more technology tools and digital resources with the help and support of in-service training from the school librarian.

Technology applies to all subject areas and all learning, but many teachers lack the time and training necessary to prepare technology-infused lessons. School librarians are in a position to share their skills and expertise through collaboration, mentoring, and modeling. School librarians can provide critical and unique forms of leadership in this arena because of their
knowledge of pedagogical principles, their global perspective on the school curriculum, their training as information experts, and their experiences in collaborating with classroom teachers. Often professional development does not focus integrating technology in subject area curriculum and is too focused on learning software without “specific content-based examples of their use and without pedagogical and curricular connections” (Hughes & Ooms, 2004, p. 398). Yet, collaboration with peers is thought to have the power to enhance teaching and curriculum development through the collective knowledge and skill of the teachers involved (Glazer et al., 2009). Elementary school teachers prefer informal collaboration rather than formally planned activities and prefer that a colleague or technical specialist deliver needs specific training (Stevenson, 2004). Several researchers (e.g., Collinson & Cook, 2004; Glazer & Hannafin, 2008; Glazer, Hannafin, Polly, & Rich, 2009; Hughes & Ooms, 2004; Stevenson, 2004) find that teachers who work together in collaboration learn to use and integrate technology with greater success. Therefore, collaboration with school librarians, as teacher-leaders, can provide professional development that is ongoing and flexible to support of the ever-changing technologies teachers are expected learn and integrate in their teaching (Glazer et al., 2009).

In examining the most current research in schools, the indicators for success for technology integration are not solely dependent on the level of student access, but rather on the nature of student and teacher use and the commitment to the implementation. This type of implementation in a school is determined by:

- leadership, teacher proficiency, professional development, curricular fit, school culture, pedagogical approaches—and, on the level, speed, and type of technology and Web 2.0 access. Innovative leadership is needed to ensure progressive school policies on technology and Web 2.0, and other emerging technologies and to facilitate strong links between the formal and informal learning enabled through the Web. (Lemke et al., 2009, p. 43)

If teachers are to play an essential role in helping students gain critical skills, then staff development and collaboration opportunities must be offered. School librarians, as information and curricular experts, are in a position to lead teachers toward effective integration of technologies.

**Leading students.** The explosion of technology and information has resulted in major changes in education in the 21st century. As a result, information literacies have emerged as the

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new literacies and as a critical issue in the field of education (Asselin, 2005; Asselin & Dorion, 2008; Kuhlthau, 2010; Kuiper, Volman, & Terwel, 2005; Livingstone, 2008). Information literacies or “the ability to find, evaluate, analyze, and synthesize information” (Smolin & Lawless, 2003, p. 571) go beyond simply knowing how to use technology tools to include understanding how to apply them in learning (Asselin, 2005; Greenhow, Robelia, & Hughes, 2009; Kuhlthau, 2010; Kuiper, et al., 2005; Smolin & Lawless, 2003) as well as to create and communicate new learning (AASL, 2007; Leu, Kinzer, Coiro, & Cammack, 2004; Partnership for 21st Century Skills, 2009). As educators it is the responsibility of school librarians to prepare students for their future and to “develop information skills that will enable them to use technology as an important tool for learning, both now and in the future” (AASL, 2007, p. 2).

Work in today’s world is about effectively using information to make decisions and solve problems (Leu, 2002). Technology skills are crucial for future employment needs; employers are looking for adaptable critical thinkers and problems solvers, not program-specific experts. The specific technologies are and will continue to constantly change, that is why it is imperative to educate students in these new literacies so they possess the knowledge to apply them to whatever technologies emerge (Asselin, 2005; Asselin & Dorion, 2008; Leu, 2002; Leu et al., 2004; Livingstone, 2008). Literacy is “no longer an end point to be achieved but rather a process of continuously learning how to be literate” (Leu, 2001, p. 568). Students are being bombarded with information in their academic as well as personal lives and must be taught how to evaluate, analyze, and utilize it effectively (Leu et al., 2004; Livingstone, 2008). In order to prepare students, traditional instructional practices and beliefs have to change and adapt to meet the needs of the learners. School librarians are in the position not only to serve as leaders in this movement, but also as advocates for students’ future (AASL, 2009; Asselin, 2005).

Educators must recognize and address the changing needs of the learners who have grown up in a digital world of iPods, cell phones and the Internet; technology is an integral part of their lives outside of school (Bannister & Ross, 2007; Lenhart, Madden, & Hitlin, 2005; Lenhart, Madden, Macgill & Smith, 2007; Livingstone, 2008). These experiences have changed what students expect out of education and they do require a different approach to instruction to be motivated and engaged. While research suggests that administrators do see the significance digital technologies can play in teaching and learning, the overall indication is that school cultures do not yet “align learning to the realities of the 21st century” (Lemke et al., 2009, p. 5).
If educators want to stay connected to students they must stay current and skilled in the rapidly changing technologies, and technology integration must be made a priority (Anderson & Dexter, 2005; Cuban et al., 2001; Lemke et al., 2009). Addressing these needs requires a shift in thought about instructional practice and provides an opportunity for school librarians to lead by applying their knowledge of learners, curriculum, and technology to enact changes in the way teachers utilize technology to connect to their students to create engaging and relevant learning experiences for students (AASL, 2009; Asselin, 2005; Banister et al., 2007; Bull et al., 2007).

The need for these new literacies is reflected in the social participatory nature of the world students live in today. Students now require skills to be competent in communicating, participating, and contributing to today’s global networked society (Asselin, 2005; Asselin & Dorion, 2008; Kuhlthau, 2010; Leu et al., 2004; Livingstone, 2008). Advancements in collaborative technology, such as wikis, blogs, and other social networking tools, bring exciting possibilities to the learning environment and provide possibilities for sharing and building knowledge technologies (Livingstone, 2008; Todd, 2008). Online technologies afford teachers ready access to collaborative, authentic opportunities for students to engage in meaningful experiences related to the curriculum. Students need to be taught the skills they need to create, invent, design, and expand their world by actively participating in this new digital culture (Greenhow et al., 2009; Livingstone 2008; Nelson, Christopher, & Mims, 2009; Todd, 2008).

New participatory learning tools require that students develop and utilize the critical literacies to guide them in ethical, legal, and safe participation (Asselin & Dorion, 2008; Livingstone, 2008). Merchant (2007) defines this critical digital literacy as “the power, responsibilities and ethical considerations that come into play in communicative settings” and deems this to be an “important ingredient of a good literacy education” (p. 125). Demonstrating responsibility in a digital environment includes respecting intellectual property and privacy, citing sources, displaying personal safety, and displaying good judgment when adding content to public forums. This includes understanding acceptable use policies, fair use guidelines, copyright and creative commons issues, privacy concerns, and Internet safety. With more students using and sharing information online, the ethical use of information has become an area of vital importance in guiding 21st century learners, and unfortunately students seem unaware of the ethical implications and the legal and personal consequences of their actions (Berson, Berson, Desai, Falls, & Fenaughty, 2008; CoSN, 2004; Greenhow et al., 2009; Livingstone,
School librarians must lead students by not only modeling appropriate behaviors, but also by educating students, staff, and parents in these issues.

In this digital age, it is crucial to move beyond the use of technology for information seeking to utilizing technology as a collaborative, content developing, information sharing and communication tool. In order to do this, students require digital and information literacy skills instruction and opportunities to practice being responsible literate global citizens when using digital technologies. Information literacy is not a new concept, but with the advances in online and digital resources, information literacy has expanded to include these new critical literacies and has moved to the forefront in education. These 21st century learners and the new literacies that they require present the opportunity for school librarians to assume a leadership role within their schools through technology integration (Asselin, 2005; Hanson-Baldauf & Hughes-Hassell, 2009; Hughes-Hassell & Hanson-Baldauf, 2008).

The ever-changing and advancing environment of 21st century learning presents leadership opportunities for school librarians through leading teachers and students in technology integration. This research identifies the enablers and barriers accomplished school librarians experience in leading both teachers and students in order to familiarize school librarians with sources of support for their technology leadership efforts and challenges to overcome. This information contributes to a better understanding of how school librarians can enact this critical role to address the changing needs of the students and teachers in the 21st century.

**Relevant Research**

The limited research in this area also supports the contention that school librarians must embrace their leadership role in technology integration. A compilation of recent state studies (Scholastic, 2008) examines school librarians and their impact on student achievement and identifies two roles of school librarians that impact student achievement: leader and technology facilitator. In those studies, school librarians who exhibit leadership were more likely to plan and teach cooperatively with teachers, provide training for teachers, and take responsibility for technology integration (Lance, Hamilton-Pennell, & Rodney, 2000; Lance, Rodney, & Hamilton-Pennell, 2000). Other noted findings include a connection between leadership and collaboration, in that classroom teachers are more willing to collaborate with the school librarian if she or he had taken the initiative to become an assertive, involved leader in the school.
(Rodney, Lance, & Hamilton-Pennell, 2002) and that schools perform best where both principals and teachers perceived the school librarian as a school leader (Lance, Rodney, & Russell, 2007). Additionally, research indicates that school librarians provide instruction and help students acquire information and technology skills needed to succeed in the information-saturated world of the 21st century and in schools with “best practice library media programs,” school librarians act “as an innovator, transformation agent, and a technology integration leader” (Smith, 2006, p.16).

Dissertation research examining school librarians’ role in technology integration is sparse as well and these largely descriptive studies are primarily based on perceptions and attitudes, but do provide some notable findings. McCracken’s (2001) research investigates practicing school librarian perceptions regarding role implementation as described in Information Power: Building Partnerships for Learning (1998), and perceptions regarding the importance of assuming a leadership role in the use of instructional technology. In regards to technology, McCracken finds that school librarians believe it is important to use technology in their practices and that the more technology is accessible in the school library, the more important school librarians perceive the use of technology to be. Additionally, the use of technology is the third most frequently cited factor enabling respondents to expand their role and several school librarians noted that students are eager to use the new technologies. Despite the overall positive reactions of many school librarians to the use of technology, some were very negative about the prominent role technology is now taking in school library programs.

Oliver’s 2003 examination of role of school librarians as it relates to the integration of technology in a high school curriculum finds that some school librarians are acting as technology leaders within their schools by providing current resources, teaching teachers how to utilize resources, and serving as building experts for technology integration. Teacher perceptions of school librarians include that school librarians are those who are proactive and often approach teachers with ideas and plans to integrate technology into their classroom instruction. However, the majority of the teachers indicate viewing school librarians as technology leaders only because they felt that they were more knowledgeable in using equipment than teachers (Oliver, 2003). In Underwood’s (2003) case study investigation of school library leaders in Louisiana, she concludes that an effective school librarian is one who leads from the middle through technology expertise, collaborative planning, promoting reading and positive public relations.
These perceptions were gathered through interviews with the superintendent, principals, library supervisor, and classroom teachers and these interviewees state that school librarians modeled and promoted collaborative planning and all agree that school librarians are curriculum and technology leaders within the schools.

Massey (2009) utilizes focus groups and in-depth interviews with 10 National Board Certified school librarians to examine how exemplary school librarians apply their technology integration expertise when using digital library technology (online databases) to support the curriculum in K-12 schools. The study identifies behaviors and techniques that exemplary school librarians have in common when integrating online databases into their instruction and also examines the barriers they experience when integrating the specific technology of online databases, but not barriers to enacting the leadership role to achieve this integration. Yet, as Haycock (1995) has pointed out, most of the research has revealed much of the “what” and the “why” of issues related to the practice of school librarianship but little of the “how” (p. 114, 118) to enacted in practice.

The recent research by Hanson-Baldauf and Hughes-Hassell (2009) to explore school librarians’ perceived competencies with Web 2.0 technologies, usage of Web 2.0 technologies in their own teaching, and the barriers they believe impede the use of Web 2.0 technologies in teaching and learning serves as an initial step in the investigation of school librarians and technology integration. Findings include that a significant number of school librarians do not feel competent with “emergent technologies such as social-networking and file-sharing tools” (p. 6), the majority “only rarely or occasionally used podcasts, wikis, blogs, Web design tools, and electronic whiteboards” (p. 6), and emergent technology tools and applications are infrequently used. Yet the majority feel that technology professional learning opportunities were plentiful and effective. School librarians agreed on the importance of integrating technology into their instruction, but fewer felt “well prepared” to do this (p. 8).

The most current research to date in this area is by Everhart et al. (2010) to define and investigate the leadership practices of school librarians in technology integration. The School Library Media Specialist Technology Integration Survey (PALM, 2009) developed through their research is the first instrument to define and investigate school librarians’ technology integration leadership practices. Technology integration leadership practices, for the purposes of this research, are identified as those found in the School Library Media Specialist Technology
Integration Survey (PALM, 2009). Preliminary results conclude that National Board Certified school librarians feel committed to and have experienced success in technology leadership with students to a great extent and with teachers to a lesser, but not insignificant, extent. Yet, school librarians report much lower levels of involvement in technology leadership activities outside of their school building, such as district-wide policymaking, and information sharing activities with peers and community members. This research also creates and contributes an instrument designed to investigate and define technology integration practices of school librarians.

The school library is one of the most technology-rich spaces in many schools, with school librarians serving as one of the school’s experts in information technology integration (Massey, 2009; Oliver, 2003); therefore, technology integration leadership has emerged as an essential competency for 21st century school librarians (Shannon, 2002). Despite the abundance of literature suggesting the need for and the importance of school librarians to be proactive leaders in technology integration, this role is one that has been largely ignored in the research arena and remains undefined for school administrators, teachers, and the school librarians themselves (Asselin, 2005; Everhart & Dresang, 2006; Shannon, 2008). Leadership combined with professional technology competencies are two important characteristics associated with 21st century school librarians as agents of change to encourage, nurture and support colleagues to evolve and adopt innovation into action (Hughes-Hassell & Harada, 2007).

The current role of school librarians has evolved over many years. The mix of professional and personal competencies needed by today’s school librarians is indeed complex. Technology, teaching, collaboration, and leadership have become more prominent in national guidelines and in the professional literature. Results of research studies and reports of best practices that address this multifaceted set of competencies will benefit both practitioners and library educators (Shannon, 2008).

The extremely limited research in this area reinforces the importance of the technology leadership role of school librarians, but an overall lack of research and theoretical foundation in this area has left practicing school librarians feeling unprepared to enact this role. The emerging research, reviewed above, provides a research base on which to build, but still lacks specific investigations on what is enabling some school librarians to succeed in enacting a technology leadership role and what is constraining others. The research by Everhart, Mardis, and Johnston (2010) did ask respondents to comment on enablers and barriers experienced when enacting
technology leadership practices, but this data remains unanalyzed and unreported. This research utilizes the archived data from that survey in order continue the efforts to address the lack of research in this area and contribute to the knowledge base to further inform practice.

**Distributed Leadership Theory**

This section of the literature review includes an overview of distributed leadership theory, the theoretical foundation for this research. It includes a detailed presentation of the most contemporary version of this theory, Spillane’s distributed leadership (2006), as it relates to this research. A review of the related research in which distributed leadership has been applied to the concept of teacher leaders and in similar educational situations is presented to illustrate the connection between distributed leadership theory and teacher leaders.

**Overview of Distributed Leadership**

For the past several decades the focus of leadership research has centered on the individual stand-alone formal leader, yet in recent years the concept of shared, dispersed, or distributed leadership has emerged and received increased research attention (Gronn, 2002a; Spillane, 2006). The impetus for this paradigm shift is attributed to the disillusionment with the individual leader and the increased demands on educational leaders in the ever-changing world of education (Elmore, 2000; Gronn, 2002a). Leadership demands have increased so that they are greater than one individual, and distributed leadership theory promotes a situation not where one individual does something to others, but one where multiple people work together in such a way that they pool together their abilities and expertise to facilitate an outcome that is greater than the sum of their individual actions (Gronn, 2002a; Harris, 2004; Spillane et al., 2004). While traditional educational leadership research focuses on identifying a particular set of characteristics present in those who are deemed effective leaders, and then identifying potential leaders who possess those traits, more recent research places emphasis on the importance of context and the constitution of leadership practice. It is in this context that distributed leadership has emerged as a viable framework (Beachum & Dentith, 2004; Camburn, Rowan, & Taylor, 2003; Copland, 2003; Spillane et al., 2004).
A variety of models and definitions of distributed leadership exist, but most share two common propositions: that leadership is a shared process in which several individuals take part and that leadership emerges from the interactions of the different individuals within a group where essential skills and knowledge are dispersed among many (Bennett, Harvey, Wise, & Woods, 2003; Harris, 2004; Spillane, 2006). Distributed leadership places an emphasis upon maximizing expertise of teachers and building capacity within the organization (Spillane et al., 2002). Distributed leadership can provide leadership that is “fluid and emergent, rather than a fixed phenomenon” (Gronn, 2000, p. 324), where teachers can become leaders at various times and work collaboratively to pool their expertise, vertically and laterally (Muijs & Harris, 2007). This type of leadership is particularly appropriate for school librarians due to their knowledge of pedagogical principles, their global perspective on the school curriculum, their training as information experts, and their experience in collaborating with classroom teachers. School librarians have this unique expertise to offer in contributing to school leadership.

Spillane (2006) proposes distributed leadership as an analytical framework and a diagnostic tool to help practitioners explore how the practice of leadership is “stretched over” (p. 23) multiple leaders, followers, and the situation or for “understanding school leadership practice” (p. 32). The situation is an integral component of leadership practice and Spillane asserts that the contextual situation of leadership defines leadership practice and influences interactions between leaders and followers and that the situation and structures through which people act determine how leadership practice is fundamentally enabled or constrained. This assertion guides this research, in that there are certain factors that can enable or constrain the technology integration leadership practices of school librarians.

**Foundations of Spillane’s Distributed Leadership Theory**

Spillane’s theory of distributed leadership draws from and builds upon previous work by Elmore and Gronn. Elmore (2000) defines distributed leadership through expertise, or the knowledge, skills, interest, predispositions, or aptitudes, that people within the organization either possess or develop and introduces the idea that distributed leadership is based on the assumption that all members in the organization can lead where they have expertise and therefore leadership can be shared. It is the “complement of competencies that all persons in the organization possess that allow for a fluid leadership” (p. 15). Elmore believed that in any
organized system, people specialize or develop skills that are related to their interests, aptitudes, prior knowledge and roles, which determine the framework for their participation in distributed leadership.

Gronn (2002b) defines distributed leadership as an “emergent property of a group or network of interacting individuals” (p. 317). Gronn identifies two types of distributed leadership, as numerical action where leadership of an organization is broadly dispersed and as a concertive collaborative action. The dispersed action is the most well known version of distributed leadership, but Gronn defines this as merely a “superficial” level. Unfortunately this is the version that is being implemented in many U.S. schools (Scribner, Sawyer, Watson, & Myers, 2006). Gronn’s (2002b) view is that the activity is what links people and structure together. Gronn asserts that leadership is a form of “concerted action” in which everyone works together in that “they pool their expertise” toward completion of a task or accomplishment of a goal or that the whole is more than the sum of its parts (Gronn, 2002a). The principle idea is that leadership revolves to those who have the expertise in that particular context at that point in time and that there can be several formal and informal leaders in any one organization (Gronn, 2000).

**Spillane’s Theory of Distributed Leadership**

The most contemporary perspective of distributed leadership theory and the one examined for the purposes of this research is that developed by Spillane et al. (2004), who base their theory of distributed leadership on three propositions: leadership practice is the central concern; leadership practice is distributed over leaders, followers, and the school’s situation or context; and the situation defines leadership practice and is defined through leadership practice (see Figure 1). Spillane et al. (2001) integrate social distribution theory as well, as illustrated by the belief “that leadership function is stretched [original emphasis] over the work of a number of individuals and the task is accomplished through the interaction of multiple leaders” (p. 20). In a rebellion against the one heroic leader, this theory promotes a situation not where an individual does something to others, but one where people work together in such a way that they pool together their abilities and expertise to facilitate an outcome that is greater than the sum of their individual actions (Spillane et al., 2004). Distributed leadership takes the view that expertise is distributed across many people, not just a few and this opens boundaries for leaders to emerge from a variety of individuals who are spread throughout an organization (Bennett et al., 2003;
In a distributed approach, Spillane (2006) asserts that research must start with identifying and observing leadership practice and then “begin to explore the interactions among the leaders, the followers and their situation” (p. 84). Spillane promotes his distributed perspective as a means of simply better understanding the meaning and nature of leadership in schools, a theoretical foundation to study school-embedded leadership practice and help practitioners understand school leadership practice. In this perspective, distributed leadership theory is an applicable theoretical foundation for the study of the technology integration leadership practices of school librarians due to the informal and embedded nature of these leadership practices. This review focuses on the three specific concepts of this perspective that are of importance to this research, leadership practice, expertise, and the situation, which are examined in detail as they apply to the technology leadership practices of school librarians.


**Leadership practice.** Grover and Glazier (1986) define the purpose of a theory as “to explain and predict relationships among phenomena, to give the practitioner an understanding of specific relationships, and to guide research” (p. 230) and in this case the observed interactive phenomena is leadership practice. Building on ideas and premises of Gronn, Spillane (2006) defines distributed leadership as more than just shared leadership; it is about leadership practice.
Most research pays little attention to the practice of leadership (Heck & Hallinger, 1999), but focuses on what leaders do rather than how they do it or the thinking and enacting of leadership. Spillane et al. (2004) assert that leadership practices provide insights into how school leaders act and the leadership routines within the structure of the school. Leadership practices may include the tasks or activities used in the performance of a routine; who is responsible for the tasks; what tools are necessary to perform the tasks; and the leadership function or goals the tasks are designed to address (Spillane, 2006). The emerging technology integration leadership research reviewed in the previous section takes the initial step to identify the leadership practices of school librarians in the area of technology integration (Everhart et al., 2010), but the situational aspect is one that remains unexplored.

**Expertise.** Building on Elmore’s (2000) work, distributed leadership is premised on people leading when and where they have expertise. Distributed leadership theory looks beyond those in formal leadership positions, not focusing on the individual, but the practices of leadership, and asserts leadership needs to be distributed to those who have, or can develop, the knowledge or expertise required to carry out the leadership tasks to contribute to the improvement of the organization (Spillane, 2006). Spillane et al. (2004) define leadership practice as “the activities engaged in by leaders, in interaction with others in particular context around specific tasks” (p. 5) and that different school members emerge to take on leadership functions as dictated by the situation and their own interests and expertise. This leads to a dynamic pattern of distributed leadership in which the leadership can be flexible to change over time and across context depending on the needs and challenges that may arise in the school; it is these needs that determine who leadership is distributed to, not a hierarchical system (Copland, 2003; Elmore, 2000; Harris, 2008; Harris & Muijs, 2005).

This concept of people in the organization leading where they have expertise is what first garnered the researcher’s attention. A distributed leadership perspective recognizes the varied skills and expertise of individuals and engages multiple individuals, both in formal and informal leadership positions in leadership practices. School librarians possess unique technology knowledge and skills, a pedagogical background, expansive curricular knowledge, and experience developing partnerships with teachers. This distinctive combination of knowledge, skills, and expertise often places school librarians in positions of leadership especially in the area of technology integration.
To whom is leadership distributed? It is well documented in the research that multiple individuals perform leadership work in schools and that responsibility for leadership functions is typically distributed among three to seven people, including administrators and specialists (Camburn et al., 2003; Spillane, 2006; Spillane, Camburn, & Pareja, 2007; Spillane, Diamond, & Jita, 2003). Research identifies that the individuals or groups providing leadership include a mix of principals, assistant principals, teachers in a formal leadership role (e.g., grade or subject team leaders), and those with no formal leadership position such as teachers with specialist positions (e.g., literacy specialists, technology specialists, counselors), subject area experts, mentor teachers, and other teachers informally recognized by peers as influential (Heller & Firestone, 1995; Louis, Leithwood, Wahlstrom, & Anderson, 2010). Yet, school librarians are never mentioned specifically in this body of research as a subject matter expert, a specialist, or as performing leadership functions.

Spillane (2006) concludes that leadership practice in schools is structured differently across school subjects and calls for more research to include other subject area contexts. There is only one current study that mentions the school librarian. Luebke’s (2009) case study research examines the informal leadership roles exercised in elementary schools by specialist teachers including music, art, physical education, and the school librarian. He finds that the specialists assume leadership positions within their own particular areas of interest and expertise and informal distributed leadership allows sharing that expertise with the school community. The school librarian expressed how she accumulated expertise in certain areas, such as reading, that would position her in a place to contribute to important school wide initiatives. Then she made proactive efforts to share and collaborate with her colleagues. Yet, the school librarian also found that when certain situations in the school changed, her collaboration and leadership efforts became more arduous. Therefore, school librarians have to adapt and strategies have to be developed to continue in these efforts through connecting to the central goal of student achievement (Luebke, 2009). This study concludes that leadership is distributed across the school community and does take a fluid form, presenting opportunities for specialists to practice leadership based on expertise rather than formal authority. This one study provides a foundation on which to build a case for distributed leadership as an avenue to leadership for school librarians.
Distributed leadership proposes that it is the task or the problem that determines how leadership is distributed to those who have the knowledge or expertise to contribute to leadership tasks and to the common goal of the organization (Gronn, 2002a; Leithwood, Day, Sammons, Harris, & Hopkins, 2006; Spillane, 2006). “[L]eadership practice emerges in and through the interactions of leaders, followers, and situation” (Spillane et al., 2001, p. 27), therefore indicating that there is no one defining way to say who leadership is distributed to, or when, or where it will occur (Heller & Firestone, 1995; Spillane, 2006; Spillane et al., 2003). This research asserts that school librarians have the knowledge and expertise to contribute to school improvement in the 21st century, which most always involves technology integration.

It is impractical and unwise for the principal to hold and distribute all knowledge needed to lead a school through the improvement process. Instead, those with talents for the tasks, no matter what positions they hold in the school, need to become leaders to advance a school's improvement goals (Camburn et al., 2003; Spillane et al., 2003). The rapidly changing technological environment and the highly uneven distribution of expertise make technology leadership particularly challenging for most school administrators. It has become essential for schools to distribute leadership and allow others within the school, based on their expertise, to participate in technology leadership (Anderson & Dexter, 2005). The environment of the 21st century school presents the opportunity for school librarians to contribute to school leadership through their expertise in technology integration.

Teachers “construct others as influential leaders based on their interactions with them as well as conversations with colleagues about these individuals” (Spillane, 2006, p. 48). This can be based on forms of “human, cultural, social, and economic capital” (p. 48) and defines who is viewed as an influential leader and who emerges as a teacher leader within a school. School librarians are in position to share their expertise with colleagues in order to benefit teachers in their technology integration efforts and contribute to optimal student learning. This expertise is a form of human and social capital that positions school librarians as leaders, in that as educators, they understand how to approach teaching various subject matters with technologies and connect them to student learning. This culture of collaboration through a distributed leadership model promotes the concept that all are contributing to and responsible for the collective learning of all students.

*How is leadership distributed?* Leadership is inevitably distributed in schools, but how the
leadership activities are distributed and who decides how they are distributed can be very different from school to school (Spillane, 2006; Spillane, Camburn et al, 2007; Timperley, 2005). The overarching assumption is that distributed leadership is “not restricted to any particular pattern and cannot be prescribed in advance but emerges within the organization in order to solve problems or to take action” (Harris, 2008, p. 175).

Distributed leadership theory recognizes that many people have the potential to exercise leadership in any organization but the key to success will be the way that leadership is facilitated, orchestrated, and supported (Elmore, 2000; Gronn, 2002a; Harris, 2008). Research suggests that there are three mechanisms that can determine how leadership is distributed. These include by design, by default, and by crisis, but they are not mutually exclusive (Spillane, 2006). Through deliberate design decisions, formal and informal leaders can influence the distribution of responsibility for leadership tasks.

This includes creating new leadership opportunities and structures that enable the development of teacher leaders, including school librarians. This “institutionalized practice” involves the establishment of formal committees and structures (Gronn, 2002b, p. 430). School librarians, as part of the school community, often are appointed to various committees and asked to serve in a variety of formal leadership positions, such as chairing a specific committee. In these formally designated leadership positions, others beyond the school administrators take responsibility for leadership tasks including subject area specialists, mentor teachers, and other professional staff. The creation of these formal structures can serve as a way to enable school librarians to take on leadership responsibilities, but conversely can exclude school librarians.

The distribution of leadership is not always planned and tasks can arise by default when formal leaders or teacher leaders identify an area in which leadership is lacking and fill a gap when the principal lacks the prerequisite skills or expertise in that particular area (Crowther, Kaagan, Ferguson, & Hann, 2002; Spillane, 2006). Therefore, the distribution of leadership among leaders evolves over time as individuals get to know one another’s skills and weaknesses, develop trust, and create what Gronn (2002b) calls “intuitive working relations” that contribute to the distribution of leadership (p. 430). It is the distribution of leadership by default that provides opportunities for school librarians to embrace leadership positions in observing and fulfilling a need. There are many times when the school principal is asked to make decisions regarding technology and does not possess the expertise needed or times while attending a grade
level meeting school librarians offer teachers ideas for integrating technology into a lesson. Recognizing this area where leadership expertise is lacking and taking responsibility for leadership to fill this vacuum allows for school librarians to establish their potential as sources of leadership due to expertise in this area and illustrate the valuable contribution they as individuals can make to the collective effort. This is also an evolving relationship that school librarians must create with those with whom they teach; as collaboration occurs and people discover each other’s strengths and weaknesses, they will know whom to approach in the future for expertise in a certain area (Harris, 2008).

Finally, a school may encounter an unanticipated crisis or challenge, and formal leaders and teachers leaders will have to work together to take on a particular leadership task to address the problem (Spillane, 2006; Spillane & Orlina, 2005). Gronn (2002b) refers to this impromptu distribution of leadership as “spontaneous collaboration” (p. 430). Distributed leadership implies that the practice of leadership is one that is shared within formal and informal contexts. This could be formal school committees or a randomly formed group to address an issue. There are often unanticipated events or challenges within schools that call for school librarians, as part of the educational community, to contribute to leadership. In these cases school librarians may be asked to work together with formal and other informal leaders in the building to address a certain issue based on their knowledge, for example test scores, technology purchasing, grant writing, curriculum reform, and so forth. This distribution depends on the situation, and the varied and broad knowledge base of school librarians allows them to contribute in many areas, but especially in the area of technology integration. Any time teachers are working together to solve particular sets of pedagogical problems within the school, they are engaging in leadership practice (Harris, 2008).

**Situation.** Spillane et al. (2004), state that the “situation is both the medium for practice and outcome of practice” and as the medium for practice, can offer both “affordances and constraints” to leadership practice (p. 11). Situation and practice are thus closely intertwined in a distributed leadership approach. Moreover, the situation represents the component within the framework with the capability to enable or constrain leadership practice, ability, and motivation. Spillane et al. (2004) stress the importance of identifying and researching facets of the situation that can both constrain or facilitate leadership practices. This perspective proposes that the situation is critical to leadership practice, therefore guiding this investigation into the enablers
and barriers to technology integration leadership enactment as a way to understand the technology leadership practices of school librarians.

The situation is considered an integral part of distributed leadership: the “situation or context does not simply affect what school leaders do as some sort of independent or interdependent variable(s): it is constitutive of leadership practice” (Spillane et al., 2004, p. 20-21). Yet, this influence is also reciprocal in that leadership interactions can affect the structure and individuals that constitute that organization. An organization’s internal context, its organizational culture and history, plays a significant role in leadership development (Bennett et al., 2003). Yet, it may be challenging for practitioners to understand the extent that situation actually constitutes and defines leadership practice through interactions between leaders and followers. Additionally distributed leadership, when not executed properly or when exclusively implemented in a “top-down” approach, can be interpreted as misguided delegation or even coercion (Hatcher, 2005). Whether a school setting has a collaborative culture or a history of teachers accustomed to working in isolation can influence the development of distributed leadership, as can values held in the school such as trust, collaboration, and collective efficacy. Also, to be considered is the societal structure, including culture, gender, ethnicity, and class that can have this same sort of influential relationship. In education, the external context includes the surrounding community and school district, as well as state and federal policy (Leithwood et al., 2006).

While findings include that “school decisions are influenced by a broad array of groups and people, reflecting a distributed conception of leadership, the degree of influence exercised by these people and groups [still] reflects a traditional, hierarchical conception of leadership in organizations” (Louis et al., 2010, p. 32). In examining patterns of distribution within schools, current research finds that while there are many sources of leadership in schools, the principal remains the central source. Distributed leadership does not imply that the formal leadership structures within organizations are removed, but instead, assumes that there is a prevailing relationship between vertical and lateral leadership processes, and paradoxically it also means that those in formal leadership roles are the gatekeepers to distributed leadership practice in their schools (Harris, 2008). Distributed leadership affords principals the opportunity to enable teachers to take responsibility for some key leadership tasks, either by formal design or simply by creating a situation for spontaneous leadership to emerge (Spillane, 2006). Yet, Spillane
assumes that principals understand how position may be used positively or negatively and ignores that principals can intentionally distribute and limit leadership involvement by creating conditions for “unchosen” teachers to secretly lead, or for followers to influence leadership through subtle insubordination (Hatcher, 2005). Spillane instead proposes that it is the job of the principal to guide and bring the pieces of the organization together in a productive relationship, to coordinate and connect the leadership efforts of many, or lead the leaders.

Elmore (2000) posits that in a “knowledge-intensive enterprise like teaching and learning” there is no way for one person to possess the knowledge to perform all the required tasks without widely distributing the responsibility for leadership throughout the organization (p. 15). The extent to which leadership will be distributed in schools, and the forms it may take, are determined largely by what principals believe and feel about what is to be accomplished, the availability of expertise, and the principals’ preference regarding the use of professional expertise (their own expertise, teachers’ expertise, expertise from external sources) (Louis et al., 2010). School librarians do have expertise to contribute, but the principal in this context is a vital situational element that must be considered due to the impact he or she can have on school librarians’ leadership efforts.

**Limitations to Distributed Leadership**

Although the concept of distributed leadership has gained popularity and empirical research using this theory is growing, the possible limitations to this theory must be considered. One of the biggest challenges is Spillane’s assumption that principals understand how position and relationships may be used positively or negatively in school culture to determine the leadership practices that can occur (Hatcher, 2005). Spillane’s (2006) framework also largely neglects the principal’s role as the formal leader and the responsibilities or circumstances under which the principal must exercise leadership. Moreover, distributed leadership, when not executed properly or when exclusively implemented in a “top-down” approach, can be interpreted as misguided delegation and choosing to involve only those who support the administration agenda and exclude those who do not (Hatcher, 2005). This may involve principals creating conditions that intentionally limit the distribution of leadership, such as closed forms of distributed leadership, which limit collective and democratic management of schools through exclusion of certain individuals or groups from full participation (Hatcher,
Distributed leadership is unlikely without focused leadership on the part of the school’s formal leader (Leithwood et al., 2007).

It is also a challenge to understand the extent to which situation actually constitutes and defines leadership practice through interactions between leaders and followers. Distributed leadership, however, not only involves tasks to get done, but also involves true delegation of responsibility and authority. The design of leadership practice must be intentional and ongoing. Defining how leadership is distributed, who takes on the charge, and how the situation defines leadership practice is one of the biggest challenges ahead for distributed leadership in education (Spillane, 2006).

There are challenges to operationalizing distributed leadership, which have been identified in the literature. The most difficult challenge is the job distinctions between followers and leaders (Gronn, 2000; Spillane & Orlina, 2005; Timperley, 2005; Zinn, 1997). Teacher leadership falls into two categories: informal and formal. Informal teacher leadership is work that is done in the classroom (lesson planning or management of the classroom and school), while formal teacher leadership is work that includes department chairs, committee chairs, and other positions that require a move away from the classroom, yet are integral to the culture and workings of the school. Even with the categorical descriptions of teacher leadership, it still results in confusion within a distributed framework (Ash & Persall, 2000; Harris, 2003), and many researchers acknowledge the difficulty of studying leadership that is distributed because many interactions take place informally, privately, and without a specified time or place (Harris, 2008; Timperley, 2005). This is a considerable limitation to this research; the collaborative and leadership practices of school librarians often take place in informal settings and through private exchanges.

Spillane focuses on interactions between leaders, followers, and the situation, but the relationship with student learning is more ambiguous. Spillane (2006) asserts that “leadership practice connects with instructional practice” and that “teaching and learning should be a central concern” (p. 90-91), but also believes that leadership practice itself must be explored and investigated before attempting to measure effectiveness on student learning. Yet Timperley (2005) warns that leadership should be distributed only when it provides better quality leadership that contributes to assisting teachers in providing more effective instruction to their students and improves student performance since this is the overall goal of any educational practice, including
leadership (Heck & Hallinger, 1999). In order to address this limitation, current research has shifted focus to examine the relationship between distributed leadership and organizational outcomes (Harris, 2008; Louis et al., 2010). Currently distributed leadership is a term widely used, but in addition to being plagued by ambiguity, there is a significant lack of empirical research connecting it to school improvement or student improvement (Bennett et al., 2003; Gronn, 2000; Leithwood et al., 2006; Mayrowetz, Murphy, Louis, & Smylie, 2007; Spillane et al., 2004).

**Summary**

Spillane proposes his descriptive distributed leadership theory as an analytical framework for “understanding school leadership practice” (Harris & Spillane, 2008, p. 32). Distributed leadership shifts the focus of analysis from leaders to leadership activity (Gronn, 2000; Spillane et al., 2001, 2004). This perspective of leadership looks beyond the characteristics and beliefs of individual leaders to include the leadership practices of multiple individuals. Spillane (2006) concludes that the collaborative nature of the work of teacher leaders represents the idea and ideals of distributed leadership. The current research in this area is making strides to move the dominantly theoretical focused distributed leadership research into the empirical evidential realm, yet is still in the nascent stages.

Distributed leadership forms the theoretical foundation of this research. This perspective provides a lens to examine and understand embedded school leadership like that of school librarians. The technologically advanced environment of the 21st century school is impacting leadership practices in education and does afford school librarians an opportunity to enact the expected technology leadership role. The connection of expertise to leadership practice in distributed leadership theory places school librarians in the position to lead students and teachers through technology integration expertise paired with pedagogical knowledge. A fundamental proposition of distributed leadership is that aspects of the situation determine how leadership practice is enabled or constrained. This research asserts that the leadership practices of school librarians also will be enabled or constrained by situational factors.

This section of the literature review defines distributed leadership practice and examines the concepts and propositions of interest as they relate to school librarians in order to provide guidance for collecting and analyzing data for this study. Spillane (2006) concludes that the
collaborative nature of the work of teacher leaders represents the idea and ideals of distributed leadership. Therefore, this research draws from the wealth of research in the field of teacher leadership to examine the factors that influence teacher leaders.

**Enablers and Barriers to Teacher Leadership**

The basis of this study relies on the proposition taken from distributed leadership theory, that there are many factors that can both enable and constrain school librarians in enacting a leadership role in technology integration within schools. Spillane (2006) asserts that a distributed perspective “necessitates understanding how aspects of a situation enable and constrain [leadership] practice and thereby contribute to defining it” (p. 19). The collaborative nature of the work of teacher leaders represents the idea and ideals of distributed leadership (Spillane, 2006). Muijs and Harris (2007) asserts that teacher leadership is more of a subset of distributed leadership, sharing the characteristics of fluid and emergent collaboration but is more concerned the leadership role of teachers rather than those in formal leadership roles.

There are a number of factors that can either support or constrain teacher leadership in a distributed approach and most of the research about factors influencing the development of distributed leadership in schools is found in the teacher leadership literature (Camburn et al., 2003; Frost & Durrant, 2003; Harris & Lambert, 2003; Leithwood & Riehl, 2003; Lieberman & Miller, 2005; Murphy, 2005, 2007; Smylie et al., 2002; Spillane et al., 2002).

In order to investigate the barriers and enablers to the leadership role for school librarians, it is necessary to review and extrapolate from education research, specifically in the area of teacher leadership since no research exist in this area for school librarians. This research is most relevant and applicable to this examination of school librarians as technology integration leaders, because, due the informal nature of the role and expectation for school librarians to essentially act as teacher leaders in the area of technology integration, it is assumed that the factors that can both enable and constrain teacher leadership are the same factors that will impact school librarians in enacting a leadership role in technology integration. Furthermore, school librarianship literature has a wealth of research that examines supports and barriers for school librarians and school library programs that is applicable, but none that examines technology integration leadership. The factors that serve as supports and barriers to teacher leadership and
their relation to school librarians are examined utilizing the conceptual framework to present the research in this area.

**Conceptual Framework: Zinn’s Classification of Enablers and Barriers**

Zinn’s (1997) research into teacher leadership results in a framework to categorize and describe the external and internal factors that support and impede teacher leadership. This classification system categorizes both enablers and barriers into four domains (see Figure 1). Zinn (1997) argues that there are four domains within which these supports and barriers are clustered: “(1) people and interpersonal relationships, (2) institutional structures, (3) personal considerations and commitments, and (4) intellectual and psychosocial characteristics” (p. 243). Each domain contains a list of enabling and impeding factors for further classification. Zinn's (1997) framework is notable for its inclusion of factors from both the work and home environments that can overlap to influence teachers.

There are many differing factors that can either facilitate or deter teacher leaders, and factors that serve as sources of support at one time or in one setting could be barriers at other times or in other settings. This “mirroring” or parallel structure of barriers and supports seems to be a natural element of school structures (Caffarella & Zinn, 1997; Harris, 2008; Murphy, 2007; Zinn, 1997). The framework illustrates that conditions that both support and impede teacher leaders may coexist, but Zinn (1997) finds that teacher leaders only elect to engage in leadership practices when the supports outweigh the barriers. This framework is grounded in research and is referenced in numerous studies and utilized in multiple dissertations to classify supports and barriers (e.g., Caffarella & Zinn, 1999; Collay, 2006; Harris & Muijs, 2005; Katzenmeyer & Moller, 2009; Murphy, 2007; Pruitt, 2008; Robertson, 2008) and has been chosen as the framework to examine and classify the enablers and barriers for the purpose of this research. Therefore, in the following sections, sources of support and barriers to teacher leadership described in existing literature are briefly discussed utilizing Zinn’s four domains to frame the review of the literature in this area.
People and Interpersonal Relationships

- Work Support System
- Working Relationships
- Collegial Relationships
- Mentoring
- Collaboration
- Collegial Respect
- Recognition of Work
- Family and Friends Support

Institutional Structures

- Leadership Opportunities
- Professional Development Opportunities
- Policy
- Time
- Funding
- School Climate
- Personnel
- Role Definition

Personal Considerations and Commitments

- Family and Friends
- Resources (time, people, funds)
- Life Transitions
- Health
- Cultural or Religious Values

Intellectual and Psycho-social Characteristics

- Personal Work Beliefs
- Values and Commitment
- Self-Confidence
- Scholarly Inquiry
- Reception to Change
- Vision
- Intrinsically Rewarding
- Enthusiasm

Figure 2. Overview of Zinn’s Four Domains of Supports and Barriers to Teacher Leadership. Adapted from Supports and barriers to teacher leadership: Reports of teacher leaders by L. Zinn, Copyright 1997.

People and Interpersonal Relationships

This domain takes into consideration that teachers do not work in a vacuum and that interpersonal relationships at work or in personal lives can have positive or negative influences on teacher leaders (Katzemeyer & Moller, 2009; Lieberman & Miller, 2005; Little, 2003; Zinn, 1997). These relationships focus on personal support systems, mutual respect, collaboration, mentoring, and modeling. A key source of support for teacher leadership mentioned frequently in research is a strong network of colleagues. This network of “critical friends” (Lieberman & Miller, 2005) provides a safe, trustworthy forum for working through difficult problems. Teacher leaders rely on support from colleagues in general, but also different sets of colleagues for different problems or concerns (Zinn, 1997). Teacher leaders identify valuable relationships that promote mutual respect and interdependence among the staff as supportive to their efforts.
As teachers develop working relationships, they learn to trust and appreciate one another’s strengths and weaknesses and these “intuitive working relationships” contribute to the distribution of leadership (Gronn, cited in Spillane, 2006, p. 46).

Yet these same personal relationship factors can also serve as barriers to teacher leadership. Katzenmeyer and Moller (2009) find that “maintaining effective relationships with colleagues can be more formidable than working with administrators. The egalitarian nature of teaching does not encourage a teacher to step out and take leadership roles” (p. 60). Teacher leadership disrupts the traditional status quo hierarchy in a school, which can lead to resentment from peers who perceive that some teachers may have more influence than others. Teacher leadership introduces status differences based on knowledge, skill, and initiative in a profession that has made no provision for them. This resentment can lead to tense relationships with fellow teachers, lack of collaboration, opposition, and impede teacher leadership efforts (Barth, 2001; Lambert, 2003a; Little, 2003; Murphy, 2005; Zinn, 1997). A lack of support from other teachers is a major obstacle in the development of teacher leadership in schools (Murphy, 2005).

“Teachers who lead - who behave like administrators - violate the taboos of their school and may be dealt with severely by their peers” (Barth, 2001, p. 446). Additionally, a main barrier to teacher leadership is often the feeling of being isolated from colleagues and this concern - that relationships with colleagues may diminish - often leads teachers to choose not to pursue a leadership role (Lieberman, Saxl, & Miles, 2000). So while teacher leaders enjoy the opportunity to work collaboratively with their colleagues, their changed status often separates them as the “[l]earning how to accumulate informal power, exercise influence, and reconcile conflicting collegial interests requires nothing less than a profound identity shift for contemporary classroom teachers” (Bowman, 2004, p. 187).

Relationships with administrators are also crucial sources of support for teacher leaders. Effective teacher leaders have collegial relationship with their school principals even when not acting in leadership capacities and learn from their mentoring and by modeling (Militello & Janson, 2007; Zinn, 1997). In many cases, administrators are members of teacher leaders’ close support network. Administrators who support these leaders are most often principals, but other system administrators can provide support or encouragement as well (Frost & Durrant, 2003; Katzenmeyer & Moller, 2009; Ritchie & Woods, 2007; Ryan, 1999; Silva, Gimbert, & Nolan, 2000; Zinn, 1997). The quality of a principal’s relationship with teachers is correlated with
teachers’ willingness to participate in teacher leadership: the more open, supportive, and facilitative a principal is with teachers, the more willing they are to take on a leadership role. Not only do administrators provide verbal encouragement, they often demonstrate support by removing other barriers to the teachers’ leadership (Smylie et al., 2002).

Principals can encourage and promote teacher leadership with formal appointments such as creating teams to address certain tasks or responsibilities, as a substitute for administrative leadership, or suggesting a teacher conduct a professional development session in an area of expertise (Buckner & McDowelle, 2000; Duke & York-Barr, 2004; Harris & Muijs, 2005), or creating a situation for spontaneous leadership to emerge (Elmore, 2000; Spillane, 2006).

Principals can build supportive relationships with the teachers in their schools to provide encouragement for teachers to take on active roles beyond the classroom to enable their development as teacher leaders while providing teachers with supportive feedback through open communication. When principals validate teachers by recognizing the contributions of their work, it makes teachers feel valued and may serve to propel them to leadership involvement (Buckner & McDowelle, 2000). For teacher leaders to be successful requires principals who will relinquish control and be willing to create new working relationships with teacher leaders (Katzenmeyer & Moller, 2009), create learning environments that support collaboration, and model trust and respect (Marzano, Waters, & McNulty, 2005; Scribner et al., 2006).

Some principals who subscribe to a traditional hierarchical view of leadership see teacher leaders as threatening. This can lead to active resistance from the principal or passive resistance, in that administrators simply do nothing to support teacher leadership (Barth, 2001; Birky et al., 2006; Katzenmeyer & Moller, 2009; Mangin, 2007; Muijs & Harris, 2007; Ryan, 1999; Silva et al., 2000; York-Barr & Duke, 2004; Zinn, 1997). When a principal is perceived as closed to new ideas or controlling, the more likely it is that teachers will avoid participation in leadership (Smylie et al., 2002). The primary influence upon a teacher’s growth to teacher leader is that of the school principal, and without the support of the principal, teacher leadership is unlikely (Buckner & McDowelle, 2000; Crowther et al., 2002; Katzenmeyer & Moller, 2009; Silva et al., 2000).

The importance of relationships with colleagues and principals is echoed in the school librarianship literature as well. School librarians rely on teachers to collaborate with them and know that cultivating accepting and trustful relationships is vital for enacting leadership.
(McCracken, 2001; Oberg, 2009; Oliver, 2003; Slygh, 2000; Underwood, 2003). Luebke (2009) found that a group of respected colleagues - other school librarians - serve as support to the school librarian in his study examining school leadership. The relationship with school administrators is also one that garners a great deal of attention in the literature. Unfortunately it has been found that an extremely limited number of principals even recognize that school librarians should take on a leadership role and this can serve as passive opposition (Hartzell, 2002; Oberg et al., 2000; Smith, 2006). Yet, when principals have a positive working relationship with school librarians, they can serve as advocates and sources of support (Oberg, 2009). Research has found that a school’s technology planning, leadership, professional development, curriculum alignment, technology use, and perceptions of technology’s effect on learning all could be attributed to school administrators’ opinions (Anderson & Dexter, 2005; Kowch, 2009). When teachers believe that their input and opinions are valued, they are more likely to participate in leadership (Murphy, 2005; Silins & Mulford, 2004). Not only do teacher leaders want to be valued, but in case studies where there was a high degree of professional support, appreciation, and recognition for their work teachers were more apt to engage in leadership activities (Muijs & Harris, 2007).

An instructional technologist is defined as a building level person who works with teachers to teach or integrate technology in the curricular areas. This position is emerging as schools search for ways to deal with the ever-expanding presence of technology in schools. This is not a relationship addressed in the teacher leadership literature specifically, but competitive relationships with other teachers are mentioned. As this position of computer or technology specialist emerged in the 1990s research began to note the overlap with the role of the school librarian (Seavers, 2002) and as this position has become even more instructionally focused, the boundaries between the role of school librarians and instructional technologists have blurred.

Both technology specialists and school librarians look for ways to incorporate information technology into the curriculum of the school and provide support and resources for the entire school community. Sugar and Holloman (2009) define the role of the instructional technologist as providing effective technology integration within specific lessons and serving as an instruction expert by providing advice on when and how to incorporate appropriate technology into a lesson. In examining the perceptions of the role of the school librarian and the role of the instructional technologist, Nguyen (2007) found that school librarians described their
ideal technology team in the libraries as a professional librarian, a clerk, a technology coordinator, and a technician. Instructional technologists described their team as including administrators, members from all subject areas, and a technician, but not a school librarian. Instructional technologists also expressed that they want to teach, to collaborate with teachers, and to share the most effective methods and techniques in utilizing the technology for instruction, which overlaps with the role stated by school librarian participants. The instructional technologist was also mentioned as the person responsible for staff development and overall was viewed as the sole technology leader in the school. Seavers (2002) found that most instructional staff perceived the instruction technology specialist as the person responsible for the hardware, software and network issues as well as being the person responsible for training teachers in the integration of technology into the curriculum and teaching students. Teachers turn to instructional technologists to help them with the technology and lesson planning.

In examining the background of instructional technologists, Nguyen (2007) found that most were not formally trained in education and did not possess a teaching certificate, but were expected to assist teachers in technology related projects. Yet some were first classroom teachers who were approached by their principals to serve in this role. The technology specialist interviewed for Nguyen’s research did not have a common education degree connection except for teaching certification.

Teachers, instructional technologists, and school librarians all expressed confusion over the job divisions. In order to collaborate, it is important for these professionals to develop an understanding of both roles and in what areas they overlap. The results of the limited research in this area urge for school librarians and instructional technologists to collaborate and work as a team to benefit students and teachers, yet there needs to be further research to clarify and define the role and responsibilities of each member of this team (Cameron, 1999; Nguyen, 2007; Seavers, 2002).

**Institutional Structure**

“The most important factor in the development or the obstruction of teacher leadership is the context of the school” (Katzenmeyer & Moller, 2009, p. 76). The school culture encompasses the values, beliefs and norms of the teaching profession and the institutional structure of a school has many written and unwritten norms and expectations as well as formal
and informal policies and procedures that impact teacher leadership (Louis et al., 2010; Murphy, 2005; Zinn, 1997). In order to support teacher leadership, schools must minimize the barriers and maximize existing structural factors that enable teacher leadership. The institutional structure also determines the allocation of resources such as time, scheduling, funding, personnel, training, and even information that can impact teachers in assuming a leadership role (Beachum & Dentith, 2004; Crowther et al, 2002; Katzenmeyer & Moller, 2009; Murphy, 2005, 2007; York-Barr & Duke, 2004; Zinn, 1997).

The overall climate and culture of the school is vital because teacher leadership must be supported by “the broader organizational and institutional context in which they develop and function” (Smylie et al., 2002, p. 183). A school climate that fosters a spirit of collaboration, shared decision-making, and trust between teachers and administrators is necessary to promote teacher leadership (Crowther, et al, 2002; Muijs & Harris, 2006; Murphy, 2005; Smylie et al., 2002). Building this climate to foster teacher leadership often begins with the principal, illustrating the overlap in Zinn’s domains and the importance of the school principal. The school principal has the authority to change structures and processes that impede teacher leadership and is crucial to creating a sustainable school climate that encourages teacher leadership (Ash & Persall, 2000; Blase & Kirby, 2000; Harris, 2008; Katzenmeyer & Moller, 2009; Leithwood et al., 2006; Murphy, 2005; Ritchie & Woods, 2007; Spillane & Orlina, 2005; York-Barr & Duke, 2004).

Teachers are highly motivated to assume a leadership role when they view them as connected to the classroom, issues relevant to everyday teaching and learning and their work with students or as a means to professional development (Beachum & Dentith, 2004; Katzenmeyer & Moller, 2009, Little, 2003; Smylie et al., 2002; Zinn, 1997). This culture of professionalism, where teachers share beliefs, and through their actions strive for student success, gives teachers a shared sense of purpose and promotes an environment of collaboration (Tschannen-Moran, 2009). A culture that supports teacher leadership is one where teachers are actively encouraged to lead, take risks in promoting innovation, share ideas, and work together to solve problems (Bennett et al., 2003; Harris & Muijs, 2005). The presence of open and mutual communication is critical to teacher leadership, including sharing, planning, and communicating among teachers (Katzenmeyer & Moller, 2009; Silins & Mulford, 2002, 2004; Silins, Mulford, Zarins, & Bishop, 2000). A school culture that fosters collegiality and collaboration is vital to
teachers enacting a leadership role (Datnow & Castellano, 2000; Mulford et al., 2007; Murphy, 2005; Silins & Mulford, 2004; Smylie et al., 2002; Zinn, 1997).

Unfortunately the traditional hierarchical structure that still remains in many schools (Barth, 2001; Hatcher, 2005; Murphy, 2005) does not promote the collaborative environment necessary for teacher leadership to occur and is in direct conflict with the concepts of collaboration and teacher leadership (Ash & Persall, 2000). As a consequence, teachers do not share candidly and the lack of two-way communication interferes with the potential for teacher leadership because teachers may be unwilling to risk or initiate conversation, let alone take on significant change. This climate leads to teachers’ isolation from each other and from administrators, leaving no opportunity to plan, share, or work together on school issues (Katzenmeyer & Moller, 2009; Silva et al., 2000).

Social norms within a school are very resistant to change and it is difficult to alter these norms in order for teachers to take on a leadership role and still be connected to teaching and learning (Katzenmeyer & Moller, 2009). Timperley (2005) confirms that teachers may be disregarded or disrespected openly by other teachers because they do not possess formal authority and too often school politics is involved in creating a situation where those with the true expertise are not the ones performing the leading. This creation of teacher leaders outside their area of expertise can lead to a “credibility gap” with their colleagues (Ryan, 1999, p. 10) and lead to a climate of competition rather than collaboration.

The development of teacher leaders within a school means that teachers take on new responsibilities, the expectations of their role changes impact their status and collegial relationships, and often even the teacher leaders themselves are not aware of clear definitions of their responsibilities (Collay, 2006). A well-understood defined role is key, and definitions of this role can come from policy, administrators, and from the teacher leader themselves and yet when principals clearly define a teacher leader’s role and common goals, teacher leaders are more successful (Buckner & McDowell, 2000). Smylie (1992) explains that the role of the teacher leaders must be clearly defined in order to “redefine the relative status, responsibilities, and interdependence of teachers who may have worked together for some time under different role definitions and collegial expectations” (p. 93). Role clarification helps to eliminate some of the resentment other teachers may feel, and can facilitate a change such as teacher leadership enactment (Barth, 2006). Zinn (1997) confirms, “[p]oorly defined or overly broad roles limit the
potential for success” (p. 11). This lack of clarification can block teacher leader efforts unless the role is clearly redefined and embedded within the institutional structure (Barth, 2006; Smylie et al., 2002).

This role development also comes through leadership training opportunities. Teacher leadership requires knowledge and skills related to leadership in addition to the instructional expertise that teachers possess. Teacher leaders require accessible professional development and leadership modeling in order to continuously improve their teaching skills, be involved in school decision-making, and be involved in the professional development of others (Buckner & McDowelle, 2000; Katzenmeyer & Moller, 2009; Spillane, 2006). The research supports the idea that in order to be most effective, professional development for teacher leadership needs to focus not just on development of teachers’ skills and knowledge but also on developing leadership skills and understanding to enhance the leadership role such as personal, interpersonal, and group skills needed for successful leadership (Barth, 2001; Crowther et al., 2002; Harris & Muijs, 2005; Katzenmeyer & Moller, 2009; Lambert, 2003b; Murphy, 2005; Snell & Swanson, 2000; Zinn, 1997). Supportive principals promote on-going and long-term situational growth opportunities to help teacher leaders develop their leadership skills and capabilities necessary to enable them to be effective leaders.

Teacher leader roles often are established without consideration to structures of the workplace related to time, schedules, personnel, and classroom responsibilities. The organization of the school day calendar does not provide adequate opportunities for teachers to participate in leadership activities. And while there are many organizational constraints to teacher leadership time is noted as the major organizational factor that will either support or constrain the practice of teacher leadership (Barth, 2001, Blegen & Kennedy, 2000; Harris, 2003; Katzenmeyer & Moller, 2009; Lambert, 2003a; Murphy, 2005, 2007; Smylie et al., 2002; Zinn, 1997). Involvement in leadership places demands on teachers above and beyond their regular classroom responsibilities and creates a situation in which there is simply too much to do and too little time in which to do it. Time allowance is an important support for teacher leaders and once again the value of administrator support is illustrated in that administrators can create flexibility in the workday to allow for leadership responsibilities. Providing time for teacher collaboration is an important strategy utilized by those schools with successful teacher leaders. This time is spent “in an organized and sustained fashion to plan curriculum together, discuss teaching, and
work on problems or new initiatives in the school” (Beachum & Dentith, 2004, p. 280).

Teacher leaders frequently experience time conflicts because no time accommodations are made to account for the additional responsibilities of leadership. Classroom responsibilities limit available time for leadership endeavors and conversely, leadership responsibilities take away from time usually devoted to classroom instruction (Barth, 2001; Harris, 2003; Zinn, 1997). Many teachers are reluctant to lead because they feel they are just too busy. But to enable teacher leaders, time can be made for leadership activities through common planning periods, scheduled team meetings, or early release time which all can support the practice of teacher leadership (Beachum & Dentith, 2004; Murphy, 2005; Zinn, 1997).

Finally, policy must be considered as an element of institutional structure. The “mirroring” of the enablers and barriers is again apparent in examining teacher leadership from a policy perspective. It has become a widespread practice for teachers to be recruited to participate in some type of leadership function in their schools due to the increased accountability demands on formal administrators. Yet another noted repercussion of accountability reform is the pressure placed on teachers for their students to succeed. These pressures have led to over-worked teachers who cannot afford the time to take on extra duties, which includes engaging in leadership responsibilities (Muijs & Harris, 2006). The continued escalation of pressures and demands as a result of education reform presents an environment that requires the assistance of teachers in leadership responsibilities, but ironically serves to create a detrimental condition for teachers to lead (Daly, 2009; Little, 2003; Muijs & Harris, 2006; Silins & Mulford, 2002; Smylie et al., 2002).

Elmore (2000) emphasizes that supporting structures are even more important to the success of teacher leadership than the actual selection of the teachers who will lead. It is possible for schools to be structured to facilitate school leadership, but policies and procedures that institutionalize the practice of teacher leadership in a school are essential to enable teacher leadership (Katzenmeyer & Moller, 2009; Murphy, 2005; Sinden, Hoy, & Sweetland, 2004). The symbiotic relationship between enablers and barriers is again evident in examining those institutional structure factors that can impact teacher leadership. All too often school policies dictate a hierarchical structure, seriously impeding and frustrating teacher leaders. Silva et al. (2000) find that teachers cite school structures blocking their ability to work together, poor school climate, lack of training, and an unsupportive administrative all as preventing their ability
to be effective leaders. School climate is vital to teacher leader success, but many schools still suffer from obstacles that keep teachers from leading; many of these barriers are a result of restrictive formal and informal institutional structures (Murphy, 2005, 2007; Silva et al., 2000; Zinn, 1997).

These same institutional supports and barriers are scattered throughout the research in school librarianship. The school principal is a critical element in supporting and impeding leadership enactment by school librarians (Hartzell, 2002; Oberg, 2006). As the school leader, the principal “shapes the school culture, sets expectations for the school’s staff” (Shannon, 2009, p. 1). A collaborative school culture supports the efforts of school librarians and provides a climate for sharing knowledge (Oberg, 2009; Slygh, 2000), yet a climate where teachers feel threatened or competitive can hinder these efforts. Time and scheduling are often noted as issues for school librarians. Implementing flexible scheduling, or employing a clerk to address time constraints that impede collaboration and leadership opportunities are seen as supportive measures, while imposed fixed scheduling or ignoring personnel needs serve as barrier (Massey, 2009; McCracken, 2001; Shannon, 2009). Resources such as funding and materials are vital to the school library; it is hard to lead technology integration efforts if resources and technologies are not available. Since most principals do not even recognize that school librarians should take on a leadership role (Hartzell, 2002; Oberg et al., 2000; Smith, 2006), opportunities for leadership are not presented. Finally, too many principals lack knowledge about the role of school librarians (Church, 2008) and therefore cannot provide the role clarification needed to support leadership enactment.

**Personal Considerations and Commitments**

This domain takes into consideration that teachers have personal, as well as professional lives. Achieving a balance between work commitments and personal commitments can be crucial for teachers choosing to assume leadership responsibilities. Yet, Zinn (1997) finds that the influences of one’s personal life often are ignored in the teacher leadership literature. There are indeed external conditions that can support teachers’ ability to engage in a leadership role such as support from family and friends, whether the activity provides them extra financial support, moral support, or the opportunity of time. Personal cultural or religious beliefs, along
with good health, also can contribute to the enactment of the leadership role. Yet, these personal commitments also can serve as constraints to enacting leadership.

The needs of family at any given time dictate the amount of “physical and emotional energy” that teachers have available for leadership activities at work and often work commitments must be reduced to meet commitments of private lives (Caffarella & Zinn, 1999). There can also be lack of family support for extra time and energy needed to devote to leadership. Many teachers are also reluctant to lead because they feel they are just too busy. “Responsibility upon responsibility has been added to each teacher’s working day: responding to parents, overseeing after-school activities, attending professional development activities, and, of course, maintaining standards” (Barth, 2001, p. 445). This struggle of too many responsibilities can extend to maintaining a balance between their commitments to work and their responsibilities to family (Collay, 2006; Suranna & Moss, 2000; Zinn, 1997). Zinn’s (1997) research did find that most frequently family support and family responsibilities impacted leadership enactment and that finding a balance between family responsibilities and commitments at work was important. Finding that as teachers move through their careers they have different needs and their personal life stage does relate to their willingness to serve as a teacher leader. For example, early in their careers teachers often do not have families and have the time to devote to leadership within the school setting, but later the arrival of children might make staying for meetings and serving on committees difficult. Again, as teachers near retirement, caring for aging parents might interfere with taking on a leadership role (Zinn, 1997b). As found in the teacher leader literature, the personal considerations and the impact they can have on leadership enactment is largely ignored in the school library literature was well. The personal life of school librarians either can provide the additional support needed to enable them to accept a leadership role or serve as one more obstacle that cannot be overcome (Caffarella & Zinn, 1999; Katzenmeyer & Moller, 2009; Smylie et al., 2002; Zinn, 1997).

**Intellectual and Psycho-social Characteristics**

Zinn’s (1997b) fourth domain focuses on the influences that impact a teacher’s willingness and ability to engage in a leadership role and responsibilities. These factors have been the subject of limited study and in this domain, the teacher leaders themselves serve as support or an impediment. Some studies conclude that intrapersonal factors provide a teacher with the beliefs,
value system, desire to learn and change, and the confidence to either support or impede them in their leadership endeavors (Caffarella & Zinn, 1999; Zinn, 1997).

When teachers believe that their input and opinions are valued, they are more likely to participate in leadership (Murphy, 2005; Silins & Mulford, 2004). Not only do teacher leaders want to be valued, but in case studies where there is a high degree of professional support, appreciation, and recognition for their work teachers are more apt to engage in leadership activities (Muijs & Harris, 2007). Yet it is often the intrinsic rewards, such as an increased effectiveness, increased influence, or collegiality that serve to support teacher leadership (Zinn, 1997). Strong personal beliefs can serve to motivate teachers to assume leadership responsibilities through belief in strong work ethics, a need to maximize talents and expertise, commitment to excellence, and dedication to their students and colleagues (Zinn, 1997b). Teachers often are called to leadership work by the desire to make a difference and teacher leaders are driven by their commitment to create a better world and thus better education for all children. It is this link between teacher leadership and moral purpose, the goal of equipping all children for success, that frequently motivates teachers to become involved in activities related to school leadership (Crowther et al., 2002). It is this personal drive to serve as an advocate for the needs of the students that has been determined to be an important interpersonal characteristic in enabling teacher leaders to succeed (Crowther et al., 2002; Katzenmeyer & Moller, 2009; Silva et al., 2000; Zinn, 1997b).

Teacher leadership offers both ownership of, and responsibility for, maximizing student learning. Many teacher leaders admit they prefer leading to following when the issues have personal importance or there is a sense of connection with the task. Additionally, providing teachers with the opportunity to make a difference and contribute to the organization encourages teachers to view themselves as important in shaping a school’s direction. When teachers believe that their input and opinions are valued, meaningful, and purposeful they are more likely to participate in leadership (Crowther et al., 2002; Silins & Mulford, 2004; Zinn, 1997).

Research suggests that a sense of inquiry and love of learning enables teachers to assume leadership responsibilities through collaborating and sharing professional learning and knowledge (Harris, 2003; Muijs & Harris, 2006; Zinn, 1997b). Teachers who identify and study problems related to their practice and then communicate the results of their learning can influence colleagues both within and outside of their schools as well as administrators,
legislators, and others who make decisions impacting schools and school districts. In doing so, these teachers make an important contribution to their schools and the wider educational community (Hatch, Eiler White, & Faigenbaum, 2005).

Teacher leadership involves collaboration with others based on content expertise that leads to self-confidence and the willingness to share that expertise (Silins et al., 2000; Zinn, 1997). This self-confidence in their area of expertise and opportunities to build a sense of efficacy about their leadership abilities from experiences in leading are vital factors for teachers in enacting a leadership role (Crowther et al., 2002). Teachers are not equally efficacious in every teaching situation and “[i]n assessing self-perceptions of teacher competence, the teacher judges personal capabilities such as skills, knowledge, strategies, or personality balanced against a particular teaching context” (Tschannen-Moran & Barr, 2004, p. 28). Bandura (1997) finds that school contextual factors strongly influence teacher efficacy. The organization, the climate, the principal’s leadership, and overall combined effects of school contextual factors influence levels of teacher efficacy, demonstrating the overlap between Zinn’s domains and the overarching importance of the role of the school administrator.

Teachers who take on leadership responsibilities often face their own intrapersonal challenges in doing so. Strong personal beliefs and values can serve to deter teachers in assuming leadership responsibilities. When teachers feel insecure, discouraged, and unwilling to take risks, then they are less likely to take on leadership responsibilities. Some teachers who are content teaching in their own classroom value their autonomy and isolation; they do not want to spend the additional time on leadership tasks or want the stress that comes with additional responsibility with no extrinsic reward (Barth, 2001; Blegen & Kennedy, 2000; Lambert, 2003a). Many studies of teacher leaders find that lack of extrinsic incentives (e.g., release time, monetary compensation) for teachers to assume a leadership role was a common problem (Barth, 2001; Harris, 2003; Zinn, 1997). Other teachers are reluctant to let go of comfortable routines and desire to maintain the status quo, having no aspirations to move on to new challenges. Finally, most fear that additional responsibilities will interfere with their teaching, which may conflict with their feelings of their primary professional obligations to students’ needs (Collay, 2006; Crowther et al., 2002)

Often the barrier is the insecurities experienced by teachers because they do not see themselves as leaders and are uncomfortable in a leadership role (Katzenmeyer & Moller, 2009;
Teachers may not assume a leadership role because they are not willing to take risks in their current school structure and fear lack of support from their peers (Tschannen-Moran & Barr, 2004). Additionally many deal with the internal barrier of low self-efficacy, believing they are unqualified to lead because they lack the expertise, the preparation, and skills necessary to be leaders (Crowther et al., 2002; Lambert, 2003a; Smylie et al., 2002; Snell & Swanson, 2000; Zinn, 1997). Even when teachers had the necessary leadership skills, most still feel that they cannot act as effective leaders (Silva et al., 2000). Perceived self-efficacy has a variety of effects; Bandura (1997) states:

> such beliefs influence the courses of action people choose to pursue, how much effort they put forth in given endeavors, how long they will persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding... and the level of accomplishments they realize. (p. 3)

Previously discussed research provides insights into the intellectual and personal characteristics of school librarians that can either enable or impede technology integration leadership. Hanson-Baldauf and Hughes-Hassell (2009) find that a significant number of school librarians do not feel competent with emergent technologies and only rarely use them. It can therefore be inferred from these findings that school librarians themselves feel they do not possess the technological skills or competencies needed to integrate technology into their own teaching, much less serve in a leadership role in this area. Yet Massey (2009) finds that National Board Certified school librarians do demonstrate a high level of technology integration abilities and self-confidence that has developed with leadership experience. National Board Certified school librarians also have a strong sense of commitment to students and their learning or a moral purpose that serves to compel them to contribute to leadership efforts. This is closely related to the concept of intrinsic reward and that improving learning outcomes for students is rewarding work for school librarians (Oberg, 2009).

There are many differing factors that can either facilitate or deter school librarians in enacting the expected leadership role in technology integration. In extrapolating from education leadership literature, the parallels between teacher leaders and the expectations for school librarian leadership become apparent. The teacher leadership literature provides a great deal of research into the leadership practices of teacher leaders and those factors that both support and deter them. This body of literature, paired with the related literature from the school
The ever-changing and advancing environment of 21st century learning has necessitated the evolution of school librarians to technology leaders and presents opportunities to exert this leadership (e.g., AASL, 2009; McCracken, 2001; AASL & NCATE, 2003; NBPTS, 2010; Shannon, 2002; Todd, 2008). Yet, the dearth of research in this area has left school librarians unprepared to enact a leadership role in technology integration. In a distributed approach, Spillane (2006) asserts that research must start with first identifying and observing leadership practice and then explore the interactions among the leaders, the followers and the situation. Emerging research takes the initial step to identify the leadership practices of school librarians in the area of technology integration (Everhart et al., 2010), but the elements that can either support or constrain these practices remains unexplored.
CHAPTER 3
METHODOLOGY

In conducting social research, the area of investigation and the research questions determine the method that the researcher follows. The research method consists of how the researcher collects, analyzes, and interprets the data in the study (Creswell, 2009). In this study, the researcher chose to investigate school librarians as leaders in technology integration. This chapter provides a rationale for the research, reviews the research questions and theoretical foundation as positioned in the methodology, explains the selection process for the method, and describes the procedure that was followed in this research. Finally, the chapter concludes with the data analysis procedure and limitations of the study.

Research Purpose

This study investigates current practices of accomplished school librarians in order to identify, categorize, and understand what enables some school librarians to thrive as technology integration leaders and what constrains others. It is framed in a teacher leadership perspective.

Research Questions

Four research questions guide this research:

- RQ1: What enablers or supporting factors do accomplished school librarians perceive as enablers in enacting the role of leader in technology integration?
- RQ2: What barriers or constraining factors do accomplished school librarians perceive to enacting the role of leader in technology integration?
• RQ3: What is the association between accomplished school librarians involved at a high level in technology integration leadership and the identified enablers in comparison to the other participants?
• RQ4: What is the association between accomplished school librarians involved at a low level in technology integration leadership and the identified barriers in comparison to the other participants?

Theoretical Foundation

In conducting social research, “we are attempting to connect theory with empirical data” (Schutt, 2006, p. 69). Research requires that an investigator begin with research questions informed by a theoretical or conceptual framework; the theory is paramount to guide research (Magee, Lee, Giuliano, & Munro, 2006; Rew, Koniak-Griffin, Lewis, Miles, & O’Sullivan, 2000). Distributed leadership theory served as the impetus for this research and provides a framework for “thinking about and framing investigations of leadership practice” (Spillane, 2006, p. 102).

It is the proposition that “aspects of a situation enable or constrain leadership activity” (Spillane et al., 2004, p. 20-21) that led to this inquiry and guided the researcher in all aspects of the research design. Spillane et al. (2004) propose distributed leadership theory as an analytical framework for “understanding school leadership practice” (p. 32). They assert that leadership practices provide insights into how school leaders act and the leadership routines within the structure of the school. Leadership practices may examine, the tasks or activities used in the performance of a routine; who is responsible for the tasks; what tools are necessary to perform the tasks; and the leadership function or goals the tasks are designed to address (Spillane, 2006). In this research, distributed leadership theory “provides a lens that shapes what is looked at and the questions asked” (Creswell, 2009, p. 49).

Method Selection

Method selection is dependent on the research problem the researcher seeks to answer (Creswell, 2009), and begins with the research questions. The researcher defined the question of
study, determined the population of interest, identified and specified the variables she wanted to
include in her analysis, and then began to consider what type of method was most appropriate for
the research. Most research begins with an investigation to learn what is already known and
what remains to be learned about a topic; therefore the researcher began by reviewing research
that had been completed in this area (Schutt, 2006).

The researcher conducted an in-depth literature review of the areas of interest by
examining the previous and current work of noted experts in the field of school librarianship and
technology. Through this literature review the researcher was able not only to further identify
prominent researchers on this topic, but also to identify agencies and research centers that have
conducted studies. The researcher reviewed recent research projects and findings from the top
ranked school library preparation programs through online searches, reviewed recent
dissertations related to the topic of interest, and conducted a thorough review of published
findings in relation to technology, leadership, and school librarians. Additionally, Stewart and
Kamins (1993) recommend reviewing the research that has been conducted by professional
organizations. Therefore the researcher also investigated the publications and research
undertaken by professional organizations in the field of library science related to school
librarians, including the American Library Association (ALA) and the American Association of
School Librarians (AASL). In addition, because school libraries often fall into the category of
education, and for that reason research from professional organizations in the educational
technology field, such as the International Society for Technology in Education (ISTE) and the
American Educational Research Association (AERA), were also reviewed.

Finally, local informal networks can also provide valuable knowledge on a particular
research topic and serve as a great source to determine what research has been previously or is
currently being conducted (Jacobson et al., 1989). This is especially relevant in the field of
school librarianship, which is a very connected community. The researcher contacted various
researchers and experts in this area to question their knowledge of research in relation to the
topic of school librarians and technology leadership. The researcher also had the benefit of an
informal network, in that she was a part of the team that worked on background research and
survey construction for a current study by the Partnerships for Advancing Library Media
(PALM) Center at Florida State University (2009).
In this review of the research, the researcher, as suggested by Boslaugh (2007), conducted a thorough investigation of all viable options in order to ascertain what research has been, and is currently being conducted in this area. The researcher found through her review and through informal sources, that while research in the general area of school librarians and technology leadership is scarce, recent survey research had been conducted by the PALM Center at The Florida State University (Everhart, Mardis, & Johnston, 2010) and The University of North Carolina (UNC) at Greensboro (Hanson-Baldauf & Hughes-Hassell, 2009).

In an examination of the FSU and UNC studies the researcher found that while both focus on school librarians and technology integration, the survey from FSU was uniquely in that it added the variable of leadership practice and contained questions that addressed concepts of enablers and barriers to enactment of the leadership role. Due to her professional relationship with the primary investigators, the researcher was aware that the data collected from the two questions addressing enablers and barriers had not been analyzed or reported. Finding that this data would adequately address her research questions and that the primary method of data collection was appropriately suited to her research (Boslaugh, 2007; Doolan & Froelicher, 2009; Gorard, 2002; Kiecolt & Nathan, 1985; Schutt, 2006), the researcher chose to utilize this previously collected survey data for the purposes of this research.

The researcher specifically selected data obtained from two open-ended questions from the end of the School Library Media Specialist and Technology Integration Survey (PALM, 2009) that asked participants to respond with enablers and barriers that facilitate or constrain their technology integration leadership involvement. These questions ask respondents to “Think back about the activities in the preceding statements, specifically those in which you are fully involved. What enables you to be involved at that level?” and “Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement” (PALM, 2009). The open-ended questions allowed respondents to provide a personal answers in their own words to questions; which yield useful information, especially when researchers need to explore issues that do not have a finite or predetermined set of responses (Babbie, 2004; Dillman et al., 2009; Schutt, 2006) as is the case in this research.

Surveys are useful for descriptive and explanatory purposes and provide an efficient method for collecting data from a large population in order to enhance understanding of some
topic (Babbie, 2004; Schutt, 2006). Additionally, survey is the most commonly used method to collect information about both the instructional design practices of teachers and their use of computers in their instruction (Bielefeldt, 2002). Furthermore, an anonymous survey is beneficial when questioning people in relation to workplace experiences because their responses may reflect negatively on them or their supervisor, which may be the case in this research. The assumption is that by creating an environment in which individuals fear no penalty that they will be more honest response in their responses (Dillman et al., 2009). Therefore, the researcher determined that survey data would be most appropriate for this study due to the versatility and the ability to collect data from a wide range of people from many locations (Dillman et al., 2009; Schutt, 2006).

**Research Design**

The collection of new research is not always a necessary step in the research process; it is sometimes possible to examine a new research question using previously collected data, or secondary analysis. Original survey research rarely uses all of the data collected and this unused data can provide answers or different perspectives to other questions or issues (Clark & Maynard, 1998), therefore this research employs the secondary analysis method to utilize unused archived survey data to investigate the enablers and barriers that accomplished practicing school librarians experience in enacting leadership in technology integration.

**Secondary Analysis Method**

There are many diverse interpretations and definitions as to what constitutes secondary analysis. The most-widely accepted definition is presented by Hakim (1982) as “any further analysis of an existing dataset which presents interpretations, conclusions or knowledge additional to, or different from, those presented in the first report on the inquiry as a whole and its main results” (p. 1). Most research begins with an investigation to learn what is already known and what remains to be learned about a topic through reviewing secondary sources (Stewart & Kamins, 1993), but secondary analysis takes this one step further, reviewing investigations others have previously conducted in the specified area of interest, but also
including the data previously collected. A researcher may identify that there is already an existing dataset that addresses the problem she seeks to investigate (Doolan & Froelicher, 2009). Technological advances have led to a plethora of data that has been collected, compiled, and archived, and that is now easily accessible for social research (Clark & Maynard, 1998; Dale et al., 1988; Finlayson, Egan, & Black, 1999; Schutt, 2006, Smith, 2008; Stewart & Kamins, 1993). The key to using preexisting survey data in an effective way to find meaningful answers to research questions is a good fit between the research question and the dataset (Doolan & Froelicher, 2009).

**Secondary Analysis Procedure**

Secondary analysis is a systematic method with procedural and evaluative steps to be followed, just as there are in collecting and evaluating primary data. The advantage is that the data already exist in some form and can be evaluated for appropriateness and quality in advance of actual use (Stewart & Kamins, 1993); however it is important to identify and evaluate data in a “stepwise fashion” in order to clarify and address any issues before analysis begins (p. 18). Stewart and Kamins (1993) propose a method to follow in identifying and evaluating secondary data sources. Employing this procedure, the researcher has described the identification and selection of the dataset, and continues with an evaluation of the dataset, an in-depth examination of the original survey method that presents the participants, sampling, instrumentation, and data collection procedure, concluding with the data source utilized in this secondary research.

**Evaluating the dataset.** Once a dataset that appears viable in addressing initial requirements discussed above is located, the next step in the process of secondary data analysis is evaluation to ensure the appropriateness of this dataset for the research topic (Dale et al., 1988; Kiecolt & Nathan, 1985; Smith, 2008; Stewart & Kamins, 1993). Determining if existing survey data is appropriate for the research question and appraising the data once located are evaluative processes that require questioning and reflection on the part of the researcher (Finlayson et al., 1999; Magee et al., 2006; Orsi et al., 1999). There are unique methodological considerations when utilizing existing data to investigate new research questions and generate new knowledge. In addition, there is some question as to the rigor of secondary analysis as a research method; therefore the issues that threaten validity and reliability of the study must be attended to.
thoroughly by the researcher (Magee et al., 2006). In determining the appropriate match of a dataset to a research investigation, there are several factors that must be considered and questions that must be asked.

In order to ensure congruency, appropriateness, and quality of the primary study and the resulting dataset, the researcher employed Stewart and Kamins’ (1993) evaluative process before finalizing data selection. This process for evaluating a dataset involves six questions: (a) what was the purpose of this study; (b) who was responsible for collecting the information; (c) what information was actually collected; (d) when was the information collected; (e) how was the information obtained; and (f) how consistent is the information obtained from one source with information available from other sources. In answering these questions the researcher utilized documentation of the primary study and information from the original study found in publication, and consulted the investigators from the primary study.

**What was the purpose of this study?** The question of determining the original purpose of the project that produced the data is important because this can influence many factors of the data, including the targeted population, the sample selected, the wording of questions on the survey, and the general context of the study (Doolan & Froelicher, 2009; Rew et al., 2000). It is also important to know about the agency or individual(s) collecting the information and the similarities or differences in research goals between those researchers and the researcher contemplating secondary analysis (Boslaugh, 2007; Schutt, 2006; Stewart & Kamins, 1993). In addressing this issue, the researcher has the benefit of a professional relationship with the researchers who conducted the original study. Through maintaining contact with the members of the FSU research team that originally conducted this study the researcher is privy to inside information about the data collection process. The original study sought to characterize the dominant technology integration activities of school librarian leaders in order to answer the research question: “What is the leadership role of the school librarian in technology integration?” Additionally, another purpose of this research was to design an instrument to define, examine, and rank technology integration practices of school librarians. The overall goal of this research to improve the education of future school librarians coincides with the secondary researcher’s goal. However, secondary analysis allows the researcher to analyze the original dataset to answer a different question (Babbie, 2004; Schutt, 2004); in this case, what is enabling or deterring these practices.
Who was responsible for collecting the information? In addressing the question of who was responsible for collecting the information the secondary researcher again has the benefit of a relationship with the primary research team. As per Stewart and Kamins’ (1993) suggestion, the researcher conducted an investigation into the primary investigators’ backgrounds and previous research projects. Through a thorough examination of their record of research, it was found that the primary investigators, Dr. Nancy Everhart and Dr. Marcia Mardis, are very well respected academic researchers, are technically competent, and have a reputation for excellence in research integrity. Additionally, extensive documentation on their collection of the data was made available to the researcher in order to review their process.

What information was actually collected? In examining what information was actually collected it is vital for the secondary researcher to have access to adequate documentation from the primary research, including protocols and procedures followed in the collection of the data (Clarke & Cossette, 2000; Dale, 2006; Dale et al., 1988; Finlayson et al., 2009; Jacobson et al., 1989; Smith, 2008; Stewart & Kamins, 1993). The primary research team in this case kept meticulous documentation that provides evidence of careful and consistent data collection through every step of the data collection process. This documentation, the survey instrument, and published findings were consulted to obtain information on what data was collected. *The School Library Media Specialist and Technology Integration Survey* (Appendix A) consisted of three sections and collected the following data: 30 demographic questions covering areas such as staffing levels, education and experience of the school librarians, and Internet access; 60 statements related to technology integration activities; and three open-ended questions that asked respondents to discuss barriers, enablers, and other factors that influenced their leadership practices (Everhart, Mardis, & Johnston, 2010). Additionally, the original research team members were available for further clarification (Boslaugh, 2007; Clarke & Cossette, 2000; Dale et al., 1988; Jacobson et al., 1989).

When was the information collected? In any research, the time when the data is collected must be considered (Boslaugh, 2007; Finlayson et al., 1999; Schutt, 2006; Stewart & Kamins, 1993). Survey data may be several years old before it is released and available for use by others. In some areas this lag in time may not be a concern, but any area related to technology and information is constantly changing and evolving (Boslaugh, 2007). Since this research does deal with technology, the time frame of data collection is paramount. The
researcher looked for datasets dealing with the issue of school librarians as technology leaders that were no more than three years old. The FSU researchers conducted the primary study and collected data during the spring, summer, and fall of 2009. This data has been determined by the researcher through review of previous research to be the most current dealing with this topic. Initial examination of the primary study documentation, concerns arose from the mention in the primary study raised a concern that data had been collected near the end of the 2009 school year. In the field of school librarianship the end of the school year is a very busy time and one would assume that issues such as low response rates might be significant. However, the primary research documentation noted that the survey time window was extended to account for this to include the summer and fall.

*How was the information obtained?* In examining how the data was collected the researcher found that it was collected through an online survey. Web-based survey research as a method for collecting data in the social sciences has grown exponentially in recent years and provides a cost effective method for reaching a wide geographically diverse population (Dillman et al., 2009; Schutt, 2006). Dillman et al. (2009) state that Internet surveys are appropriate for survey populations with high levels of computer access and proficiency, such as those in the field of education. Furthermore, school librarians frequently use, and are generally comfortable with technology. Most school librarians have access to computers every day and are assigned email addresses as a part of their job. In addition, there is recent evidence that respondents are more likely to respond to open-ended questions in web-based surveys (Dillman et al., 2009; Smyth et al., 2009), therefore this method for distributing the survey was beneficial to this researcher.

“The quality of secondary data cannot be evaluated without knowledge of the methodology employed when collecting the data” (Stewart & Kamins, 1993, p. 25). In order for the researcher to evaluate the secondary dataset, issues that are inherent to the survey method itself and to the instrument that was used had to be considered. The FSU research team developed the instrument used in the primary research, the *School Librarian Technology Leadership Survey* (PALM, 2009), because no instrumentation existed in this area.

*Primary instrumentation.* One of the frequently mentioned disadvantages of utilizing secondary data is that secondary researchers often have to settle for the original researchers’ measurement tool choice and the secondary researcher must evaluate and make a judgment call on the instrumentation (Clarke & Cossette, 2007). When considering a survey dataset for
secondary analysis, it is necessary to examine the original survey method. The researcher in this case was a part of the team that researched and constructed the survey instrument, but she also consulted the literature review and documentation of this process. There are issues and limitations of the original survey method that must still be considered when examining this dataset for secondary analysis (Clarke & Cossette, 2000; Dale, 2006; Dale et al., 1988; Finlayson et al., 2009; Jacobson et al., 1989; Smith, 2008; Stewart & Kamins, 1993). The School Library Media Specialist and Technology Integration Survey (PALM, 2009) consisted of three sections and collected the following data: 30 demographic questions covering areas such as staffing levels, education and experience of the teacher-librarian, and Internet access; 60 statements related to technology integration activities; and three open-ended questions that asked respondents to discuss barriers, enablers, and other factors that influenced their leadership practices (Everhart, Mardis, & Johnston, 2010). Response choices for statements related to technology integration activities used a Likert scale that reflected the respondents’ degree of leadership regarding the particular integration activity (0=Not my job; 1=Rarely involved; 2=Partially involved; 3=Substantially involved; 4=Fully involved). Each of these response choices was fully explained in the context of the survey instrument. This secondary research utilizes the data obtained from the two open-ended questions at the end of the original survey that asked about enablers and barriers, the descriptive data obtained through the questions at the beginning of the survey, as well as each respondent’s level of technology leadership involvement as determined in the original study. This level was determined through the respondent’s answers to the 60 Likert scale items, with each of these statements of leadership activity ranked at a level of entry, adaptive, or transformative during the survey construction.

Measurement validity. Measurement validity, the determination that instrument measures what it is intended to measure, is always a concern with survey instrumentation (Babbie, 2004; Dillman et al., 2009; Schutt, 2006). In examining the documentation from the original survey construction, the researcher identified that the survey was developed based an extensive literature review and by examining surveys that measured this same technology leadership concept in other fields, such as with teachers and school administrators. Additionally, four sets of national standards, Empowering Learners: Guidelines for School Library Media Programs (AASL, 2009); The International Society for Technology in Education’s (ISTE) National Educational Technology Standards and Performance Indicators for Teachers (NETS•T) (ISTE,
Library Media Standards (NBPTS, 2001), and Standards for Initial Preparation Programs: School Library Media Specialists (AASL & NCATE, 2003) that relate to school librarians and technology were consulted and serve as the foundation of the survey questions and their designation as entry, adaptive, or transformative (Everhart, Mardis, & Johnston, 2010). The survey was constructed, designed, and conducted following Dillman, Smyth, and Christian’s (2009) survey tailored design guidelines that promote designing surveys that are respondent friendly and result in a high rate of return (Dillman et al., 2009).

After the experienced research team drafted and revised the survey multiple times it appeared to have face validity as the questions specifically pertained to the concept of technology leadership practices (Schutt, 2006). In order to strive for content validity the survey was based on an extensive review of the pertinent literature and sent out for expert review to a panel of experts in the area of school librarianship and technology for pre-testing (Schutt, 2006). This expert panel included respected higher-education educators from school librarian preparation programs, officers from professional organizations for school librarians and technology professionals, state-level education and school librarian administrators, leading recognized expert practitioners, internationally recognized speakers, and published authors in the related areas. When this process was complete, a small group of practicing National Board Certified school librarians piloted the revised survey and again provided feedback for further revisions.

**Instrument reliability.** The other common concern with survey research is the issue of reliability of the instrument, or that the measurement “yields the same result each time” (Babbie, 2004, p. 141). Since this instrument is newly developed, reliability is indeed one of the limitations in this research. The original research team field-tested the online web-based survey with a small group of practicing school librarians before it was widely distributed. This provided a set of foundational data, but the small amount does not contribute to a great extent to the reliability of the instrument. In an effort to build reliability, this instrument is currently being utilized in another nationwide survey (Babbie, 2004; Schutt, 2006).

**How consistent is the information obtained from one source with information available from other sources?** It is always beneficial to have multiple sources in order to bolster confidence in findings, whether it is that two or more sources arrive at the same conclusion for
comparison or that they do not, providing an option for contrast. In this case, there has been no other similar data located on this very specialized topic, so this analysis is impossible to perform.

**Examination of primary survey method.** Finally, in evaluating how the original data was collected, the researcher considered and examined how issues such as sampling, response rates, missing responses, bias, and management of the data were handled in the original research (Finlayson et al., 1999; Jacobson et al., 1989; Kiecolt & Nathan, 1985). This survey was developed and conducted in 2009 in order to ascertain current attitudes and practices of school librarians in regard to technology integration.

**Primary participants.** The study participants are National Board Certified school librarians practicing in various schools across the United States at the elementary, middle, and high school levels. National Board Certification is the highest credential in the teaching profession and less than 2% of school librarians in the United States are National Board Certified.

In 1998, the National Board for Professional Teaching Standards approved 10 standards for Library Media Specialists that are divided into three categories: “what Library Media Specialists know; what Library Media Specialists do; and how Library Media Specialists grow as professionals” (NBPTS, 2001, p. 5). Note that the term “Library Media Specialist” is synonymous with that of school librarian and is the terminology currently in use in these standards. These standards are aligned with *Information Power* guidelines (AASL & AECT, 1998) and require that school librarians demonstrate knowledge of information literacy, practice instructional collaboration, and the integration of technology into the library program and the curriculum. More recently the National Board for Professional Teaching Standards Library Media standards (2010) have been revised and are available in draft form, but they still reinforce the same rigor in describing the knowledge, skills, and abilities of accomplished school librarians.

Studies of National Board Certified educators explain the assumptions and benefits of certification for teachers. Due to their success in meeting the rigorous standards established and ratified by teaching professionals, National Board Certified educators are assumed to be experts in their respective fields. This also holds true for National Board Certified school librarians, who have documented their accomplishments and demonstrated “essential knowledge, skills, dispositions, and commitments that allow them to practice at a high level” (National Board for
Professional Teaching Standards, 2001, p. v) including expertise in technology integration. The survey participants are uniquely positioned to inform this research due to their documented accomplishment in meeting the rigorous standards of the National Board for Professional Teaching Standards, especially Standard V: Leading Innovation Through the Library Media Program (NBPTS, 2001), which asserts that “[a]ccomplished library media specialists lead in providing equitable access to and effective use of technologies and innovations” (2001, p. 23). These school librarians have shown their technology integration abilities along with other areas of expertise, adopting and adapting technologies as powerful teaching and learning tools. Therefore, their success in meeting the rigorous standards established and ratified by library and teaching professionals, assumes these educators to be experts in their respective fields, including technology and leadership.

Primary sampling. The analyst of secondary data must be extremely familiar with the methods used to obtain the original sample in order to determine if the sample is representative of the population the researcher seeks to investigate (Clarke & Cossette, 2000; Smith, 2008). Sample verification processes include investigating the degree to which the data reflect the sampling procedures described in the documentation and investigating the effects and extent to which non-response, data loss and missing data affect the data. The following information describing the sample has been extracted from published preliminary findings of the original study and from communication with the primary research team.

The population used for this study included 2100 National Board Certified school librarians from the United States, as of April 2009, practicing in elementary, middle, and high schools. Since the purpose of the primary survey was to identify the leadership practices of school librarians in technology integration, it only targeted those school librarians practicing within the school building and not those practicing at the district level. A sampling frame was constructed by obtaining information from the National Board for Professional Teaching Standards website. A listing of National Board Certified school librarians by state was created and two doctoral students located contact information for each participant. The respondents were solicited by sending invitations to National Board Certified school librarians whose email addresses could be ascertained from information available on the National Board for Professional Teaching Standards organizational website. This resulted in approximately 35% of the population of 2100 National Board Certified school librarians in the United States, or 735.
Participants were also obtained via postings on the following email lists: Yahoo! Groups/Library Media (for teacher-librarians seeking National Board Certification), LM_NET, aslforum, and many state school librarian email lists (Everhart, Mardis, & Johnston, 2010). So the assumption is that more than 35% of the population was invited to participate.

This sample was selected for two reasons. One is that documented accomplishments in technology integration and leadership form the basis of two of the four required portfolio entries for the rigorous National Board Certification credential in Library Media. The other is that a vast body of research exists concerning how National Board Certification develops leaders (NBPTS, 2010), but this research is exclusively based on teachers. The participants in this sample are uniquely positioned to inform this research due to their documented accomplishment in meeting the rigorous standards of the National Board for Professional Teaching Standards, including technology integration and leadership. Furthermore, National Board Certification is a voluntary process; therefore this research assumes that these school librarian participants want to be leaders. Their success in meeting the rigorous standards established and ratified by library and teaching professionals, assumes these educators to be experts in their respective fields, including technology and leadership. Hence, this sample is uniquely positioned to both define and differentiate leadership practices in technology integration for school librarians and will “best help the researcher understand the problem and the research question” (Creswell, 2009, p. 178).

**Primary procedure.** After the original research team obtained appropriate Institutional Review Board approval (Appendix B), participants were solicited. Following Dillman et al.’s (2009) survey tailored design guidelines the research team established contact with each respondent multiple times, including personal correspondence in the form of a cover letter with notification of an incentive. Dillman et al. finds that informing potential respondents that a question or problem exists that is of importance to them and that their help is needed to find a solution, respondents will be more likely to return the surveys. Subjects were also mailed a paper copy to assure contact in the case of emails that may have been blocked by network firewalls, which is a common practice in U.S. schools. As an incentive, survey participants were given the opportunity to enter a drawing for a $100 gift certificate to Amazon.com.

In efforts to increase the response rate, two research assistants sent email reminders to all original invitees and reminders were posted on the electronic mailing lists noted above. As a
result 310 surveys were completed for a 42.1% response rate, of which 15 cases were excluded from analysis. This was due the fact that in 10 cases the respondents were not National Board Certified school librarians and in two cases the answers to some items (e.g., number of schools served, number of full-time school librarians) appeared more consistent with a district supervisor than with a building level school librarian (B. Kotrla, personal communication, July, 19, 2010). This was determined from the answers the participants gave to the questions that asked for “the number of schools you serve” and “how many certified school librarians are there in your school?” These respondents answered 100 or more to number of schools and 100 or more to number of specialists. Both of these answers are out of the realm of the building level school librarian, or one who works onsite in an elementary, middle, or high school. Finally, three respondents gave an out of range answer to the question “what year did you obtain National Board Certification?” Thus, there were 295 usable surveys or 40.9%. While respondent names were not included in the results, respondents’ U.S. Department of Education-assigned school identification codes were used as unique identifiers to ensure unique cases. The raw data was entered in Excel and is stored on an FSU server.

Management of the primary data. It is mandatory for the secondary analyst researcher to obtain all documentation of the processes and protocols followed by the primary researchers, including the questionnaire, all coding materials, and any publications that are related to the particular dataset (Boslaugh, 2007; Clarke & Cossette, 2000; Finlayson et al., 1999; McCall & Appelbaum, 1991; Stewart & Kamins, 1993). Finally, it is paramount that the secondary researcher have access to the raw dataset itself in order to perform original analyses in an effort to consider and account for all of the aforementioned possible concerns (Boslaugh, 2007; Jacobson et al., 1989; McCall & Appelbaum, 1991; Stewart & Kamins, 1993; Wang, Sedransk, & Jinn, 1992). The researcher was granted permission to access to the raw dataset and all supporting documentation from the primary investigators (Appendix D).

Missing data can compromise the dataset due to the fact that subjects who fail to complete all questions in a study may differ significantly from those who do, therefore the secondary researcher must make every effort to identify how these issues were dealt with in data coding and data entry in the original study (Boslaugh, 2007; Clarke & Cossette, 2000; Finlayson et al., 1999; Stewart & Kamins, 1993). The primary research team statistician indicated that the Statistical Package for the Social Sciences (SPSS) automatically omits missing values from
calculation of descriptive statistics. In addition, they dropped Likert item 60 ("I am aware of information about advances in technology and digital resources.") was dropped from further analysis because 43.2% of cases completing the survey didn’t respond to that item, leaving 59 items for analysis (B. Kotrla, personal communication, July, 19, 2010).

The research team calculated an “index score” for each participant designed to reflect the level of involvement in technology integration leadership. Each of the 59 items that are statements of technology integration leadership practices (Appendix A) were constructed, reviewed, and assigned a rating as Entry (worth 1 point), Adaptive (worth 2 points), or Transformative (worth 3 points). These rankings were developed based on a review of the literature and other scales related to the topic. The statements and their rankings were reviewed by an expert panel and revised based on their feedback as well. The participants were asked to indicate their involvement in each by marking: 0=Not my job; 1=Rarely involved; 2=Partially involved; 3=Substantially involved; or 4=Fully involved. Each of these response choices was fully explicated in the context of the survey instrument. The Likert scale items represented technology integration leadership activities that were ranked as an entry level practice, an adaptive level practice, or a transformative level practice (see Table 1).

<table>
<thead>
<tr>
<th>Level of Item</th>
<th>Number of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transformative</td>
<td>21</td>
</tr>
<tr>
<td>Adaptive</td>
<td>27</td>
</tr>
<tr>
<td>Entry</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
</tr>
</tbody>
</table>

The index score was calculated by multiplying the Likert score by the designated level of involvement of the question (entry, adaptive, or transformative) and then all of the scores on each question for each participant were totaled (see Figure 3).
Item Involvement score=
(Nnot*1)+(Nrarely*2)+(Npartially*3)+(Nsubstanially*4)+(Nfully*5)/10

Index score = 21 (3(Likert Response)) + 27 (2(Likert Response)) + 11 (1(Likert Response))

3 = Transformative 2 = Adaptive 1 = Entry

Figure 3. Index score calculation for technology integration leadership involvement.

Utilizing Statistical Package for the Social Sciences, the data was transformed into ordinal data and then ranked in order. Since the data are not normally distributed (see Figure 4), the categories of low, middle, and high were determined by frequency distribution. This was determined through utilizing SPSS cutmarks to determine the score divisions for the three categories (0-567=low, 568-601= mid, 602-641=high).

The cases were then sorted into three categories based on their index score (see Figure 5). The higher the index score, the higher the involvement in technology integration leadership practices.

Figure 4. Histogram of case distribution by index score.
Figure 5. Histogram of case distribution frequency with designation of categories of involvement (index score): low, mid, and high

Limitations of the primary method. The limitations present in the original research were extracted from the original study documentation and preliminary findings. Since “National Board Certified school librarians represent a small minority (about 2%) of all school librarians in the United States and the process of National Board Certification is very rigorous, it is expected that this group would perform at a higher level than the norm” (Everhart, Mardis & Johnston, 2010, p. 5). Additionally, in survey research, one must always recognize the possibility of self-presentation bias of the tendency of individuals to present themselves and their practices in a favorable way. This is often noted in surveys that examine teachers’ technology practices because they do not want to feel inadequate in regards to expectations of the evaluators or others in the professional community. This might be considered with this sample of National Board Certified school librarians in that they may have responded in such a manner to reflect the expectations that come with that certification rather than their actual practice (Kopcha & Sullivan, 2007). It was apparent in the evaluation of the primary study that the researchers took
steps to minimize general limitations of the survey method in general such as non-response, poor measurement, inadequate coverage of the population, and sampling error (Schutt, 2006).

Participants

The participants in this research are the same as those documented in the primary research - National Board Certified school librarians practicing in various schools across the United States at the elementary, middle, and high school levels. These participants are uniquely positioned to inform this research due to their documented accomplishment in meeting the rigorous standards of the National Board for Professional Teaching Standards, especially Standard V: Leading Innovation Through the Library Media Program (NBPTS, 2001), which asserts that “[a]ccomplished library media specialists lead in providing equitable access to and effective use of technologies and innovations” (2001, p. 23). These school librarians have shown their technology integration abilities along with other areas of expertise, adopting and adapting technologies as powerful teaching and learning tools.

Sampling

This sample is uniquely positioned to both define and differentiate the leadership role in technology integration for school librarians and will “best help the researcher understand the problem and the research question” (Creswell, 2009, p. 178). National Board Certified school librarians have successfully completed a rigorous certification process that designates them as leaders in their field and can provide an in-depth look at leadership practices.

The 295 usable survey responses from the primary study of National Board Certified or accomplished school librarians practicing in various schools across the United States at the elementary, middle, and high school levels is the same sample utilized by the secondary researcher. This research is based on those respondents who answered the two open-ended questions addressing the variable of interest, enablers and barriers to the enactment of the leadership role in technology integration. Upon obtaining the original data it was found that 279 (94.5%) participants that answered the enabler question and 263 (89.1%) respondents that answered the barrier question.
Units of Analysis and Variables

The unit of analysis for this research is the responses of individual accomplished school librarians to the two open-ended questions addressing enablers and barriers to the enactment of the leadership role in technology integration. The variables of interest are specific enablers and barriers as indicated in the participant responses to the two open-ended questions and the participant’s level of involvement in technology leadership as measured by an index score that was calculated in the original study.

This research utilizes the “index score” for each participant that was calculated as described in the original research study, which represents the level of involvement in technology integration leadership activities. Utilizing Statistical Package for the Social Sciences, the total index score was transformed into ordinal data and ranked in order. Since the data is not normally distributed (see Figure 2), the categories of low, middle, and high were determined by frequency distribution.

Secondary Data Source

After a thorough examination of the original survey method including the instrumentation, sampling, and procedures, the researcher determined that the resulting dataset from this research met her research needs and served her research purpose. This secondary research utilizes the data obtained from the two open-ended questions at the end of the original School Library Media Specialist and Technology Integration Survey, which ask respondents “Think back about the activities in the preceding statements, specifically those in which you are fully involved. What enables you to be involved at that level?” and “Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement” (PALM, 2009). Since these questions ask participants to reflect back on the practices described in the survey (technology integration leadership practices), the responses to these questions provide the variables of interest to the researcher, those factors that are perceived as enablers or barriers to enactment of the technology leadership role. In open-ended questions respondents are asked to provide their own personal answers in their own words to questions, which can provide elaboration on or insights into understanding responses from the closed-ended questions. Open-ended questions can also yield useful information, especially when researchers need to explore
issues that do not have a finite or predetermined set of responses (Babbie, 2004; Dillman et al., 2009; Schutt, 2006) as is the case in this research.

Descriptive open-ended survey questions are thought to be “costly” because they require extra time and effort on the part of the respondent (Dillman et al., 2009) and can lead to low response rate, yet with the advent of web-based surveys, studies have shown that respondents are more likely to answer open-ended questions and provide better quality responses (Dillman et al., 2009; Smyth et al., 2009). In web surveys, this involves having a text field/box where respondents can write in their answers to a question posed and this has led to web respondents providing longer answers that contain both more themes and more elaboration or detail than traditional pen and paper surveys (Denscombe, 2008; Dillman et al., 2009; Smyth et al., 2009). The negative aspect of open-ended questions is that categorizing the responses and transforming text responses into numbers is timely for the researcher (Creswell, 2008). Yet, as Creswell states, open-ended questions are “ideal when the researcher does not know the response possibilities and wants to explore the options” (Creswell, 2008, p. 399). Therefore, this type of question is “ideal” for this research.

However, the researcher must take care in the coding to avoid threats to the reliability and validity of the results (Babbie, 2004; Krippendorff, 1980). In this research, the coding scheme is based on the framework *Domains of Supports and Barriers to Teacher Leadership* (Zinn, 1997) (see Table 1). As directed by Krippendorff (2004), this framework serves as the analytical construct and is derived from “existing theories or practices; the experience or knowledge of experts; and previous research” (p.173). A detailed description of this framework and the indicators is found in Chapter 2.

**Data Analysis Procedure**

The researcher gained an in-depth understanding of the data through the previously described evaluation of the primary study and its documentation. The final step in this process was the data manipulation and analysis. Data manipulation includes defining and constructing variables of interest based on the variables existing in the data, recoding the data, etc. The responses from the two open-ended survey questions, which address the variables of interest to the researcher, those factors that are perceived as enablers or barriers to enactment of the
technology leadership role, were analyzed in a two-step process of content analysis and statistical analysis, including frequency distribution and percentage difference analysis. Each technique is described in detail in the following sections.

**Content Analysis and Data Coding**

Content analysis is a “systematic, objective, quantitative analysis of message characteristics” (Neuendorf, 2002, p. 1). In the case of this research the messages are the responses to the two open-ended survey questions, which ask respondents “Think back about the activities in the preceding statements, specifically those in which you are fully involved. What enables you to be involved at that level?” and “Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement” (PALM, 2009). Content analysis involves coding and categorizing text in a way that relationships can be identified (Schutt, 2006). The goal of this content analysis was to identify the enablers and barriers perceived by respondents, categorize them, and then determine frequency.

In order to extract the specified enablers and barriers from the text of the open-ended questions, the researcher performed content analysis. The researcher has 12 years of experience as a school librarian; this background of practice and commonality of experience assisted the researcher in performing the content analysis through reading each response to determine manifest and latent content enablers and barriers. The participant responses were imported into MS Excel (Mac ver. 12.2.8) and then the researcher read and analyzed each response, utilizing human coding to extract individual descriptors of enablers and barriers. Following Neuendorf’s (2002) procedure for content analysis, the researcher utilized an *a priori* coding scheme of exhaustive and mutually exclusive categories taken from the conceptual framework. The researcher utilized the conceptual framework *The Four Domains of Supports and Barriers to Teacher Leadership* (Zinn, 1997) to code the data into categories. The descriptors of enablers and barriers came directly from the work of Zinn (1997) and have been used regularly by researchers to sort and describe barriers and supporting factors to teacher leadership (e.g., Caffarella & Zinn, 1999; Collay, 2006; Harris & Muijs, 2005; Katzenmeyer & Moller, 2009; Murphy, 2007; Pruitt, 2008; Robertson, 2008). This framework explicitly lists descriptor indicators within each category of specific enablers and barriers that reside in each domain. The
data was coded by the most finite enabler and barrier descriptor and by broader category based on the conceptual framework and the supporting literature.

During the content analysis of the responses to enabler open-ended questions responses it was found that four cases discussed barriers within in the enabler response field. Based on the purpose of this research, to identify the enablers and barriers, the researcher made the decision that this data was still worthwhile and it was not omitted, but moved. In these four cases these portions of the responses were moved into the respondent’s existing barrier response. During the analysis of the answers to the barrier question, it was found that the responses of “No” or “not at this time” and “no barriers” occurred 22 times; these cases were noted, and denoted as separate in the categorization in the next step. In most cases, participants listed more than one enabler and more than one barrier in their responses. Once enablers and barriers were identified, they were spilt into separate fields in the spreadsheet, but each remained connected to their individual case number. This resulted in 724 enablers and 366 barriers to be considered for analysis.

**Intra-Coder Reliability**

When coding open-response items, researchers make interpretations or judgments based on substantive criteria outlined in a conceptually organized codebook and code the data accordingly. Intra-coder reliability testing is necessary to guard against the introduction of subjective bias in the coding and analysis of data (Neuendorf, 2002). Therefore, to increase reliability the researcher coded the responses by looking for specific factors and underlying assumptions and meanings based on the conceptual framework three times with at least a month duration in between each instance of coding to ensure consistency in her own coding. There was 100% agreement in each coding instance.

**Inter-Coder Reliability**

There is a general consensus among scholars that taking explicit steps to increase coder agreement has benefits and adds to the credibility of a study (Creswell, 2009). Therefore, the researcher recruited two doctoral students and one master’s student who have knowledge of this population to code the data in accordance with the codebook in order to conduct inter-coder reliability testing. The two doctoral students hold advanced degrees in the area of school librarianship; and one has many years of experience as a school librarian, while the other has
limited experience. It is widely acknowledged that inter-coder reliability is a critical component of content analysis, but that it does not ensure validity, and when not established properly, the data and interpretations of the data cannot be considered valid. As Neuendorf (2002) notes, "given that a goal of content analysis is to identify and record relatively objective (or at least intersubjective) characteristics of messages, reliability is paramount. Without the establishment of reliability, content analysis measures are useless" (p. 141). The inter-coder reliability testing began with a meeting with the coders to review the conceptual framework chosen for the coding of data. The categorical framework includes specific descriptors of types on enablers and barriers that would be classified into each category. It is recommended to utilize 10% of the dataset for intercoder reliability testing (Neuendorf, 2002). Each coder was given a sheet with approximately 10% (n=75) of the participant responses to the enabler question and approximately 10% (n=50) of the responses to the barrier question and they independently coded responses. The researcher then compared the completed coding and utilized the percent agreement formula to determine agreement between the coders. This formula is simply the number of times coders agreed divided by the total number of units of analysis, and can be easily calculated (Neuendorf, 2002). The researcher found 98.6% agreement in the coding of the enabler responses and 100% agreement in the coding of the barrier responses. There was one item on which all of the coders disagreed, the enabler “professional organizations.” This enabler is one that is not specifically stated in Zinn’s framework and is not mentioned in the teacher leader literature. Therefore it was expected that this might result in disagreement in the coder testing; this is discussed in chapter four of this dissertation.

**Statistical Analysis**

All demographic data was entered into Statistical Package for the Social Sciences in order to provide a thorough description of the sample found in chapter four. The content analysis and data coding resulted in the identification of the perceived enablers and barriers for school librarians in enacting a leadership role in technology integration. The researcher also utilized Statistical Package for the Social Sciences to calculate frequency distribution tables for the enablers and barriers in each of the four domains (Zinn, 1997) and to identify the frequencies of specific enablers and barriers within each domain. Frequency, or one-way tables, represents the simplest method for analyzing categorical nominal data and is often used as a procedure to
review how different categories of values are distributed in the sample (Vaughn, 2008). 

Customarily, if a data set includes any categorical data, then one of the first steps in the data analysis is to compute a frequency table for the categorical variables. These resulting frequency tables served to provide results for research questions one and two.

The identified enablers and barriers, the categorization, and the frequency tables that resulted from the content analysis, were utilized in the next step of analysis. Research question three deals with those participants determined to be involved at a high level in technology integration leadership activities and the differences and similarities in the enablers experienced by these respondents in relation to the other participants or those not highly involved. Research question four addresses the barriers experienced by those participants involved at a low level in technology integration leadership activities in comparison with the other respondents. Whereas the analysis of the first two research questions focus on the frequencies of the enablers and barriers, the analysis of the last two research questions shifts to the participants, in order to identify the specific enablers and barriers highly involved and lesser involved respondents perceive as impacting their involvement in technology integration leadership practices. The specific enablers and barriers as indicated in the participant responses to the two open-ended questions that were identified and categorized in the first step of the analysis. The researcher chose to examine the enablers of those participants who are highly involved in technology integration leadership because it is important to learn from this highly specialized group of accomplished school librarians and what enables those that are involved in technology integration leadership at the highest level. The researcher chose to examine the barriers of those who are involved at a low level because it is important to learn from identifying the barriers that even these most accomplished school librarians experience. This level was determined, as described by the calculation of an index score for each participant’s level of involvement in technology integration leadership activities. In examining the original data it was established that 71 cases were found to be involved at a high level of involvement in technology integration practices, 71 at the mid range, and 76 at a low level.

In order to determine if there is an association between enablers and accomplished school librarians’ level involvement in technology integration leadership in comparison to other participants, the researcher utilized the identified enablers resulting from the data analysis of research question one. The researcher employed MS Excel (Mac ver. 12.2.8) to create a
spreadsheet of those participants found to be involved at a high level in technology integration leadership practices (n=71) and the enablers they identified. It was found that 70 of the 71 (98.6%) of the highly involved participants responded to the enabler open-ended question. Most participants named more than one enabler in their responses, resulting in 217 enablers for analysis. The researcher calculated the frequency in which the highly involved participants reported each enabler.

Since this research deals with nominal data it is necessary to utilize a nonparametric method. Unlike their parametric counterparts, non-parametric tests make no assumptions about the distribution of the data nor do they rely on estimates of population parameters such as the mean in order to describe a variable’s distribution (Vaughan, 2008). The researcher employed an association measure called percentage difference (Fielding & Gilbert, 2006; Rudestam & Newton, 2007). The percentage difference was utilized to as a “method to make a statement about the degree or amount of relationship by comparing percentages based on a condition” (Rudestam & Newton, 2007, p. 145). In this case the condition is the participants’ “level of involvement” in technology leadership activities.

In order to compute the percentage difference between groups, the researcher identified the enablers reported by those school librarians who are highly involved and the enablers identified by other participants. The researcher created another spreadsheet of the other participants, which were found not to be highly involved in technology integration leadership, or those participants in the low and middle range of involvement (n=149). It was found that 148 of the 149 (99.32%) of the other participants responded to the enabler open-ended question. Most participants named more than one enabler in their responses, resulting in 360 enablers for analysis. The researcher then calculated the frequency in which the participants not highly involved in technology integration leadership practices reported each enabler.

The researcher then constructed a bivariate contingency table to show the frequency distribution of the values of identified enablers, given the condition of high level involvement. Contingency tables are often utilized to record and analyze the association between two or more categorical variables (Fielding & Gilbert, 2006; Vaughan, 2008). The researcher converted the observations in each cell to a percentage, and then compared the percentages across the categories of the identified enablers by calculating the percentage difference between the enablers identified by highly involved participants and the other participants not highly involved.
in technology leadership integration activities in order to determine the percentage difference when condition of “level of involvement” imposed. The results of this analysis are presented in chapter four.

The researcher examined the difference between the barriers experienced by those respondents who were involved at a low level in technology integration leadership practices and the other participants. In this step of the analysis the researcher utilized the resulting frequency tables of the identified barriers from the data analysis of research question two. The researcher then extracted the barrier responses from those respondents who were found to be involved in technology integration leadership at a low level. The researcher created a spreadsheet of the responses composed of those participants found to be involved in technology integration leadership practices at a low level (n=76) and the barriers they identified. It was found that 65 of the 76 (85.5%) of the participants involved at a low level responded to the barrier open-ended question. Most participants named more than one barrier in their responses, resulting in 107 barriers for analysis.

In order to determine if there is an association between barriers and accomplished school librarians’ level involvement in technology integration leadership in comparison to other participants, the researcher utilized the identified barriers resulting from the data analysis of research question two. The researcher calculated the percentage difference between the barriers experienced by those respondents who were involved in technology integration leadership practices at a low level and all of the other respondents. The researcher created another spreadsheet of the responses composed of the other respondents, who were found to be more involved in technology integration leadership practices, (n=144) along with the barriers they identified. It was found that 127 of the 144 (89.1%) of the other participants responded to the barrier open-ended question. Most participants named more than one barrier in their responses, resulting in 198 barriers for analysis.

The researcher constructed a second contingency table to show the frequency distribution of the values of the identified barriers, given the condition of low level of involvement. The researcher converted the observations in each cell to a percentage, and then compared the percentages of the barriers by calculating the percentage difference between the percentages that participants involved at a low level identified barriers and the percentage the barrier was identified by the other participants. The results of this analysis are presented in chapter four.
Validity and Reliability

The researcher utilized documentation from the primary study to identify and evaluate how the issues of reliability and validity were addressed in the primary survey data collection method, as discussed previously in this chapter. The researcher also undertook additional actions based on her own research questions to further examine the issues of validity and reliability because as asserted by Schutt (2006), validity and reliability are required in empirical research.

Validity

Validity refers to the extent that a measure accurately reflects the concept it intends to measure (Babbie, 2004). Validity issues with the primary survey instrument have already been discussed previously in this chapter, as have issues with the analysis method. The issue of validity arises in secondary data analysis because the researcher did not construct the instrumentation specifically to measure for her purposes and this can sometimes lead to a mismatch in that data collected for one purpose may not match with the needs of the secondary researcher’s purpose (Babbie, 2004). The researcher in this case has specific questions that deal with the enablers and barriers of the technology leadership role. In conducting a thorough evaluation of the instrument as part of the above evaluative process, the researcher confirmed that the two open-ended questions that deal with the enablers and deterrents as well as multiple other fixed response scale questions that allude to these factors do adequately satisfy the content purpose of this research. Additionally, there is a great deal of research and instrumentation that examines teacher leadership enablers and barriers and this data was examined within the context of the teacher leadership literature, including the theoretical and conceptual framework utilized in this research, in order to strive for construct validity through convergent validation (Schutt, 2006). Therefore the researcher contends that this instrument does indeed provide a valid measure of the concepts to be investigated and is relevant and appropriate to answering the research questions. The researcher has also taken measures to ensure validity with intra- and inter-coder reliability testing in this research.
Reliability

Reliability suggests that a measurement method will yield the same data each time in repeated observations of the same phenomenon (Babbie, 2004). Reliability issues with the primary survey instrument have already been discussed previously in this chapter, as have issues with the analysis method.

Limitations of the Research

While the secondary analysis method has numerous advantages and benefits, such as the practical benefit of saving the researcher money, time, and personnel (Hyman, 1972; Kiecolt & Nathan, 1985; Stewart & Kamins, 1993), this approach is not without its limitations. The limitations of the theory, along with validity and reliability concerns, have been described and explained. The purpose of this research is to investigate the enablers and barriers that accomplished school librarians perceive in the enactment of a leadership role in technology integration and it serves as an initial step in identifying, classifying, and explaining these factors. While the overall goal cannot be generalizability, there are implications of interest to the school library profession as a whole because the enablers and barriers to technology integration leadership enactment have not previously been identified or investigated.

The most recognized limitation to the secondary data analysis method approach is “inherent in its nature” in that the data were collected for some other purpose (Boslaugh, 2007, p. 4). Since the data were not collected to answer the researcher’s specific research questions issues can arise. For example, the methods used and measures chosen may differ from those that might have otherwise been selected, or particular information that the researcher would like to have may not have been collected; or data may not have been collected in the geographic region of interest, in the years the researcher would have chosen, or on the specific population that is the focus of interest (Boslaugh, 2007; Doolan & Froelicher, 2009). Most of these issues have been addressed by ensuring a match between the research questions and the dataset through the previously described procedures (Stewart & Kamins, 1993). In this particular project the researcher avoided some common pitfalls often associated with secondary analysis by participating in the research design plan, yet there are still some significant limitations that exist and that may have affected the analysis.
The researcher is at a disadvantage because she did not participate in the execution of the data collection process and does not know exactly how and how well it was conducted and if data are affected by problems such as response rate or misunderstanding of specific survey questions by the participants. In order to address these issues the researcher utilized documentation from the original study, information from published findings, and consultations with the original primary researchers (Boslaugh, 2007; Dale et al., 1988; Kiecolt & Nathan, 1985).

There were some limitations experienced in this research that can be attributed to the use of secondary data. Sampling itself was found to be a limitation in the primary research and was the dominant limitation in this secondary research as well. The use of a convenience sample posed extreme limitations in data analysis methods and precluded generalizability. Additionally, the method used to calculate of the index score from the primary study proved to be a limitation experienced in this research; in future research, other more robust methods for determining this score will be considered.

The biggest limitation of the primary research is that the instrument used in the primary research is newly developed; this is an issue of concern in the secondary research as well. Yet, as previously stated, in the evaluation of the primary method, issues of validity and reliability of this new instrument were addressed by the primary research team and these efforts are furthered by this research by the use of construct validity through convergent validation. The original research team addressed reliability questions by field testing the online web-based survey with small group of practicing school librarians before it was widely distributed, and the instrument is currently being utilized in another nationwide survey (Babbie, 2004; Schutt, 2006).

A final limitation is that the school identifiers collected in the primary study are not available to the secondary researcher due to confidentiality reasons. The school identifiers connect to the participants, therefore school identifiers were removed from the dataset, and all participants remain anonymous to the researcher (Burnstein, 1978; Clarke & Cossette, 2000; Law, 2005; Smith, 2008). To ensure survey confidentiality and due to the original consent agreement, these subjects cannot be contacted for follow-up questions and additional data cannot be collected. This lack of opportunity for follow-up or the collection of additional data from the participants has proven to be a limitation in furthering this research, yet the possibility of comparison research with the nationwide survey data is promising for future research endeavors.
Ethical Considerations

There is the tendency to falsely assume that secondary analysis method is without ethical concerns that must be addressed. Secondary data analysis, as with any other research method, must take ethical concerns into consideration. The issue of informed consent, loss of anonymity for subjects, concern for derogatory impacts on a specific population group, and how it relates to using data collected for another purpose must all be considered and addressed by the secondary researcher (Burnstein, 1978; Finlayson et al., 1999; Law, 2005; McCall & Appelbaum, 1991). Institutional review boards play a crucial role in determining that the data are being used in a legal and ethical manner and that sensitive information about subjects is protected (Doolan & Froelicher, 2009). Therefore, the researcher has made efforts to educate herself as to the institutional review board policies of Florida State University in relation to the ethical and legal aspects of her research as well as those related to the original research, which was also conducted at Florida State University. This included investigating any policy or legal changes that may have occurred since the original research was conducted (Clarke & Cossette, 2000; Doolan & Froelicher, 2009; Jacobson et al., 1989).

Data sharing is a vital aspect for researchers throughout the world, but balancing the rights of subjects must also be considered (Law, 2005). The main concerns involve harm of the subjects with privacy issues and what constitutes informed consent. Hence, the researcher has gained access to the approved institutional review board application from the original research and reviewed for possible concerns. The ethical concern related to this dataset is that the subjects were assured confidentiality in the original consent agreement to protect their privacy. This dataset does contain school identifiers of the participants, but the researcher, even though considered a part of the initial research team who could have access to these, did not request these in order to abide by that agreement. The researcher has received approval from the FSU Institutional Review Board (Appendix E) for this research and for utilizing the existing dataset for secondary analysis. In addition to compliance with the original IRB application, the researcher reviewed the original research goals and the wording of the original consent, and compared it to her own for congruency with the aims of the original study and to align as much
as possible with the topic for which the participants originally gave consent (Burnstein, 1978; Doolan & Froelicher, 2009; Rew et al., 2000).

**Summary of the Method**

Secondary analysis is an empirical exercise carried out on data that has already been gathered or compiled, but it is a flexible method that can be utilized in several ways. The secondary analysis researcher makes interpretations, draws conclusions, or gains knowledge that differs from those in the original inquiry (Hakim, 1982). The method of secondary analysis is an effective way to find meaningful answers to new research questions utilizing pre-existing data (Doolan & Froelicher, 2009). The overall goal of this methodology is the same as that of others, to contribute to scientific knowledge through offering an alternate perspective, but it differs from primary research methods in its reliance on existing data. The challenge is to apply theoretical knowledge and conceptual skills to utilize existing datasets to address social research questions. The key is that the secondary researcher must be able to develop skills in managing and analyzing data, and creatively applying data to her own research questions (Jacobson et al., 1989; Magee et al., 2006).

Secondary data analysis was determined to be a highly appropriate method for this study due to the relevance of the open-ended questions of enablers and barriers, the extremely high response rate to those questions, the recentness and reliability of the data, and the alignment with Zinn’s conceptual framework.
CHAPTER 4
RESEARCH RESULTS

The purpose of this research is to identify, categorize, and explicate the enablers and barriers that accomplished school librarians experience in regards to enacting a leadership role in technology integration. It is based on the distributed leadership theory assumption that leadership tasks are not all the sole responsibility of one individual leader, but that anyone can contribute through collaboratively pooling their expertise, and that teachers can become leaders at various times. The distributed leadership proposition that the situation determines how leadership practice is fundamentally enabled or constrained and thereby contributes to defining practice guides this research. Zinn’s (1997) Four Domains of Supports and Barriers to Teacher Leadership framework is utilized to categorize the many differing factors that can influence school librarians in enacting a leadership role in technology integration. Chapter four reviews the sample and the data source, then presents the results of the data analysis. It is organized by research question in order to present the results in relation to each question. The chapter concludes with a summary of the research findings.

The Sample

The population used for this study included 2100 school librarians in the United States who were National Board Certified as of April 2009 and practicing in elementary, middle, and high schools. Since the purpose of the primary survey was to identify the leadership practices of school librarians in technology integration, this survey only targeted those school librarians practicing within the school building and not those at the district level.

Respondent demographics mirror the general population of school librarians (Kenney as cited in Everhart, Mardis, & Johnston, 2010) in that the majority, 98.5 % of participants were Caucasian women (n=290) averaging 50 years of age with 14 years of experience as a school
librarian. Seventy one percent (n=210) formerly were classroom teachers. The majority of those who once taught in elementary schools (n=80) worked in the upper grades (n=45) and of those who reported having been teachers in middle and high schools (n=131), 14% taught language arts (n=41), 8% taught history (n=22), and 5% taught reading (n=15). Almost all (n=291 or 98.7%) worked full-time in one school, nearly 75% (n=221) had full-time paid support staff, and only 13% (n=39) had a fixed schedule. Very few participants reported full-time (n=123 or 42%) or part-time (n=45 or 15%) technology support staff, and the technology available in these school libraries was above national averages (Goldring, 2009). The mean number of desktop computers was 165 and mean number of laptop computers was 52 (Everhart, Mardis, & Johnston, 2010).

The original dataset from the primary study included 295 respondents. This research is based on only those respondents who answered either of the two open-ended questions dealing with the enablers and barriers, 279 participant responses for enablers and 263 participant responses for barriers.

The Data Source

This research utilizes the data obtained from two open-ended questions at the end of the original School Library Media Specialist and Technology Integration Survey (PALM, 2009). The first section of the survey consisted of 30 demographic questions covering areas such as staffing levels, education and experience of the school librarians, as well as questions relating to the technology available and Internet accessibility in the school where they worked. The second section, and the main focus of the survey, was 60 statements related to technology integration activities with response choices for statements that reflected respondents’ degree of leadership regarding the particular integration activity: 0=Not my job; 1=Rarely involved; 2=Partially involved; 3=Substantially involved; 4=Fully involved. Each of these response choices was fully explained in the context of the survey instrument. Finally, there were open-ended questions that asked respondents to discuss barriers, enablers, and other factors that influenced their leadership practices. The open-ended responses illuminated the factors that enabled school librarians’ involvement in technology integration leadership practices as well as the factors that constrained them. The first open-ended question asked respondents, “Think back about the activities in the
preceding statements, specifically those in which you are fully involved. What enables you to be involved at that level?” and the second open-ended question asked, “Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement” (PALM, 2009).

Data Analysis

The responses were analyzed utilizing content analysis to identify the enablers and barriers from the text of the open-ended question. The participant responses were imported into MS Excel (Mac ver. 12.2.8). The researcher performed content analysis by reading each response to determine and extract enablers and barriers utilizing a priori coding scheme of exhaustive and mutually exclusive categories taken from the Zinn’s (1997) Four Domains framework. This framework explicitly lists descriptors within each category of specific enablers and barriers that reside in each domain and served as a codebook. Additionally, the researcher has 12 years of experience as a school librarian; this background of practice and commonality of experience permitted the researcher to perform the content analysis through reading each response to determine manifest and latent enablers and barriers identified by respondents. With most participants listing more than one enabler and more than one barrier in their responses it became necessary to spilt the identified enablers and barriers into separate fields within the spreadsheet, but each remained connected to their individual case number. This resulted in 724 enablers and 366 barriers to be considered for analysis and 22 cases (16.6%) that responded to the barrier question with the responses “No,” “Not at this time,” or “No barriers.” These responses were not categorized but are noted in the overall frequency table.

The result of the content analysis was the identification of the perceived enablers and barriers for school librarians in enacting a leadership role in technology integration, as well as frequency distribution tables. Frequency or univariate tables represent the simplest method for analyzing categorical data and are often used as a procedure to review how different categories of values are distributed in the sample (Vaughn, 2008). The enablers and barriers were coded and categorized based on Zinn’s (1997) Four Domains of Supports and Barriers to Teacher Leadership framework (Appendix F) which are: Domain One: People and Interpersonal
Relationships, Domain Two: Institutional Structures, Domain Three: Personal Considerations and Commitments, and Domain Four: Intellectual and Psycho-social Characteristics. This framework is grounded in the research of teacher leaders and has been utilized in multiple research studies and dissertation. The categories provide a way to classify the factors that support and constrain teacher leadership enactment for analysis.

**Research Question One**

In order to determine what enablers or supporting factors accomplished school librarians perceive in enacting the role of leader in technology integration the researcher performed content analysis on the responses to the open-ended question: “Think back about the activities in the preceding statements, specifically those in which you are fully involved. What enables you to be involved at that level?” To examine the specific enablers that occurred in each domain, the data was coded by category and by each individual enabler. Table 2 displays the list of enablers, in descending frequency in which participants mentioned the enabler as facilitating involvement in technology integration leadership. For example, out of 724 noted enablers principal support was identified 70 different times. Principal support (n=70) was the most frequently named enabler by participants as facilitating their involvement in technology integration leadership practices along with opportunities for leadership and responsibilities (n=69) and making a difference for the students and teachers they work with (n=69). Opportunities for professional development (n=60), and having collaborative (n=33) and supportive relationships (n=12) with faculty were found to be enabling factors. Each enabler will be further discussed below within the domain in which it was categorized.

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive principal</td>
<td>70</td>
<td>9.67</td>
</tr>
<tr>
<td>Opportunities for a leadership role and responsibilities</td>
<td>69</td>
<td>9.53</td>
</tr>
<tr>
<td>Desire to make a difference for students and teachers</td>
<td>69</td>
<td>9.53</td>
</tr>
<tr>
<td>Professional development opportunities</td>
<td>60</td>
<td>8.29</td>
</tr>
<tr>
<td><strong>Enablers</strong></td>
<td>$f$</td>
<td>%</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Sense of obligation to get involved</td>
<td>48</td>
<td>6.63</td>
</tr>
<tr>
<td>Commitment to continual professional growth</td>
<td>41</td>
<td>5.66</td>
</tr>
<tr>
<td>Expertise</td>
<td>36</td>
<td>4.97</td>
</tr>
<tr>
<td>Collaborative teachers</td>
<td>33</td>
<td>4.56</td>
</tr>
<tr>
<td>Professional organizations</td>
<td>33</td>
<td>4.56</td>
</tr>
<tr>
<td>Personal belief and values</td>
<td>22</td>
<td>3.04</td>
</tr>
<tr>
<td>Personal interest in technology</td>
<td>19</td>
<td>2.62</td>
</tr>
<tr>
<td>Professional responsibility</td>
<td>18</td>
<td>2.49</td>
</tr>
<tr>
<td>Supportive district personnel</td>
<td>17</td>
<td>2.35</td>
</tr>
<tr>
<td>District level support</td>
<td>17</td>
<td>2.35</td>
</tr>
<tr>
<td>Respected and valued by staff</td>
<td>16</td>
<td>2.21</td>
</tr>
<tr>
<td>Dual role as instructional technologist</td>
<td>16</td>
<td>2.21</td>
</tr>
<tr>
<td>Education</td>
<td>16</td>
<td>2.21</td>
</tr>
<tr>
<td>Funding</td>
<td>15</td>
<td>2.07</td>
</tr>
<tr>
<td>Technology resources</td>
<td>15</td>
<td>2.07</td>
</tr>
<tr>
<td>Experience</td>
<td>14</td>
<td>1.93</td>
</tr>
<tr>
<td>Supportive teachers</td>
<td>12</td>
<td>1.66</td>
</tr>
<tr>
<td>Flexible schedule</td>
<td>12</td>
<td>1.66</td>
</tr>
<tr>
<td>Time</td>
<td>11</td>
<td>1.52</td>
</tr>
</tbody>
</table>
Table 2 - continued

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time clerk</td>
<td>10</td>
<td>1.38</td>
</tr>
<tr>
<td>Collaborative instructional technologist</td>
<td>7</td>
<td>0.97</td>
</tr>
<tr>
<td>Full-time on-site tech support</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>Supportive school climate</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>Stipend</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>Volunteers</td>
<td>5</td>
<td>0.69</td>
</tr>
<tr>
<td>National Board Certification</td>
<td>4</td>
<td>0.55</td>
</tr>
<tr>
<td>Personal time</td>
<td>2</td>
<td>0.28</td>
</tr>
<tr>
<td>Personal finances</td>
<td>1</td>
<td>0.14</td>
</tr>
<tr>
<td>Family support</td>
<td>1</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>724</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note.* The % symbolizes the percentage that the specific enabler was found in relation to all the total identified enablers (n=724).

**Categorization of the enablers.** After the researcher performed content analysis to extract the specified enablers and barriers from the text of the open-ended questions, each enabler was coded according to Zinn’s (1997) framework. The framework provides a very specific list of indicators or descriptors of enablers that would reside within each domain. These indicators paired with the teacher leadership literature and school librarianship literature, assisted the researcher in making all coding decisions. There were very few instances where coding difficulty arose, yet issues did occur. For example 33 participants named “professional organizations” as an enabler. This is not mentioned in the teacher leadership literature as a noteworthy support for teacher leadership. The researcher, based on her knowledge of the population, the context of the responses, and supporting literature chose to categorize
“professional organizations” in Domain One: People and Interpersonal Relationships due to the indicator from Zinn (1997) that describes a mentoring and supportive relationship from respected colleagues. Further coding decisions will be discussed below in each domain as they occur.

Frequency distribution was calculated for enablers by category utilizing SPSS. Table 3 and Figure 6 report the frequencies and percentages for the enabler categories. The enablers experienced most frequently reported by respondents in enacting technology integration leadership reside in Domain Four: Intellectual and Psycho-social Characteristics (39.92%) yet very closely followed enablers that reside in Domain Two: Institutional Structure (33.56%), and the least common enabler category was Domain Three: Personal Considerations and Commitments (0.55%).

Table 3. Frequency of Leadership Enactment Enablers Categorized by Zinn’s Four Domains of Supports and Barriers to Teacher Leadership

<table>
<thead>
<tr>
<th>Domain</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 1: People &amp; Interpersonal Relationships</td>
<td>188</td>
<td>25.97</td>
</tr>
<tr>
<td>Domain 2: Institutional Structure</td>
<td>243</td>
<td>33.56</td>
</tr>
<tr>
<td>Domain 3: Personal Considerations &amp; Commitments</td>
<td>4</td>
<td>0.55</td>
</tr>
<tr>
<td>Domain 4: Intellectual &amp; Psycho-social Characteristics</td>
<td>289</td>
<td>39.92</td>
</tr>
<tr>
<td>Total</td>
<td>724</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Figure 6. Graphical representation of leadership enactment enablers categorized by Zinn’s Four Domains of Supports and Barriers to Teacher Leadership
Domain one enablers. Participants reported 188 enablers in Domain One: Personal and Interpersonal Relationships. Zinn (1997b) defines the parameters of this domain as encompassing those interpersonal relationships, both attitudes and behaviors, which can positively and negatively strongly influence teacher leadership. As a result of her research Zinn (1997b) found that the “success or failure of teacher leadership depends in large part on the effectiveness or personal support systems, mutual respect, and interdependency” (p. 17). The most frequently occurring enabler was principal support (n=70), and the least frequently occurring enabler was a full-time instructional technologist (n=7). Table 4 presents the frequencies and percentages associated with the enablers in Domain One. The enablers reported by respondents in this domain deal with relationships with others such as teachers and their willingness to collaborate, positive relationships with principals who provide support and encouragement, and collaboration with technology specialists and with other school librarians.

The researcher made the choice to include the enabler of “professional organizations” in this domain based on her knowledge of the population, the context of the responses, and the indicator from Zinn (1997) that describes a mentoring and supportive relationship from respected colleagues. Responses that listed professional organizations as an enabler commented on support, networking, and mentors. These school librarian participants also spoke of support from district level personnel, which are mentioned only slightly in the teacher leadership literature; therefore, the researcher also had to make a choice as to the coding. Again based on her knowledge of the population, the context of the responses, and supporting literature, the researcher chose to categorize “support from district media/library personnel” (n=17) in this domain due to the indicator from Zinn (1997) that describes a mentoring and supportive relationship from respected colleagues and a positive working relationship with administrators. A district school library supervisor is defined as an administrator at the central district level that provides district leadership for all of the school library programs within the district. This differs from the enabler categorized in Domain Two, which is categorized as “district support” and refers to resources such as money, technology hardware, and software provided from their district. Additionally, a few respondents listed collaborative relationship with their building level instructional technologist (n=7). For the purposes of this research “instructional technologist” is defined as a building level person who works with teachers to teach or integrate
technology in an instructional manner into the curricular areas. This is different from a technical support person whose only purpose is purely technical and not educational. These deviations from the teacher leadership literature signify the need for an adapted framework specific to the enablers and barriers that school librarians experience in enacting a leadership role in technology integration.

Collaborative teachers (n=33) were found to be the second most frequently occurring enabler in this domain. Respondents noted that teachers who were willing to work with them and collaborate on technology infused lessons as a team were enablers to the leadership role in technology integration. Respondents spoke of collaborative teachers, but also commented on “supportive teachers” (n=12), which is designated as different from collaborative teachers according to Zinn’s framework and the teacher leadership literature. Enablers coded as supportive teachers included those responses that spoke of teachers providing a personal support system supporting the school librarian’s efforts of technology integration and leadership and respondents mentioned a sense of value and respect (n=16) from other faculty members as an enabler as well. The indicators in Zinn’s framework and their definitions in the literature provided the researcher with a great deal of assistance in determining the differences in these responses and all coding decisions relied on this framework.

Table 4. Frequency of Leadership Enactment Enablers in Domain One: Personal and Interpersonal Relationship

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive principal</td>
<td>70</td>
<td>37.23</td>
</tr>
<tr>
<td>Collaborative teachers</td>
<td>33</td>
<td>17.55</td>
</tr>
<tr>
<td>Professional organizations</td>
<td>33</td>
<td>17.55</td>
</tr>
<tr>
<td>Supportive district personnel</td>
<td>17</td>
<td>9.04</td>
</tr>
<tr>
<td>Respected and valued by staff</td>
<td>16</td>
<td>8.51</td>
</tr>
<tr>
<td>Supportive teachers</td>
<td>12</td>
<td>6.38</td>
</tr>
<tr>
<td>Collaborative instructional technologist</td>
<td>7</td>
<td>3.72</td>
</tr>
</tbody>
</table>
Table 4 - continued

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>188</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note.* The % symbolizes the percentage that the specific enabler was found in relation to all the total identified enablers in this domain (n=188).

**Domain two enablers.** Participants reported 245 enablers in Domain Two: Institutional Structure. Domain Two, as defined by Zinn (1997b), includes the formal and informal structures in the educational context that can either support or constrain teacher leadership, including formal policies, procedures, and resources, as well as norms, and expectations. The enabler reported most frequently by respondents in Domain Two was the opportunity to be involved in leadership (n=69), and the least frequently mentioned enablers were onsite full-time technology support (n=5), receiving a stipend (n=5), a supportive school climate (n=5), and volunteers (n=5). These are illustrated in Table 5, which presents the frequencies and percentages associated with the individual enablers within Domain Two: Institutional Structure. The enablers found to reside in the domain of Institutional Structure stated by respondents include the provision of resources such as funding, adequate staffing, time, technology resources, and a flexible schedule. A flexible schedule is defined as a scheduling arrangement that allows for variation in library use, rather than having each class scheduled into the library for a regular, fixed period. In a flexible schedule the school librarian and the teacher plan together for instruction or use of resources based on student learning needs in each curriculum unit, and schedule library use on that basis (McGregor, 2006).

The enabler most frequently noted by participants was the opportunity for a leadership role and responsibilities (n=69) in their schools. Respondents mentioned serving on various committees, providing professional development for other faculty and staff, having various opportunities for an authentic leadership role, and responsibilities. The opportunity for formal professional development (n=60) courses and workshops provided through their building or district was noted (n=60) as well. Sixteen respondents also found that serving in a dual role as both the school librarian and the instructional technologist enabled them in enacting leadership in technology integration and some indicated that the stipend they received for this served as an enabler (n=5). Various resources were noted by respondents as enablers, such as technical support. For the purposes of this research this technical support is defined as technical personnel.
that are on-site at the school to ensure functioning hardware and software. The mention of a flexible schedule (n=12) and full-time clerk (n=10) are responses found to be specific to school librarians and not found in the teacher leadership literature or in the framework. The researcher, based again on her knowledge of the population and the indicator definitions in Zinn’s framework, chose to categorize these enablers in this domain that deals with institutional structures and resources such as scheduling and staffing.

Table 5. Frequency of Leadership Enactment Enablers in Domain Two: Institutional Structure

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunities for a leadership role and responsibilities</td>
<td>69</td>
<td>28.16</td>
</tr>
<tr>
<td>Professional development opportunities</td>
<td>60</td>
<td>24.49</td>
</tr>
<tr>
<td>District level support</td>
<td>17</td>
<td>6.94</td>
</tr>
<tr>
<td>Dual role as instructional technologist</td>
<td>16</td>
<td>6.53</td>
</tr>
<tr>
<td>Funding</td>
<td>15</td>
<td>6.12</td>
</tr>
<tr>
<td>Technology resources</td>
<td>15</td>
<td>6.12</td>
</tr>
<tr>
<td>Flexible schedule</td>
<td>12</td>
<td>4.90</td>
</tr>
<tr>
<td>Time</td>
<td>11</td>
<td>4.49</td>
</tr>
<tr>
<td>Full-time clerk</td>
<td>10</td>
<td>4.08</td>
</tr>
<tr>
<td>Full-time on-site tech support</td>
<td>5</td>
<td>2.04</td>
</tr>
<tr>
<td>Supportive school climate</td>
<td>5</td>
<td>2.04</td>
</tr>
<tr>
<td>Stipend</td>
<td>5</td>
<td>2.04</td>
</tr>
<tr>
<td>Volunteers</td>
<td>5</td>
<td>2.04</td>
</tr>
<tr>
<td>Total</td>
<td>245</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. The % symbolizes the percentage that the specific enabler was found in relation to all the total identified enablers in this domain (n=245).
**Domain three enablers.** Table 6 presents the frequencies and percentages associated with the specific enablers within Domain Three: Personal Considerations and Commitments. Zinn (1997b) defines this domain as recognizing that leadership is just one part of teacher leaders’ lives and that external context and conditions can influence teachers. While there were only four enablers reported in this category, the most frequently mentioned enabler was personal time (n=2) and the least frequently mentioned enabler was personal finance (n=1). Less than 1% of reported enablers were categorized as Personal Considerations and Commitments.

**Table 6. Frequency of Leadership Enactment Enablers in Domain Three: Personal Considerations and Commitments**

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal time</td>
<td>2</td>
<td>50.00</td>
</tr>
<tr>
<td>Family support</td>
<td>1</td>
<td>25.00</td>
</tr>
<tr>
<td>Personal finances</td>
<td>1</td>
<td>25.00</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>100.00</td>
</tr>
</tbody>
</table>

*Note. The % symbolizes the percentage that the specific enabler was found in relation to all the total identified enablers in this domain (n=4).*

**Domain four enablers.** Domain Four: Intellectual and Psycho-social Characteristics, represents those key intellectual and psycho-social characteristics that teachers possess that support their leadership, according to Zinn (1997b). Examples include an underlying belief and value system, drive for excellence, a sense of obligation to get involved, love for learning, and most of all a perception that they can make a difference. Table 7 presents the enablers, in order of the frequency of occurrence that school librarians reported them as facilitating their involvement in technology integration leadership. In Domain Four the most frequently mentioned enabler was the commitment to make a difference for students and teachers (n=69), but the commitment to continual professional growth (n=41) and a personal sense to get involved (n=48) were also noted frequently. In this domain the school librarian, himself or herself serves as an enabler to leadership enactment; these enablers represent the personal characteristics and
beliefs that can serve to facilitate one to assume leadership responsibilities. Enablers reported in this domain include self-initiated efforts to learn and stay current through attending conferences, reading journals, and taking continuing education classes; one’s own personal knowledge and expertise; a commitment to excellence and the profession; and one’s dedication to students and colleagues. Additionally, more formal efforts, but still self-initiated, such as furthering one’s education by taking college level courses and voluntarily participating in the National Board process also were noted, but due to the more formal nature of these indicators the researcher felt they warranted a separate designation as enablers, yet are still considered as professional growth.

Table 7. Frequency of Leadership Enactment Enablers in Domain Four: Intellectual and Psychosocial Characteristics

<table>
<thead>
<tr>
<th>Enablers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire to make a difference for students and teachers</td>
<td>69</td>
<td>24.04</td>
</tr>
<tr>
<td>Sense of obligation to get involved</td>
<td>48</td>
<td>16.72</td>
</tr>
<tr>
<td>Commitment to continual professional growth</td>
<td>41</td>
<td>14.29</td>
</tr>
<tr>
<td>Expertise</td>
<td>36</td>
<td>12.54</td>
</tr>
<tr>
<td>Personal belief and values</td>
<td>22</td>
<td>7.67</td>
</tr>
<tr>
<td>Personal interest in technology</td>
<td>19</td>
<td>6.62</td>
</tr>
<tr>
<td>Professional responsibility</td>
<td>18</td>
<td>6.27</td>
</tr>
<tr>
<td>Education</td>
<td>16</td>
<td>5.57</td>
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<tr>
<td>Experience</td>
<td>14</td>
<td>4.88</td>
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<tr>
<td>National Board Certification</td>
<td>4</td>
<td>1.39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>287</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>

Note. The % symbolizes the percentage that the specific enabler was found in relation to all the total identified enablers in this domain (n=287).
Research Question Two

In order to determine which barriers or constraining factors accomplished school librarians perceive to enacting the role of leader in technology integration the researcher performed content analysis on the responses to the open-ended question “Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement.” In order to examine the individual barriers that occurred in each domain, the data was coded not only by category, but also by each specific barrier. Table 8 illustrates the frequency distribution in which participants mentioned the barrier as constraining involvement in technology integration leadership.

<table>
<thead>
<tr>
<th>Table 8. Frequency Distribution of Leadership Enactment Barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barriers</strong></td>
</tr>
<tr>
<td>Time</td>
</tr>
<tr>
<td>Exclusion from leadership role and responsibilities</td>
</tr>
<tr>
<td>Lack of funding</td>
</tr>
<tr>
<td>Inadequate staffing</td>
</tr>
<tr>
<td>Competitive instructional technologist</td>
</tr>
<tr>
<td>Climate of competition with district tech. department</td>
</tr>
<tr>
<td>Technology resources</td>
</tr>
<tr>
<td>Uncollaborative teachers</td>
</tr>
<tr>
<td>Fixed schedule</td>
</tr>
<tr>
<td>Unsupportive principal</td>
</tr>
<tr>
<td>Lack of role definition</td>
</tr>
<tr>
<td>Unsupportive teachers</td>
</tr>
<tr>
<td>Lack of district personnel</td>
</tr>
<tr>
<td>Lack of professional development</td>
</tr>
</tbody>
</table>
Table 8 - continued

<table>
<thead>
<tr>
<th>Barriers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient expertise</td>
<td>6</td>
<td>1.64</td>
</tr>
<tr>
<td>Family obligations</td>
<td>4</td>
<td>1.09</td>
</tr>
<tr>
<td>Discomfort with leadership role</td>
<td>3</td>
<td>0.82</td>
</tr>
<tr>
<td>Feelings of frustration</td>
<td>3</td>
<td>0.82</td>
</tr>
<tr>
<td>Personal finances</td>
<td>2</td>
<td>0.55</td>
</tr>
<tr>
<td>Personal inhibitions</td>
<td>2</td>
<td>0.55</td>
</tr>
<tr>
<td>Personal health</td>
<td>1</td>
<td>0.27</td>
</tr>
<tr>
<td>Total</td>
<td>388</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. The % symbolizes the percentage that the specific barrier was found in relation to all the total identified barriers (n=366).

Categorization of the barriers. The barriers were identified through the content analysis of the responses to the open-ended questions performed by the researcher as described above and then the researcher coded each barrier according to Zinn’s (1997) framework. The framework provides a very specific list of indicators or descriptors of barriers for each domain. These indicators paired with the teacher leadership and the school librarianship literature, assisted the researcher in making all coding decisions. There were very few instances where coding difficulty arose. When barriers not included in the framework were identified, the researcher, based on her knowledge of the population, the context of the response, and supporting literature, made informed choices in the categorization. These coding decisions will be discussed within each domain below as they occur. Frequency distribution was calculated for barriers by category utilizing SPSS. Table 9 and Figure 7 report the frequencies and percentages associated with the barrier categories. The majority (71.65%) of barriers reported by school librarians in enacting leadership in technology integration were found to reside in Domain Two: Institutional Structure, or the domain that encompasses those formal and informal structures such as policies, procedures, and resources that can constraint teachers in enacting teacher leadership (Zinn, 1997b). The fewest barriers were found to reside within Domain Three: Personal
Considerations and Commitments (1.80%), the domain that considers factors found in the personal lives of teachers that can constrain leadership enactment.

Table 9. Frequency of Leadership Enactment Barriers by Domain Categorized by Zinn’s Four Domains of Supports and Barriers to Teacher Leadership

<table>
<thead>
<tr>
<th>Domain</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 1: People &amp; Interpersonal Relationships</td>
<td>67</td>
<td>17.27</td>
</tr>
<tr>
<td>Domain 2: Institutional Structure</td>
<td>278</td>
<td>71.65</td>
</tr>
<tr>
<td>Domain 3: Personal Considerations &amp; Commitments</td>
<td>7</td>
<td>1.80</td>
</tr>
<tr>
<td>Domain 4: Intellectual &amp; Psycho-social Characteristics</td>
<td>14</td>
<td>3.61</td>
</tr>
<tr>
<td>No, Not at this time Answer</td>
<td>22</td>
<td>5.67</td>
</tr>
<tr>
<td>Total</td>
<td>388</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Figure 7. Graphical representation of the leadership enactment barriers categorized by Zinn’s Four Domains of Supports and Barriers to Teacher Leadership

**Domain one barriers.** Table 10 presents the frequencies and percentages associated with the individual barriers within Domain One: Personal and Interpersonal Relationships. The most frequently occurring barrier in Domain One, which encompasses relationships with others and how their attitudes and behaviors can influence leadership enactment, was a competitive relationship with instructional technologists (n=21), and the least frequently occurring barrier
was a lack of support from teachers (n=10). The barriers found in this domain include a competitive relationship with school technology personnel; opposition, both passive and aggressive, from principals; and a lack of support from teachers, including a lack of willingness to collaborate and competitive relationships. The competitive relationship with the instructional technologist, who is defined as a building level person who works with teachers to teach or integrate technology in the curricular areas, is not a barrier that is found in the teacher leadership literature specifically, but competitive relationships with other teachers is defined as a descriptor of Domain One by Zinn (1997b), and therefore the researcher chose to classify this same competitive relationship here.

Respondents spoke of troubled relationships with teachers that served as barriers. As noted above, the descriptors from the Zinn (1997) framework provided great assistance in categorizing the responses. This was also the case with the barrier questions as well. “Uncollaborative teachers” (n=19) were found to be the second most frequently occurring barrier named in this domain. Respondents spoke of teachers who were unwilling to collaborate, preferred to work on their own, and did not want to or show any interest in working together in order to integrate technology. Whereas the barrier “unsupportive teachers” (n=10) refers to teachers who either passively or aggressively opposed school librarian respondents in their efforts of technology integration leadership, did not make time, and were resistant to change.

Table 10. Frequency of Leadership Enactment Barriers in Domain One: Personal and Interpersonal Relationships

<table>
<thead>
<tr>
<th>Barriers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitive instructional technologist</td>
<td>21</td>
<td>31.34</td>
</tr>
<tr>
<td>Uncollaborative teachers</td>
<td>19</td>
<td>28.36</td>
</tr>
<tr>
<td>Unsupportive principal</td>
<td>17</td>
<td>25.37</td>
</tr>
<tr>
<td>Unsupportive teachers</td>
<td>10</td>
<td>14.93</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. The % symbolizes the percentage that the specific barrier was found in relation to all the total identified enablers in this domain (n=67).
Domain two barriers. Domain Two: Institutional Structure considers formal and informal institutional structures, policies, and procedures that constrain leadership enactment (Zinn, 1997b). Table 11 presents the frequencies and percentages associated with the specific barriers within Domain Two. The majority (71.65%) of barriers identified by participants were found to reside in this domain. The most frequently occurring barrier was the lack of time (n=94) and the least frequently noted barrier was a lack of professional development opportunities (n=6).

Twelve respondents spoke of a lack of role definition for school librarians in technology (n=12) and included comments about a lack of definition from the school librarian professional guidelines and from school administrators as constraining them in enacting a leadership role in technology integration. A lack of, and even exclusion from, leadership opportunities at the school and district level (n=40) were named by respondents as barriers. Finally, a lack of resources such as time (n=94), funding (n=33), adequate staffing (n=25), and technology resources (n=21), and a fixed schedule (n=19) were also noted barriers in this domain.

Table 11. Frequency of Leadership Enactment Barriers in Domain Two: Institutional Structure

<table>
<thead>
<tr>
<th>Barriers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>94</td>
<td>33.81</td>
</tr>
<tr>
<td>Exclusion from leadership role and responsibilities</td>
<td>40</td>
<td>14.39</td>
</tr>
<tr>
<td>Lack of funding</td>
<td>33</td>
<td>11.87</td>
</tr>
<tr>
<td>Inadequate staffing</td>
<td>25</td>
<td>8.99</td>
</tr>
<tr>
<td>Climate of competition with district technology department</td>
<td>21</td>
<td>7.55</td>
</tr>
<tr>
<td>Lack of technology resources</td>
<td>21</td>
<td>7.55</td>
</tr>
<tr>
<td>Fixed schedule</td>
<td>19</td>
<td>6.83</td>
</tr>
<tr>
<td>Lack of role definition</td>
<td>12</td>
<td>4.32</td>
</tr>
<tr>
<td>Lack of district personnel</td>
<td>7</td>
<td>2.52</td>
</tr>
<tr>
<td>Lack of professional development</td>
<td>6</td>
<td>2.16</td>
</tr>
</tbody>
</table>
### Domain three barriers

In analyzing the barriers categorized in Domain Three: Personal Considerations and Commitments, the most frequently reported barrier was family obligations (n=4) and the least frequently reported barrier was physical health (n=1). Domain Three considers the teachers’ personal lives and the constraints that can place on leadership enactment, and as was found with enablers, less than 2% of reported barriers were categorized as Personal Considerations and Commitments. Table 12 presents the frequencies and percentages associated with the specific barriers within Domain Three.

#### Table 12. Frequency of Leadership Enactment Barriers in Domain Three: Personal Considerations and Commitments

<table>
<thead>
<tr>
<th>Barriers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family obligations</td>
<td>4</td>
<td>57.14</td>
</tr>
<tr>
<td>Personal finances</td>
<td>2</td>
<td>28.57</td>
</tr>
<tr>
<td>Personal health</td>
<td>1</td>
<td>14.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7</td>
<td>100</td>
</tr>
</tbody>
</table>

*Note.* The % symbolizes the percentage that the specific barrier was found in relation to all the total identified enablers in this domain (n=7).

### Domain four barriers

The barriers that reside in Domain Four: Intellectual and Psycho-social Characteristics represent the personal psycho-social characteristics that make leadership enactment difficult. The most frequently occurring barrier in Domain Four was insufficient expertise (n=6) and the least frequently mentioned barrier was personal inhibitions (n=2). Very few respondents (1.8%) reported barriers in the Intellectual and Psycho-social domain, yet the most frequently reported barrier in this category was lack of knowledge or skills or insufficient...
expertise to act as a leader in technology integration activities. Table 13 presents the frequencies and percentages associated with the specific barriers categorized within Domain Four.

Table 13. Frequency of Leadership Enactment Barriers in Domain Four: Intellectual and Psycho-social Characteristics

<table>
<thead>
<tr>
<th>Barriers</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient expertise</td>
<td>6</td>
<td>42.86</td>
</tr>
<tr>
<td>Discomfort with leadership role</td>
<td>3</td>
<td>21.43</td>
</tr>
<tr>
<td>Feelings of frustration</td>
<td>3</td>
<td>21.43</td>
</tr>
<tr>
<td>Personal inhibitions</td>
<td>2</td>
<td>14.29</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note. The % symbolizes the percentage that the specific barrier was found in relation to all the total identified enablers in this domain (n=14).

Research Questions Three and Four

Research question three examines those participants who were determined to be involved at a high level in technology integration leadership activities and the differences and similarities in the enablers experienced by these respondents in relation to the other participants not involved at a high level. Research question four addresses the barriers experienced by those participants involved at a low level in technology integration leadership activities in comparison with the other participants found to be more involved. Whereas the analysis of the first two research questions focused on the frequencies of the enablers and barriers, the analysis of these last two research questions shifts to the participants, in order to identify the specific enablers and barriers respondents involved at a high and low level perceive as impacting their involvement in technology integration leadership practices.

The original research team calculated an “index score” for each participant, which is the level of involvement in technology integration leadership activities. Each participant that responded to all 59 Likert scale questions was given a scored based on their responses on each of the Likert items ranging from 0 to 4. The Likert items represented technology integration leadership activities that were ranked as an entry level practice, an adaptive level practice, or a
transformative level practice. The index score was calculated by multiplying the Likert score by the designated level of practice of the question (entry, adaptive, or transformative), and then all of the scores on each question for each participant were totaled. Utilizing SPSS, the data was transformed into ordinal data and then ranked in order. Since the data is not normally distributed, the categories of low, middle, and high were determined by frequency distribution. This was determined by utilizing SPSS cutmarks to determine the score divisions for the three categories (0-567=low, 568-601= mid, 602-641=high). The cases then were sorted into three categories based on their index score. In examining the original data it was established that 71 cases were found to be involved at a high level of involvement in technology integration practices and 76 cases were found to be involved at a low level.

This research utilized percentage difference as a measure of association for this nominal data (Rudestam & Newton, 2007). In order to examine this relationship the researcher constructed univariate comparison tables of the frequencies of the percentage of the enablers and barriers based on the condition of “level of involvement.” Therefore, bivariate contingency tables were utilized to compare the frequencies, similarities, and differences of those accomplished school librarians who are involved at a high level or low level in technology integration leadership practices to the same frequency percentages to the other participants.

Research question three. Research question three asks: What is the association between accomplished school librarians involved at a high level in technology integration leadership and the identified enablers in comparison to the other participants? Table 14 presents the frequency percentages in which the respondents involved at a high level in technology integration leadership identified the enabler compared with frequency percentages in which the other participants identified the enabler. Overall, the respondents involved at a high level reported more occurrences of enablers. Those respondents highly involved in technology integration leadership reported the top three enablers to be: a supportive principal, opportunities for leadership, and a sense of obligation to get involved.

The highly involved participants most frequently (32.39%, n=23) perceived principal support and the opportunities to be involved in leadership (n=23) as enablers that facilitated them in being involved in technology integration leadership activities. Also noted by highly involved participants was a need to get involved (22.5%, n=16) and to make a difference for students and colleagues (21.3%, n=15), as well as professional development activities (21.13%, n=15).
Respondents involved at a high level more frequently reported that their dual role as the school instructional technologist facilitates their ability to be fully involved in technology integration leadership practices than other participants. Those highly involved respondents also reported the enabler of professional organizations more frequently (8.24%).

In examining the frequencies in which other participants named specific enablers, it was found that these respondents perceived enablers to be the need to make a difference for the students and colleagues they work with, the commitment to continual professional growth, a personal interest in technology, expertise, and education more frequently as enablers than the highly involved respondents did.

<table>
<thead>
<tr>
<th>Enablers</th>
<th>High Level Involvement Participants (n=71)</th>
<th>Other Participants (n=149)</th>
<th>Percentage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supportive principal</td>
<td>32.39%</td>
<td>24.83%</td>
<td>7.56%</td>
</tr>
<tr>
<td>Opportunities for leadership role and responsibilities</td>
<td>32.39%</td>
<td>21.48%</td>
<td>10.91%</td>
</tr>
<tr>
<td>Sense of obligation to get involved</td>
<td>22.54%</td>
<td>11.41%</td>
<td>11.13%</td>
</tr>
<tr>
<td>Professional development</td>
<td>21.13%</td>
<td>20.81%</td>
<td>0.32%</td>
</tr>
<tr>
<td>Make a difference for students and teachers</td>
<td>21.13%</td>
<td>28.19%</td>
<td>-7.06%</td>
</tr>
<tr>
<td>Collaborative teachers</td>
<td>19.72%</td>
<td>8.72%</td>
<td>11.00%</td>
</tr>
<tr>
<td>Professional organizations</td>
<td>18.31%</td>
<td>10.07%</td>
<td>8.24%</td>
</tr>
<tr>
<td>Dual role as instructional technologist</td>
<td>14.08%</td>
<td>2.01%</td>
<td>12.07%</td>
</tr>
<tr>
<td>Commitment to continual professional growth</td>
<td>11.27%</td>
<td>19.46%</td>
<td>-8.19%</td>
</tr>
<tr>
<td>Supportive district personnel</td>
<td>9.86%</td>
<td>3.36%</td>
<td>6.50%</td>
</tr>
<tr>
<td>District level support</td>
<td>9.86%</td>
<td>6.04%</td>
<td>3.82%</td>
</tr>
<tr>
<td>Enablers</td>
<td>High Level Involvement Participants (n=71)</td>
<td>Other Participants (n=149)</td>
<td>Percentage Difference</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------------------------</td>
<td>---------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Funding</td>
<td>9.86%</td>
<td>4.70%</td>
<td>5.16%</td>
</tr>
<tr>
<td>Expertise</td>
<td>9.86%</td>
<td>12.08%</td>
<td>-2.22%</td>
</tr>
<tr>
<td>Personal belief and values</td>
<td>9.86%</td>
<td>6.04%</td>
<td>3.82%</td>
</tr>
<tr>
<td>Respected and valued by staff</td>
<td>8.45%</td>
<td>4.03%</td>
<td>4.42%</td>
</tr>
<tr>
<td>Technology resources</td>
<td>7.04%</td>
<td>4.70%</td>
<td>2.34%</td>
</tr>
<tr>
<td>Experience</td>
<td>7.04%</td>
<td>2.68%</td>
<td>4.36%</td>
</tr>
<tr>
<td>Flexible schedule</td>
<td>5.63%</td>
<td>3.36%</td>
<td>2.27%</td>
</tr>
<tr>
<td>Full-time clerk</td>
<td>4.23%</td>
<td>4.03%</td>
<td>0.20%</td>
</tr>
<tr>
<td>Stipend</td>
<td>4.23%</td>
<td>1.34%</td>
<td>2.89%</td>
</tr>
<tr>
<td>Time</td>
<td>4.23%</td>
<td>4.70%</td>
<td>-0.47%</td>
</tr>
<tr>
<td>Education</td>
<td>4.23%</td>
<td>6.71%</td>
<td>-2.48%</td>
</tr>
<tr>
<td>Professional responsibility</td>
<td>4.23%</td>
<td>5.37%</td>
<td>-1.14%</td>
</tr>
<tr>
<td>Personal interest in technology</td>
<td>4.23%</td>
<td>8.72%</td>
<td>-4.49%</td>
</tr>
<tr>
<td>Supportive teachers</td>
<td>2.82%</td>
<td>5.37%</td>
<td>-2.55%</td>
</tr>
<tr>
<td>Full-time on-site tech support</td>
<td>2.82%</td>
<td>1.34%</td>
<td>1.48%</td>
</tr>
<tr>
<td>Supportive school climate</td>
<td>2.82%</td>
<td>1.34%</td>
<td>1.48%</td>
</tr>
<tr>
<td>Collaborative instructional technologist</td>
<td>1.41%</td>
<td>3.36%</td>
<td>-1.95%</td>
</tr>
<tr>
<td>Volunteers</td>
<td>0.00%</td>
<td>2.01%</td>
<td>-2.01%</td>
</tr>
</tbody>
</table>
Table 14 - continued

<table>
<thead>
<tr>
<th>Enablers</th>
<th><strong>High Level Involvement Participants (n=71)</strong></th>
<th><strong>Other Participants (n=149)</strong></th>
<th><strong>Percentage Difference</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal finances</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
</tr>
<tr>
<td>Family support</td>
<td>0.00%</td>
<td>0.67%</td>
<td>-0.67%</td>
</tr>
<tr>
<td>Personal time</td>
<td>0.00%</td>
<td>0.67%</td>
<td>-0.67%</td>
</tr>
<tr>
<td>National board certification</td>
<td>0.00%</td>
<td>1.34%</td>
<td>-1.34%</td>
</tr>
<tr>
<td>No response</td>
<td>1.14%</td>
<td>0.67%</td>
<td>0.47%</td>
</tr>
</tbody>
</table>

**Research question four.** Research question four asked: What is the association between accomplished school librarians involved at a low level in technology integration leadership and the identified barriers in comparison to the other participants? Table 15 presents the frequency percentages in which the respondents involved at a low level in technology integration leadership identified the barrier compared with frequency percentages in which the other participants identified the barrier. The respondents involved at a low level in technology integration leadership reported that they experienced exclusion from leadership opportunities as a constraining factor more frequently (10.49%) than other respondents. Also, these low level respondents more often noted competition with technology personnel (8.30%) and unsupportive teachers (6.48%) as barriers to involvement in technology integration leadership. Similarities in the barriers reported by both the low involvement level respondents and the more involved respondents include the school principal, a lack of technology resources, and a fixed schedule. A fixed schedule is defined as scheduling situation in which “a group is scheduled to come to the library media center for instruction or use of resources on a regular basis (often weekly), for a set length of time, frequently for the school year” (Donham van Deusen & Tallman, cited in McGregor, 2006, p. 32). Both groups noted most frequently the barrier of time and, while some respondents just simply responded with “time,” others expanded on their comments by identifying that there are too many responsibilities to the job or that their time is being taken up with other duties or responsibilities.
Table 15. Percentage Difference of Barriers Between Participants Involved at a Low Level in Technology Integration Leadership and Other Participants

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Low Level Involvement Participants (n=76)</th>
<th>Other Participants (n=144)</th>
<th>Percentage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusion from leadership role and responsibilities</td>
<td>23.68%</td>
<td>13.19%</td>
<td>10.49%</td>
</tr>
<tr>
<td>Time</td>
<td>22.37%</td>
<td>34.72%</td>
<td>-12.35%</td>
</tr>
<tr>
<td>No response</td>
<td>14.47%</td>
<td>11.81%</td>
<td>2.67%</td>
</tr>
<tr>
<td>Climate of competition with district technology department</td>
<td>13.16%</td>
<td>4.86%</td>
<td>8.30%</td>
</tr>
<tr>
<td>Unsupportive teachers</td>
<td>11.84%</td>
<td>4.86%</td>
<td>6.98%</td>
</tr>
<tr>
<td>Lack of funding</td>
<td>9.21%</td>
<td>10.42%</td>
<td>-1.21%</td>
</tr>
<tr>
<td>Lack of technology resources</td>
<td>7.89%</td>
<td>6.25%</td>
<td>1.64%</td>
</tr>
<tr>
<td>Fixed schedule</td>
<td>6.58%</td>
<td>6.25%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Competitive instructional technologist</td>
<td>6.58%</td>
<td>6.25%</td>
<td>0.33%</td>
</tr>
<tr>
<td>Unsupportive principal</td>
<td>6.58%</td>
<td>5.56%</td>
<td>1.02%</td>
</tr>
<tr>
<td>Uncollaborative teachers</td>
<td>3.95%</td>
<td>6.25%</td>
<td>-2.30%</td>
</tr>
<tr>
<td>Lack of professional development</td>
<td>3.95%</td>
<td>2.08%</td>
<td>1.86%</td>
</tr>
<tr>
<td>Inadequate staffing</td>
<td>2.63%</td>
<td>9.72%</td>
<td>-7.09%</td>
</tr>
<tr>
<td>Lack of role definition</td>
<td>1.32%</td>
<td>4.17%</td>
<td>-2.85%</td>
</tr>
<tr>
<td>Lack of district personnel</td>
<td>1.32%</td>
<td>2.78%</td>
<td>-1.46%</td>
</tr>
<tr>
<td>Feelings of frustration</td>
<td>1.32%</td>
<td>1.39%</td>
<td>-0.07%</td>
</tr>
<tr>
<td>Personal inhibitions</td>
<td>1.32%</td>
<td>0.69%</td>
<td>0.62%</td>
</tr>
</tbody>
</table>
Table 15 - continued

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Low Level Involvement Participants (n=76)</th>
<th>Other Participants (n=144)</th>
<th>Percentage Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family obligations</td>
<td>1.32%</td>
<td>0.00%</td>
<td>1.32%</td>
</tr>
<tr>
<td>Insufficient expertise</td>
<td>1.32%</td>
<td>1.39%</td>
<td>-0.07%</td>
</tr>
<tr>
<td>Discomfort with leadership role</td>
<td>0.00%</td>
<td>1.39%</td>
<td>-1.39%</td>
</tr>
<tr>
<td>Personal finances</td>
<td>0.00%</td>
<td>1.39%</td>
<td>-1.39%</td>
</tr>
<tr>
<td>Personal health</td>
<td>0.00%</td>
<td>0.69%</td>
<td>-0.69%</td>
</tr>
<tr>
<td>Not at this time, No barriers responses</td>
<td>0.00%</td>
<td>1.39%</td>
<td>-1.39%</td>
</tr>
<tr>
<td>No response</td>
<td>17.11%</td>
<td>0.69%</td>
<td>17.04%</td>
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</table>

Summary

The findings from this research demonstrate that accomplished school librarians experience many factors that both enable and constrain their role as leaders in technology integration in their schools. The findings from the open-ended responses identify a supportive principal (n=70) as the most frequently reported enabler in facilitating technology leadership enactment, but also noted prominently was the opportunity for a leadership role and responsibilities (n=69) and the need to make a difference for students and teachers (n=69). This research finds that the barrier of time (n=94) is the most frequent reported factor constraining accomplished school librarians’ technology integration leadership.

Although the subjects in this research did report more enablers (n=724) than barriers (n=366), accomplished school librarians involved at a high level still experience barriers when attempting to enact a leadership role in technology integration. The findings support the proposition from distributed leadership theory that there are factors that can enable or constrain enacting leadership practices and serves to identify the enablers that support and the barriers that constrain school librarians in enacting the role of leader in technology integration.
In analyzing the enablers named by those respondents considered to be highly involved in technology integration leadership it was found that the enablers that facilitate these respondents involvement parallel those of the whole sample finding that a supportive principal and opportunities for leadership were still the most frequently noted enablers, but when compared to those of the respondents not highly involved, similarities and differences emerged. The biggest differences highlight that highly involved respondents experience more opportunities for leadership, served in a dual role as the school librarian and the instructional technologist, and more frequently experience teachers willing to collaborate than other respondents. In examining the barriers most frequently experienced by those involved at a low level in technology integration leadership this research finds that these respondents are excluded from leadership responsibilities more often, experience a competitive climate with technology personnel, and lack support from teachers more so than those respondents that are more involved.

Finally, this research employs a teacher leader framework, based on the assumption that as teachers, school librarians will experience the same enablers and barriers that teacher leaders experience enacting leadership. Findings suggest that the enablers and barriers experienced by accomplished school librarians are similar to those experienced by teacher leaders and illustrate the similar mirroring of the enabler and barriers found in the teacher leader framework. However, this research identifies additional factors that are unique to school librarians and highlights the need for an adapted framework for school librarians.

This chapter has described the results through presenting the data and initial analyses. In the following chapter the identified enablers and barriers will be examined within the context of the literature to present interpretations, conclusions, and implications.
CHAPTER 5
SUMMARY AND CONCLUSIONS

This final chapter of the dissertation contains a discussion of the findings from the examination of the responses to the open-ended questions from the School Librarian and Technology Integration Survey (PALM, 2009) in order to investigate the enablers and barriers that accomplished school librarians experience in enacting a leadership role in technology integration. It begins with a restatement of the problem addressed by this study, and then moves to a discussion of the findings positioned within the existing literature with conclusions of the study. Finally, the chapter concludes with implications and recommendations for the research and literature, theory, method, and practice, as well as recommendations for future research related to school librarians and technology integration leadership.

Summary

This study investigates the enablers and barriers that accomplished practicing school librarians, those who are National Board Certified, experience in relation to crafting a leadership role in technology integration. The specific purpose of this research is to identify, categorize, and explicate the enablers and barriers that accomplished school librarians experience in regards to enacting leadership in technology integration. The sample includes 295 National Board Certified school librarians from across the United States comprised the sample. These participants are assumed to be experts in their field including technology integration and leadership, making them uniquely situated for the purposes of this research.

Distributed leadership provides a theoretical foundation for research on leadership practices and can illuminate the multiple dimensions of leadership that occur in a school. The concepts and propositions in Spillane’s (2006) interpretation of distributed leadership theory
serves as the impetus for this research, forms the theoretical basis for it, and guides the study from research question development through data analysis.

This research utilizes a conceptual framework taken from the educational leadership literature, *Four Domains of Supports and Barriers to Teacher Leadership* (Zinn, 1997). Zinn’s research into teacher leadership resulted in a framework to categorize and describe the external and internal factors that support and impede teacher leadership. This classification system categorizes both enablers and barriers into four domains: “(1) people and interpersonal relationships, (2) institutional structures, (3) personal considerations and commitments, and (4) intellectual and psycho-social characteristics” (p. 243).

The method of secondary analysis was utilized to examine existing survey data that adequately addresses the research questions for this research employing unused survey data from two open-ended questions found at the end of the *School Library Media Specialist and Technology Integration Survey* (PALM, 2009). There is no other research to date that serves to identify the enablers and barriers to the enactment of a leadership role in technology integration. Therefore, the use of open-ended questions was vital to allow participants to express factors that enabled and constrained their technology integration leadership involvement without being limited by any preconceived categories. The responses from the two open-ended survey questions that address the variables of interest to the researcher (those factors that are perceived as enablers or barriers to enactment of the technology leadership role) are analyzed in a two-step process utilizing descriptive statistics. This two-step process involves content analysis to identify the individual enablers and barriers and subsequent category coding based on the conceptual framework *Four Domains of Supports and Barriers to Teacher Leadership* (Zinn, 1997). Frequency distribution tables were then created to illustrate the occurrences of specific enablers and barriers within the survey responses, as well as their categorizations into the four domains.

In order to determine if there is an association between the enablers identified by accomplished school librarians at a high level of involvement in technology integration leadership in comparison with the enablers identified by other participants, the researcher constructed bivariate comparison tables of the frequencies of mention (in percentages) of the enablers by respondents with different levels of involvement, or those accomplished school librarians involved at a high level in technology integration practice versus the other
accomplished school librarian participants, then calculated the percentage difference between the two groups. In order to study the association of barriers that constrain accomplished school librarians’ involvement in technology integration leadership, the researcher again constructed bivariate comparison tables of the frequencies of occurrence (in percentage) of the barriers by respondents with different levels of involvement, this time comparing the accomplished school librarians involved at a low level in technology integration leadership and the other participants, and then calculated the percentage difference between the two groups’ frequencies of the barriers they experienced.

Limitations

Limitations of this research are mainly attributed to the fact that this research utilizes secondary data and to the limitations of the first study that transferred to this research. The sampling method was found to be a limitation in the primary research and was the dominant limitation in this secondary research as well. The lack of a random sample posed extreme limitations in data analysis methods and generalizability. The use of a convenience sample, paired with nominal data, posed strict limitations on the statistical tests that could be utilized in accordance with this data. While the researcher was able to locate a statistical method for determining association between the respondents involved at a high level and the other respondents, there was no test of significance or strength of the association. Additionally, the determination and calculation of the index score from the primary study proved to be a limitation; again, this calculation was hindered by the lack of a random sample and a more robust method for determining this score could be utilized in the future.

Another limitation to this research was that the instrument used in the primary research was newly developed. A final limitation is that due to confidentiality reasons and the original consent agreement, the researcher did not have access to the school identifiers of the participants and therefore these subjects cannot be contacted for follow-up questions and additional data cannot be collected. This lack of opportunity for follow-up or the collection of additional data from the participants has proven to be a limitation in furthering this research, but the possibility of comparison research with the nationwide survey data is promising for future research endeavors.
Despite the limitations, this is a preliminary investigation into the issue of enablers and barriers and the purpose of this research is to identify and explain the enablers and barriers that accomplished school librarians experience enacting a leadership role in technology integration. There is no other research to date that serves to identify the enablers and barriers to the enactment of leadership in technology integration. Therefore, the use of open-ended questions was vital to allow participants to express factors that enabled and constrained their technology integration leadership involvement without being limited by any preconceived categories. Although the results may not be generalizable to the overall population of school librarians, they make an important initial contribution to the emerging research into the leadership roles of school librarians.

Conclusions

The first step in this study was to identify the factors that enable and constrain school librarians to be fully involved in technology integration leadership practices. Research question one asks: What enablers or supporting factors do accomplished school librarians perceive in enacting the role of leader in technology integration? Research question two asks: Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement.

As data was analyzed, certain enablers and barriers were identified more frequently than others and overall themes that coincided with the Zinn (1997) categorization emerged, as well as the “mirroring” of enablers and barriers. This “mirroring” or parallel structure of enablers and barriers seems to be a natural element of school structures (Murphy, 2007; Zinn, 1997), illustrating that conditions that both support and impede teacher leaders may coexist. Yet, in this research differences emerged that did contradict the mirroring in certain instances and highlight the need for an adapted framework for school librarians. The identified enablers and barriers are discussed below in the context of the literature from the fields of school librarianship and teacher leadership, and according to categorization by Zinn’s Four Domains, beginning with relationships found in Domain One, followed by the institutional structure of Domain Two, the personal considerations and commitments of Domain Three, and finally the intellectual and
psycho-social characteristics found in Domain Four. The percentage differences comparisons from research questions three and four contribute additional data on what enablers accomplished school librarians highly involved in technology leadership identify more frequently and conversely on the barriers identified by those with a low level of involvement.

**Relationships**

Relationships were found as frequently occurring enablers for accomplished school librarians enacting a leadership role in technology integration. A supportive relationship with the principal was found to be the highest occurring enabler, while relationships with teachers and other school librarians were also frequently identified as enablers. Yet these same relationships can also constrain teacher leadership. This research reveals that a competitive relationship with the instructional technologist is a frequent barrier in accomplished school librarians enacting a leadership role in technology integration, as are uncollaborative teachers, and an unsupportive principal. Relationships at work or in personal lives can have a positive or negative influence on teacher leaders (Katzemeyer & Moller, 2009; Lieberman & Miller, 2005; Little, 2003; Zinn, 1997). The relationships identified as frequently occurring factors in school librarians’ technology integration leadership enactment include: the principal, the district administrator, teachers, other school librarians, and instructional technologists.

**Principals.** The most frequently cited enabler in school librarians enacting a leadership role in technology integration is a supportive principal. This finding aligns with research from multiple studies from the school librarianship literature that identify principal support as vital (e.g., Church, 2008; Hartzell, 2002; Lance, Rodney, & Russell, 2007; Shannon, 2009 Todd, 2005). When principals have a positive working relationship with school librarians they can serve as advocates and a source of support to promote school librarians as an instructional partners and encourage teachers to collaborate (Oberg, 2009). The quality of the relationship between the principal and the school librarian impacts the school library and the librarian’s place within the school (Church, 2008; McCracken, 2001; Oberg, 2009; Oberg, Hay, & Henri, 2000). Respondents comment on encouragement they received from their principal in assuming a leadership role and responsibilities, such as “I have a principal who supports my position wholeheartedly. He encourages me to continue to grow in my knowledge of technology and promotes me as a technology leader.” Others describe respectful relationships where leadership was shared
and their opinion was valued, with responses such as “my principal values my opinion in technology-related matters” and a “supportive principal who appreciates and uses my experience” as enablers to technology leadership enactment.

This finding is in alignment with the teacher leadership literature that demonstrates this same connection to principal support. Supportive principals can provide encouragement for teachers to take on an active role beyond the classroom to enable their development as teacher leaders while providing teachers with supportive feedback through open communication. When principals validate teachers by recognizing the contributions of their work it makes teachers feel valued and may serve to propel them to leadership involvement (Buckner & McDowelle, 2000; Crowther et al., 2002; Katzenmeyer & Moller, 2009). According to Zinn (1997), administrators’ relationships with teachers are a supporting factor, as principals often publicize leadership opportunities, encourage teachers to take advantage of them, and seek out teacher leaders’ opinion in important school matters (Beachum & Dentith, 2004; Katzenmeyer & Moller, 2009). The quality of a principal’s relationship with teachers is correlated with teachers’ willingness to participate in teacher leadership: the more open, supportive, and facilitative a principal is with teachers, the more willing they are to take on a leadership role (York-Barr & Duke, 2004). Not only do administrators provide verbal encouragement, they often demonstrate support by removing other barriers to teachers’ leadership and even push teachers into new leadership roles (Smylie, Conley, & Marks, 2002).

This research finds that the school principal’s influence in enabling leadership enactment is overarching and considerable. The school principal can serve to encourage and promote teacher leadership opportunities with formal appointments such as creating teams to address certain tasks or responsibilities as a substitute for administrative leadership, suggesting a teacher conduct a professional development session in an area of expertise (Buckner & McDowelle, 2000; Duke & York-Barr, 2004; Harris & Muijs, 2005), or creating a situation for spontaneous leadership to emerge (Elmore, 2000; Spillane, 2006). The importance school principals and the influence they have on school librarians assuming a leadership role is critical in the area of technology integration as well. Research has found that a school’s technology planning, leadership, professional development, curriculum alignment, technology use, and perceptions of technology’s effect on learning could all be attributed back to school administrators (Anderson & Dexter, 2005; Kowch, 2009; Owen & Demb, 2004).
Accomplished school librarians involved at a high level in technology integration leadership practices identify the importance of principal support more frequently than other participants, which again reinforces again the importance of principal support. This research reveals that principals enable accomplished school librarians to assume leadership responsibilities by promoting them as leaders, recognizing their expertise, and providing encouragement. This finding aligns with the literature from teacher leadership as well, finding that one of the most frequently named enablers as opportunities for leadership and conversely one of the most frequently named barriers as the exclusion from leadership opportunities. This research did not identify unsupportive principals as a frequent barrier to technology integration leadership as Zinn’s research did. Yet, this may be attributed to the fact that while many of the identified barriers such as funding, scheduling, staffing, technology resources, and opportunities for leadership are not explicitly related to the principal they could be indirectly attributed to the principal.

**District administrators.** Administrators other than the school principal serve as enablers for school librarians in enacting technology integration leadership. Participants frequently spoke of a district school library coordinator or supervisor who facilitated their efforts in technology integration leadership. One comment was that “district level media personnel in our school district is the driving force for LMS to be involved with technology as a tool for improving instruction.” This finding is notable because of the very limited reference in the teacher leadership literature of other system administrators, such as curriculum coordinators or department chairs, who provide support or encouragement for teacher leaders (Frost & Durrant, 2003; Katzenmeyer & Moller, 2009; Ritchie & Woods, 2007; Ryan, 1999; Silva et al., 2000). Mangin (2007) finds that district support can promote the benefits of teacher leadership to principals.

This role of the district library administrator is also evident in the literature as they serve as facilitators for communication and garnering principal support for school librarians (Baumbach, 2003; Oberg, 2006; Shannon, 2009). Respondents commented on the benefit of having this administrator represent their interests in district-wide decision-making with statements such as “our director of libraries, understands that the library is and should be on the leading edge of technology and information literacy. She is always included in decisions and allows [building level school librarians] to serve on district committees to give input.” A strong
A district library administrator can represent the interests of school library programs and school librarians at the district level through giving voice to concerns, addressing issues with decision-makers, and positioning school librarians to lead. District administrators can also coordinate district-wide professional development and purchasing. This consistency and support across a district may be key to school librarians developing as leaders.

Accomplished school librarians highly involved in technology integration leadership identify district library personnel more frequently as an enabler than other participants. This facilitating relationship with district administrators is not prevalently mentioned in the teacher leadership literature and only limited research exists in the school librarian literature (Hughes-Hassel and Hanson-Baldauf, 2008; Underwood, 2003) that examines this connection. The association of the district library supervisor as an enabler is a relationship that has emerged from this research and appears to be unique to school librarians.

**Teachers.** Collegial relationships with teachers serve as enablers that facilitate school librarians’ enactment of a leadership role in technology integration. This relationship is the second most frequent relationship necessary in facilitating technology leadership involvement. Aligning with the literature (Katzenmeyer & Moller, 2009; York-Barr & Duke, 2004; Zinn, 1997), these findings highlight the importance of collegial relationships with fellow teachers in order to assume a leadership role. The presence of strong collegial relationships between teachers is a crucial enabler for teacher leaders because these relationships allow for sharing of ideas, working toward common goals, supporting one another, and guidance through a common sense of purpose (Tschannen-Moran, 2009).

This same relationship of support, a feeling of respect, and a sense of value are vital enablers in facilitating accomplished school librarians enacting leadership in technology integration. Respondents spoke not only of teachers supporting them in their efforts through serving as “critical friends,” but also through respecting and valuing their contributions to technology integration efforts and in their willingness to collaborate with them. For example, one respondent shared that “a lot of support from the faculty, especially in their willingness to allow my input into their classroom teaching strategies” was what enabled them to function as technology integration leaders. York-Barr and Duke (2004) found recurring evidence of teacher leadership associated with increased teacher collaboration, in that “developing trusting and collaborative relationships is the primary means by which teacher leaders influence their
colleagues” (p. 288), or serve as leaders. Respondents mention that their involvement in technology leadership practices is facilitated by the respect and value their efforts received from colleagues, with comments such as “faculty and students value my input. I go to classrooms, and I email new technologies to keep patrons abreast.” These supportive relationships lead to a feeling of trust and a sense of self-value enabling leadership enactment (Beachum & Dentith, 2004).

School librarians involved at a high level in technology integration leadership activities identify collaborative teachers as an enabler more frequently than other respondents who are not highly involved. Teacher leadership fundamentally depends on the relationships with other teachers and collaboration is an important element of effective leadership and a willingness to work with colleagues is necessary for effective teacher leadership to emerge (Beachum & Dentith, 2004; Katzenmeyer & Moller, 2009; Silva, Gimbert, & Nolan, 2000; York-Barr & Duke, 2004; Zinn, 1997).

The importance of relationships with colleagues is echoed in the school librarianship literature. Cultivating accepting and trustful relationships with teachers is vital for enacting leadership (McCracken, 2001; Oberg, 2009; Oliver, 2003; Slygh, 2000; Underwood, 2003). School librarians who exhibit leadership are more likely to plan cooperatively with teachers, teach cooperatively with teachers, provide training for teachers, and take responsibility for technology integration (Lance, Rodney, & Hamilton-Pennell, 2000). The findings from this research demonstrate this same connection - that collaborative relationships with teachers facilitate and serve as a critical support accomplished school librarians’ involvement in technology integration leadership. Aligning with other areas of school librarianship, this research reinforces that collaborating with teachers is a vital part of the job for school librarians and an enabler for technology integration leadership.

Uncollaborative and unsupportive teachers are frequently cited as barriers that constrain accomplished school librarians enacting a leadership role in technology integration. Respondents confirm previous research, identifying teachers unwilling to collaborate and that are resistant to change as barriers to technology integration leadership, with comments such as “teachers in the building…prefer to work alone. It is very hard to work with teachers that have that mind set” and “a lack of motivation to learn and use new technologies by some faculty members is a major source of frustration.” Some of this resistance to collaboration may be
attributed to the increased demands on teachers to meet yearly accountability measures and the 
pressure for higher test scores, so that it is sometimes difficult for a classroom teacher to find 
time to work with the school librarian. Popular literature also notes the various pressures on 
classroom teachers and the time constraints they experience (Hoppe, 2011). This finding is also 
consistent with the research of McCracken (2001), who found lack of support and interest by 
teachers as a major challenge that school librarians experienced in expanding their leadership 
roles within schools.

**Other school librarians.** Professional organizations are enablers in school librarians’ 
enactment of a technology integration leadership role. This finding is important because 
professional organizations in general are cited infrequently in the existing research of school 
librarianship and teacher leadership. The most recent ALA/AASL Standards for Initial 
Preparation of School Librarians (2010) state the expectation that school librarians “become 
active contributors in education and information professional organizations and use publications, 
conferences, and virtual professional development experiences and opportunities to engage in 
social and intellectual networks that address best practice in school libraries” (p. 13). Not only 
do professional organizations provide support for school librarians through relationships with 
other school librarians, but this research finds that professional growth opportunities from 
professional organization activities such as conferences and publications serve as enablers as 
well.

Professional organizations emerged as an enabler in facilitating accomplished school 
librarians in their technology integration leadership efforts. One respondent expresses that 
“through diverse professional involvement in district, state[,] and national level professional 
organizations, I have gained exposure to different communities and am able to discuss and 
implement new strategies for technology integration.” School librarians who have access to a 
strong and active network of other school librarians are more committed to ongoing professional 
education, mentoring, advocacy, and policy development than those who do not (Dekker as cited 
in Oberg, 2006). Luebke (2009) found that a group of respected colleagues, or other school 
librarians, served as a support to the school librarian in his study examining school leadership, 
but did not specifically mention professional organizations.

The accomplished school librarians highly involved in technology integration leadership 
identify professional organizations as an enabler more frequently than those who are not highly
involved. These findings reveal the importance of professional organizations as providing a network of fellow school librarians to learn from and share with as an enabler for accomplished school librarians in enacting leadership in technology integration. Respondents identify a mentoring and supportive relationship from respected colleagues and professional organizations and the “strong community of librarians” they provide as an enabler as frequently as they did collaborative teachers. Branch and Oberg (2001) find that leadership is participating in meetings with other school librarians beyond the district through association work with other library professionals in the community. There is often only one school librarian in the building, and this finding demonstrates the importance of developing relationships with other school librarians that share the same interests, that can act as mentors, and can provide support in order to facilitate school librarians’ involvement in technology integration leadership.

**Instructional technologists.** A competitive relationship with the instructional technologist is the most frequently occurring relationship barrier constraining accomplished school librarians in enacting a leadership role in technology integration. An instructional technologist is defined as a building level person who works with teachers to teach or integrate technology in the curricular areas. A collaborative instructional technologist is found to be an enabler, but only in a small number of cases. This is an emerging relationship as schools search for ways to deal with the ever-expanding presence of technology in schools. This is not a relationship addressed in the teacher leadership literature specifically, but competitive relationships with other teachers are frequently mentioned (Katzemeyer & Moller, 2009; Lieberman & Miller, 2005; Little, 2003; Zinn, 1997).

There is very limited research in this area, but the existing studies (Nguyen, 2007; Seavers, 2002) urge school librarians and instructional technologists to collaborate and work as a team to benefit students and teachers. Yet, there needs to be further research to clarify and define the roles and responsibilities of each member of this team (Nguyen, 2007). Seavers (2002) found that most teachers perceived the instruction technology specialist as the person responsible for the hardware, software and network issues as well as being the person responsible for training teachers in the integration of technology into the curriculum, and for teaching students. As this role has become even more instructionally focused, the boundaries between the role of school librarians and instructional technologists have blurred. In order to collaborate, it is important for these professionals to develop an understanding of their role and in which areas they overlap.
A lack of clarity and definition in the two roles is reflected in the identification of a competitive relationship with instructional technologists as a barrier to school librarians’ involvement in technology integration leadership. School librarians involved at a low level in technology integration leadership cite the barrier of a competitive instructional technologist more frequently than other respondents. Respondents confirm this with comments about lack of control in technology decision-making, being excluded from working with teachers when technology was involved, not being allowed to conduct technology related staff development, and having technology taken away from them. One respondent states, “there is a major barrier between me and the technology facilitator as far as being able to work collaboratively. The roles are currently blurred and create conflict.”

As the lines blur between these two roles, school librarians may feel threatened by instructional technologists. School librarians were once the sole person responsible for technology in the schools, but now the increased presence of instructional technologists have resulted in school librarians who are no longer seen as the technology expert in the school and are excluded from technology decision-making. A competitive relationship may arise from territorial battles over technology as a resource and access issues. Instructional technologists are often given an increased level of authority over technology and serve as gatekeepers who restrict even school librarians’ access by controlling filters and passwords. As this instructional technologist role expands to include working with teachers to integrate technology into the curricular areas, school librarians may feel that they have to compete to retain their place as a leader in technology integration.

Interestingly, serving in a dual role as school librarian and instructional technologist was found to enable involvement in technology integration leadership. In examining the percentage differences, the biggest difference occurs with school librarians involved at a high level in technology integration leadership identifying serving as both the school librarian and the instructional technologist as an enabler more than those not involved. This finding demonstrates that when school librarians do not have to contend with a competitive threatening instructional technologist they are enabled to be highly involved in technology integration leadership more often, while competitive instructional technologists can constrain accomplished school librarians’ technology integration leadership involvement.
Institutional Structure

Enablers related to the institutional structure are identified less frequently than the barriers, but these include opportunities for leadership and professional development, as well as needed resources such as time, scheduling, and staffing. The most frequently occurring barriers respondents identify in this research are institutional structure type barriers including exclusion from leadership opportunities, lack of role definition, and a lack of resources such as time, funding, adequate staffing, scheduling, and technology resources. The world of education is full of formal and informal structures that can either support or constrain teacher leadership, including policies, procedures, and resources, as well as norms and expectations that can influence teachers’ roles and opportunities in efforts to take part in leadership and facilitate professional learning (Rutherford, 2006). These institutional structures determine the allocation of resources such as funding, time, scheduling, staffing, and technology, as well as form the aspects of school climate that and either facilitate or constrain increased teacher leadership. The school librarian literature often notes the impact of the institutional structure on school librarians and role enactment (McCracken, 2001; Oberg, 2009).

Leadership opportunities. Opportunities for an authentic leadership role and responsibilities are the most frequent occurring enabler facilitating involvement in technology integration leadership and school librarians highly involved in technology integration leadership mention these leadership opportunities more frequently than other participants. The connection with principal support emerges here, in that administrative support, in conjunction with the decisions that the administrator makes for the school, has a great effect on the opportunities available for school librarians to develop and practice the skills needed to be leaders. Supportive administrators are often noted as the most essential factor in enabling school librarians the opportunity to develop as leaders (e.g., Church, 2008; Hartzell, 2002; Lance, Rodney, & Russell, 2007; McCracken, 2001; Shannon, 2009).

This research finds that leadership opportunities, such as serving on leadership, technology, and curriculum committees at the school and the district level served as natural enablers for involvement in technology integration leadership. Teacher leaders require opportunities to be involved in school decision-making and to be involved in the professional development of others (Buckner & McDowelle, 2000; Katzenmeyer & Moller, 2009; Snell & Swanson, 2000; Spillane, 2006). When educators are part of decision-making, they feel that
their expertise is valued and they increase their commitment and participation in the school (Barth, 2001). Also respondents describe serving in a leadership role as providers of staff development for their faculty. Teacher leaders are committed to their own professional development, but also to the professional development of others and they often participate in the design and management of professional development (Silva, Gimbert, & Nolan, 2000). School librarians have the potential to serve as leaders through “forg[ing] partnerships” with teachers and sharing their expertise with the teaching staff by using collaborative activities and by designing and teaching staff development workshops (Zmuda & Harada, 2008, p. 39). Church (2008) found that most principals surveyed agreed that school librarians should teach teachers, providing in-service training, and professional development opportunities in areas of technology integration. Furthermore, the school librarian literature shows that student achievement is higher when the school librarian provides professional development and takes an active role as a leader (Lance et al., 2000; Smith, 2006). Opportunities for leadership are vital in providing school librarians with the experience, confidence, and skills necessary for leadership involvement.

The barrier most frequently experienced in enacting a leadership role in technology integration is the exclusion from leadership. Respondents’ comments reflect purposeful exclusion from leadership opportunities, as well as simply being ignored. They also mention feeling of lack of control because “technology decisions are made by those at the top with no input from the school librarian” and being “excluded from the school leadership team and therefore decision-making.” Accomplished school librarians involved in technology integration leadership at a the low level identify this exclusion from leadership opportunities as a barrier 10% more frequently than other participants, again demonstrating the importance of these opportunities for leadership involvement. Some respondents attribute this exclusion to conflicting role definitions, school principals, and competition with instructional technologists. Yet again, the over-arching influence of the school principal is illustrated in these findings, because often it is the principal who chooses those who are included and excluded in leadership opportunities. Also the increased competition from instructional technologists for the leadership opportunities in technology integration leadership can leave school librarians excluded.

Professional development opportunities. The second most frequently occurring enabler in Domain Two is opportunities for professional development. The research supports
that in order to be most effective, professional development for teacher leadership needs to focus not just on development of teachers’ instructional skills and content knowledge but also on developing leadership skills and understandings to enhance the leadership role such as personal, interpersonal, and group skills needed for successful leadership. The teacher leadership literature asserts that instructional expertise alone is insufficient to allow teachers to function as instructional leaders and requires knowledge and skills related to leadership in addition to the instructional expertise (Barth, 2001; Crowther et al., 2002; Harris & Muijs, 2005; Katzenmeyer & Moller, 2009; Lambert, 2003b; Murphy, 2005; Snell & Swanson, 2000). Yet accomplished school librarians in this research do not mention professional development related to leadership skills as an enabler. This may be attributed to the lack of recognition of school librarians as a leader by principals, resulting in school librarians being excluded or ignored for leadership professional development opportunities. Similarly, professional development that focuses on leadership for school librarians, although increasing in recent years, has been limited.

Accomplished school librarians perceive professional development activities and opportunities that were devoted to technologies and learning to be essential for developing “expertise” in technology and technology integration in order to lead. This research reveals the important connection to expertise; in order to assume a leadership role in technology integration it is important to have the technology expertise necessary, including the knowledge and skills to integrate technology into instruction. Yet the lack of mention of leadership skills and leadership professional development indicates a missing piece in the training that school librarians perceive as necessary. This essential element of technology expertise to facilitate leading in technology integration efforts is well documented in the school librarian literature (e.g., Haycock, 1995, Hughes-Hassell & Hanson-Baldauf, 2008, Shannon, 2002; Williams, 2004). A lack of professional development opportunities is not reported frequently as a barrier, which reflects the research of Hughes-Hassell and Hanson-Baldauf (2008) who found that most respondents indicated that there were learning opportunities provided by their district for utilizing and integrating technology.

Resources. The majority of barriers this study identifies are related to resources. The most frequently noted barrier constraining involvement in technology integration leadership practices is time. Respondents comment on not having time to work with teachers, to plan, to learn about technologies, and to devote to any one activity because of the various tasks for which
they are responsible. Others mention that they were assigned other duties not related to the library that took up their time, such as “teaching language arts classes,” “teaching physical education classes,” “serving as lunch monitor,” and acting as “a substitute teacher.” Multiple respondents note “too much to do” and “not enough time to devote to any one role to be fully involved in accomplishing it,” no time to collaborate or plan with teachers, no flexibility, a lack of time to learn new things, and being pulled from the library for unrelated duties. Time constraints were also closely tied to the barriers of a fixed schedule and the lack of a clerk.

This finding aligns with the teacher leadership literature that notes that time is an issue for all teachers, with too much to do in too little time. “Time is a barrier when priorities are not clearly established. Frequently, multiple competing goals interfere with successful completion of a few key ones” (Zinn, 1997, p. 349). Teacher leaders need time for leadership (Katzenmeyer & Moller, 2001; Muijs & Harris, 2007), but it is difficult for teacher leaders to find adequate time during regular school hours to take on the extra tasks often associated with teacher leadership, for example, time to plan together, time to talk about teaching, or work on problems or new initiatives in the school (Beachum & Dentith, 2004). School librarians also frequently note time as a barrier in enacting leadership in technology integration in the research of Hughes-Hassell & Hanson-Baldauf (2008).

A fixed schedule is identified frequently as constraining involvement in technology integration leadership by leaving no flexibility to collaborate with teachers or assume any additional responsibilities. Those school librarians involved in technology integration leadership at a low level identify a fixed schedule more frequently as a barrier than did other participants. While fixed schedule is mentioned frequently as a barrier, a flexible schedule was not mentioned frequently as enabler, suggesting the those with a flexible schedule either take it for granted or do not recognize the benefits. Teacher leaders in classrooms also experience this lack of flexibility and Zinn (1997) found that teacher leaders need time flexibility in order to enact leadership.

A lack of clerical assistance is also identified as a constraining technology integration leadership enactment as there was no time to be involved in technology integration leadership because they were busy doing clerical work such as paperwork, shelving books, checking books in and out, and managing textbooks. Finally, technology resources, including an insufficient amount of them, lack of fully operational equipment, and dated equipment are found to be
barriers. A lack of funding sometimes is mentioned as tied to this lack of technology, and budget cuts are mentioned frequently by respondents in conjunction with the elimination of personnel, both clerical and professional and a lack of resources. This research is consistent with literature from the field of teacher leadership and school librarianship in identifying time and the lack of various resources as barriers experienced in enacting leadership. The identification of these barriers again demonstrates the permeation of the principal’s influence. It is the principal in most situations that allocates resources, determines schedules, and makes staffing decisions (Church, 2008; Hartzell, 2002; Haycock, 1995; Henri, Hay, & Oberg, 2002; Shannon, 2009).

**Role definition.** A lack of a role definition, while not identified as one of the most frequent occurring barriers, warrants discussion due to its connection to other barriers. Respondents comment on a lack of role definition from the school librarian national professional guidelines as to their actual role in technology integration and a lack of guidance on how to accomplish this in addition to all of the other various role expectations for school librarians. This lack of role definition is also mentioned as constraining their involvement in technology integration practices because teachers were unaware of the school librarians’ role in the process and did not even recognize that school librarians could or should lead technology integration efforts. One respondent shares that “there is ambiguity in our district over our role. In fact, some of the media specialists are strongly discouraged from trying to be involved in technology training. Our district does not understand the role of the library media specialist.” Another respondent expresses that this lack of role definition extends even further stating that there is a “lack of understanding of the role of a library media specialist at the state and national level.”

This lack of role definition is also demonstrated in the competitive relationship with instructional technologists. Finally, respondents declare that principals had no idea what the role of school librarians is in technology integration or as leaders. It is this lack of role definition and guidance for enactment that serves to drive this research and is identified as an explicit barrier, but also one that contributes to other identified barriers as well.

The literature of school librarianship repeatedly reflects this lack of role definition as a barrier in many of the roles and responsibilities school librarians. School librarians consistently express this concern; that administrators and colleagues have only minimal knowledge of the profession of school librarians and do not understand their role within the school, and certainly not as teacher leaders (Hartzell, 2002; McCracken, 2001; Zmuda & Harada, 2008).
The roles of school librarians have been evolving and changing throughout the years in efforts to adapt to the needs of students, but unfortunately there remains a feeling of disconnect between the stated national role expectations and those perceived by the professional enacting the roles (Seavers, 2002). This is recognized in school librarians’ perceptions of their role as leaders in the integration of technology. Teacher leadership has also experienced these same changes as an emerging effort to cope with changes in the education world. Teacher leaders, too, experience a lack of role definition from the research and administrators. Teacher leaders often experience an ill-defined leadership role and overly broad responsibilities due to this lack of definition and understanding of their potential as leaders (Zinn, 1997).

**Personal Considerations**

This research finds less than 1% of respondents note enablers that are identified as relating to personal commitments. A few factors including, personal time, financial, and family support were listed, but none to a great extent. There is very little mention of personal factors as enablers or barriers in the overall body of teacher leadership literature, but Zinn’s framework does take these into account. The low frequency in noting enablers and barriers in this area may be due to the professional nature of this survey, in that it is asking about work related tasks and many times participants do not think to mention or avoid involving personal issues (Dillman et al., 2009).

Zinn’s (1997) research did find that most frequently family support and family responsibilities impacted leadership enactment and that finding a balance between family responsibilities and commitments at work was important. Zinn also found that as teachers move through their careers they have different needs and their personal life stage does relate to their willingness to serve as a teacher leader. Another explanation for this finding may be in the sample as the majority of participants were Caucasian women (98.45%) averaging 50 years of age. At this life phase, there might be fewer enablers and barriers relating to personal commitment. Women who are younger may have children and other related tasks and may therefore be constrained in their leadership enactment due to personal responsibilities. This relationship to age and career phase is outside the scope of the research questions for this study, but this provides an area of further research in order to determine why so few respondents name enablers or barriers in this area.
**Intellectual and Psycho-social Characteristics**

Enablers identified in Zinn’s framework as intellectual and psycho-social characteristics are found most frequently as facilitating leadership involvement in technology integration. These characteristics impact teacher’s willingness and ability to engage in a leadership role and responsibilities and these factors provide a teacher with the beliefs, value system, desire to learn and grow professionally, and the confidence to either support or impede them in leadership endeavors (Zinn, 1997; Caffarella & Zinn, 1999). These same beliefs are illustrated by this research.

**Desire to make a difference and sense of obligation to get involved.** The perception that one can make a difference in the lives of student and teachers is prominently identified as the second most frequently occurring enabler facilitating school librarians’ involvement in technology integration leadership practices. This research demonstrates the commitment of accomplished school librarians to ensuring that students are equipped with the skills and knowledge they need for success. Respondents often note a responsibility for advocacy on behalf of students to ensure access and equity, commenting on the importance of ensuring that students are equipped for their future, can use technology in their learning, and making sure that teachers know how to integrate technology to benefit the students. A respondent notes “being a leader in technology makes me a better educator for the next generations and I always want to give my students the best preparation for life that I can offer.” This commitment to advocacy is often noted in the standards that guide practice and has evolved as a competency for school librarians; school librarian leadership requires becoming an advocate for both teachers and students. This same commitment facilitates technology integration leadership enactment of these accomplished school librarians.

This commitment is reflected in the teacher leadership literature, in that teachers are often called to leadership work by the desire to make a difference and teacher leaders are driven by their commitment to create a better world and thus better education for all children. It is this link between teacher leadership and moral purpose, as well as the goal of equipping all children for success, that frequently motivates teachers to become involved in activities related to school leadership (Ackerman & Mackenzie, 2007; Crowther et al., 2002; York-Barr & Duke, 2004). This sense of moral purpose and meaning is noted by Oberg (2009) in her study examining the role of school library program and the organizational cultures of schools; she notes that the moral
purpose of the school library program is to make a difference in the lives of young people and that school library professionals also reflect this. This intrinsic reward of improving learning outcomes for students is rewarding work for school librarians and serves as an enabler for technology integration leadership enactment.

It is this personal drive to serve as an advocate for the needs of the students that has been determined to be an important interpersonal characteristic in enabling teacher leaders to succeed (Collay, 2006; Crowther et al., 2002; Katzenmeyer & Moller, 2009; Silva et al., 2000; Zinn, 1997) and is reflected by the respondents in this research. Serving as an advocate for students has a prominent role in the school librarian literature and in the national standards that guide practice. School libraries of today provide opportunities for students to access and utilize a variety of information resources. As educators, it is the responsibility of school librarians to prepare students for their futures and teach them the skills they need to create, invent, design, and expand their world by actively participating in this new digital culture (Asselin, 2005; Greenhow et al., 2009; Livingstone 2008; Nelson, Christopher, & Mims, 2009; Smolin & Lawless, 2003; Todd, 2008).

Accomplished school librarians are enabled by these personal connections to their tasks through their personal interest in technology, personal values and beliefs that demand excellence, and a professional responsibility. These findings illustrate the parallels between teacher leaders and these highly accomplished school librarians in taking ownership of, and responsibility for, maximizing student learning. This is consistent with the finding of Hanson-Baldauf and Hughes-Hassell (2009) that school librarians agree that integrating technology into their instruction is an important aspect of their job. Strong personal beliefs can serve to motivate teachers to assume leadership responsibilities through belief in strong work ethics, a need to maximize talents and expertise, and commitment to excellence (Zinn, 1997). Recent scholars have recognized that successful leaders have a clear awareness of their values and beliefs and these leaders work with integrity allowing values and beliefs dictate their decision-making. Many teacher leaders prefer leading to following when the issues have personal importance or there is a sense of connection with the task (Sergiovanni as cited in Robertson, 2008).

A personal sense of obligation to get involved in technology integration leadership activities is found to facilitate involvement in technology integration leadership activities. Accomplished school librarians reflect a willingness with comments such as feeling a need to get
involved and a personal commitment to being an active involved part of the learning community; they spoke of getting involved because that is what is needed to be done. Respondents also mention professional responsibility and that it was the responsibility of school librarians to step up and take on this role not only because of their knowledge and skills, but also a personal desire or self-motivation to be involved.

School librarians highly involved in technology integration leadership activities identify a self-motivated obligation or need to get involved as facilitating involvement in technology integration leadership more frequently than other participants. Zinn (1997) defines this as an “initiator,” a teacher who recognizes that leadership is needed in a situation and is willing to step up and take on additional responsibility. Teacher leaders often consider themselves to be part of a learning community and take responsibility for getting involved to do what needs to be done (Crowther et al., 2002; Katzenmeyer & Moller, 2001; Lambert, 2003b). This is also consistent with the research from the school librarian literature that asserts that part of demonstrating leadership in schools is to be proactive and get involved in learning and working with others in integrating technology (Branch & Oberg, 2001).

**Commitment to continual professional growth and learning.** The commitment to continual growth is a prominent enabler in facilitating accomplished school librarians’ involvement in technology integration leadership practices. This personal commitment to professional growth as demonstrated through self-initiated efforts on the part of school librarians is the enabler noted third most frequently by respondents. These efforts are designated differently from “professional development opportunities” which represent formal professional development leadership opportunities through institutional structures. Additionally, more formal efforts, but still self-initiated efforts, such as furthering one’s education by taking college level courses and voluntarily participating in the National Board process are also identified. Teacher leadership is connected to teacher learning and teacher leaders need opportunities for continuous professional development in order to develop their role (Harris & Muijs, 2003; Muijs & Harris, 2007).

Aligning with the literature, this research conveys the importance of professional growth in leadership involvement, but respondents frequently note informal professional growth activities that enabled them to be involved in technology integration leadership practices. Respondents comment on their efforts and commitment to continual learning and staying current, including
personal informal self-initiated efforts such as reading journals, attending conferences, reading web pages, and attending webinars. This is consistent with Miller’s (as cited in Massey, 2009) findings that professional development gained either from attending conferences or from consulting with colleagues, positively influenced technology integration. When asked how they prefer to learn to use technology tools and applications, school librarians in the 2008 research by Hughes-Hassell and Hanson-Baldauf also chose methods that indicated self-motivation and that they were willing to learn technology on their own time to develop their expertise. Teacher leaders are consummate learners and research suggests that a sense of inquiry and love of learning enables teachers to assume leadership responsibilities (Crowther et al., 2002; Harris, 2003; Katzenmeyer & Moller, 2009; Muijs & Harris, 2006; Smylie, 2002; Zinn, 1997). This commitment by school librarians to professional growth and continual learning is one that is necessary for technology integration leadership. Technology is constantly changing and it is essential that school librarians to stay up to date through continuing their professional learning in order to advance and hone the skills and knowledge that are mandatory to lead in technology integration efforts.

**Expertise and experience.** This research finds that the fourth most frequently occurring enabler for technology integration leadership perceived by accomplished school librarians is personal expertise and knowledge. The respondents reveal a unique combination of curriculum and technology expertise as enabling their involvement in technology integration leadership through sharing this expertise and working with teachers to identify instructional needs and recognize technologies that will serve as a tool in the learning process. This finding is also reflected in Massey’s (2009) research that finds that National Board Certified school librarians demonstrate a high level of technology integration abilities and self-confidence that has developed with based on their expertise. Hanson-Baldauf and Hughes-Hassell (2009) also note that school librarians indeed feel they have sufficient technology knowledge and expertise. Numerous participants spoke of their “personal skills,” “knowledge” and “expertise” in technology use and integration that enabled their involvement, but also include expertise in other areas such as instruction, assessment, and accommodating diverse learning styles as types of expertise that enable leadership involvement. This suggests that self-confidence in their technology integration expertise and the opportunities to build this sense of efficacy about leadership abilities based on knowledge and skills are vital to facilitating leadership enactment.
It is the assertion of this research that the unique expertise, or the combination of pedagogical principles and curriculum, paired with technology and information expertise, of school librarians presents the opportunity for school librarians to serve as leaders in the integration of technology.

The teacher leadership literature also reflects the importance of expertise in the content area as an enabler for leadership involvement, and teacher leaders often describe teacher leadership that is based in classroom expertise rather than formal leadership roles and point to the value of teacher-created knowledge and expertise when it comes to sharing knowledge and leading others (Crowther et al., 2002; Tschannen-Moran & Barr, 2004; Zinn, 1997). Expertise that stems from subject area knowledge as well as instructional strategies is an essential element in teacher leadership (Snell & Swanson, 2000). It is this expertise in the subject taught and how to teach it that gives teachers credibility and allows them to operate as teacher leaders (Lieberman & Miller, 2005; Snell & Swanson, 2000).

**National Board Certified School Librarians**

The sample for this research is composed of National Board Certified school librarians, which represent a very unique population having implications for this research. The first step in developing school librarian leaders is to identify what is enabling those most accomplished school librarians to thrive in this role as well as the barriers they face in doing so. Therefore, National Board Certified school librarians were selected based on the connection of leadership and “expertise” as fundamental elements of distributed leadership theory. In fact, this might be noted as a strength of this study since if a highly specialized population experiences such an array of enablers and barriers it informs places to start investigating into this problem for a more general population. Yet the very specialized nature of this population must be considered when interpreting the results of this research.

This population is well- positioned to inform this research which is based on the assumption that National Board Certified school librarians have documented their accomplishments and demonstrated “essential knowledge, skills, dispositions, and commitments that allow them to practice at a high level” (National Board for Professional Teaching Standards, 2001, p. v). These school librarians have shown their technology integration abilities along with other areas of expertise, adopting and adapting technologies as powerful teaching and learning tools. Because
of their success in completing the rigorous standards established and ratified by library and teaching professionals, National Board Certified educators are assumed to be leaders and experts in their fields and assumedly can provide insights into the leadership practices of school librarians. Yet, since the certification process is so very rigorous, this group is expected to perform at a higher level than the norm (Everhart, Mardis & Johnston, 2010) and certain findings of this research may be attributable to this population’s designation as National Board Certified educators.

Respondents in this research identify relationships with other educators as some of the most frequently experienced enablers. This finding aligns with the research and the foundations of the National Board for Professional Teaching Standards (2007) that values the ability to work effectively with adults and requires that collaboration is demonstrated by candidates through development of an entry in which they describe their work with other professionals, the families of their students, and the larger school community, and then analyze how that work improves student learning. The National Board Certification process itself is designed to encourage professional collegiality and qualities of leadership and promotes teachers as members of learning communities that collaborate with other educators and engage in professional growth as learners and leaders (Lustick & Sykes, 2006). In a study of helping behavior, Frank et al. (2008) found National Board Certified teachers were named as helping other teachers more frequently than non-National Board Certified teachers.

The respondents spoke frequently of technology knowledge and expertise, which again is an implication of this population and the National Board certification process. National Board Certified school librarians do demonstrate a high level of technology integration abilities and self-confidence that has developed with leadership experience (Massey, 2008). This expertise is demonstrated by National Board Certified Teachers in the development of their portfolio and in the assessment exercises, which measure content expertise as well as the knowledge of learners. Technology integration is one of the four required portfolio entries. Teacher expertise serves as an element in leadership because this expertise can lead to self-confidence and the willingness to share that expertise, leading to collaboration (Zinn, 1997). Frank et al. (2008) find that National Board Certification serves as an indicator of teachers’ willingness and capability to undertake leadership, and therefore an internal source of leadership within the school.

This research finds that professional development facilitates involvement in technology
integration leadership. The documented accomplishments entry in the National Board Certification portfolio requires that teachers demonstrate how their professional development activities impact student learning and allows them to serve as members of the learning community (NBPTS, 2007). The most frequently identified enablers are types of self-motivated professional development activities that facilitate these accomplished school librarians’ involvement in technology integration leadership. Also the identification of professional organizations as an enabler may be due to the fact that National Board Standards state that “accomplished [school librarians] share their influence and expertise with school colleagues, with members of their local and global communities, and with associates in their professional organizations” (NBPTS, 2010).

This research finds that accomplished school librarians also demonstrate this strong sense of commitment to students and their learning or a moral purpose that serves to compel them to contribute to leadership efforts. This aligns with the research that National Board Certified educators share an intrinsic need to teach and make a difference for students (NBPTS, 2007). This is also reflected in the low frequency of barriers identified in this category also. This need to make a difference for students and teachers was found to be the second highest enabler and was also named more frequently by those highly involved respondents as enabling their involvement in technology integration leadership.

Distributed Leadership Theory

The ever-evolving complex technological environment of 21st century schools, paired with a general lack of technology leadership training among formal school leaders, has necessitated a shift in the leadership paradigm from the one sole leader to one where the functions of technology leadership in schools will need to be shared, or distributed, across a group of staff members to collectively employ an adequate level of expertise (Anderson & Dexter, 2005; Bennett, 2008; Kowch, 2009; Reil & Becker, 2008). Leadership, from the distributed perspective, is viewed as an “emergent property of a group or network of interacting individuals” that suggests an “openness of the boundaries of leadership” and in which “varieties of expertise are distributed across the many, not the few” (Bennett et al., 2003, p. 7). For example, in schools, technology leadership consists of a shared set of responsibilities that may be distributed
among the principal, school librarian, and other teacher leaders. Distributed leadership promotes this conjoint agency where individuals collaborate and bring ideas and expertise together so that their collective action achieves more than their individual actions.

This research is based on the proposition taken from distributed leadership theory that there are many factors that can both enable and constrain school librarians in taking on a leadership role and responsibilities within a school. Spillane (2006) asserts that a distributed perspective “necessitates understanding how aspects of a situation enable and constrain [leadership] practice and thereby contribute to defining it” (p. 19). Aspects of the situation define leadership practice, and therefore it is necessary to understand how these aspects enable and constrain leadership practice in efforts to define the leadership role of school librarians in technology integration. Distributed leadership theory has not previously been applied to the leadership practices of school librarians and whether or not this proposition is supported in a school library context is an over-arching purpose to this research. The findings of this research do support the proposition from distributed leadership that that there are aspects of a situation that can enable or constrain accomplished school librarians in assuming leadership and does apply to accomplished school librarians when enacting a leadership role in technology integration.

The distributed leadership theoretical proposition that necessitates understanding how aspects of a situation can enable or constrain leadership practice is supported in this research in that the identification of these enablers and barriers does contribute to the understanding and definition of the leadership role in technology integration for school librarians. Yet findings from this research illuminate some of the limitations of the application of the theory. A noteworthy finding to emerge from this research is the overarching influence of the school principal within the identification of in the enablers and barriers demonstrating the critical role played by the school principal in either facilitating or constraining leadership. Additionally, while this research did not focus on the “followers” element in distributed leadership theory, it was revealed that the important relationships with others in the building play an important part in either facilitating or constraining leadership. While the principal is prominently named as an enabler, other relationships emerged as enablers as well therefore illustrating the importance of this element of distributed leadership.
Principal support is identified as the most frequently named enabler, in that accomplished school librarians are more likely to be involved in technology integration leadership in situations where principals support teacher leader involvement. Other enablers reflect the influence or could be attributed to the principal as well. Whether it is through encouraging relationships, providing the necessary resources, creating a supportive culture, or reducing barriers, principal support is critical for school librarians’ involvement in technology integration leadership.

This research finds that principals still have disproportionate influence in school librarians enacting leadership in technology integration. Principals can serve as a barrier when they are unwilling to or uncertain how to share authority, create a hostile culture for teacher leadership, or do not have skills in delegating, (Barth, 2001). The principal’s influence is also present in other barriers such as a lack of leadership opportunities and lack of resources. Research finds that principals “play[s] a pivotal role in determining the boundaries within which distributed leadership can take place” and some assert that a strong principal to guide the distribution is a crucial element (Bennett, 2008, p. 605).

The findings of this research align with multiple studies that demonstrate that in schools where significant teacher leadership is present, the involvement of teachers in school leadership is often initiated by the principal (Barth, 2001; Harris, 2003; Muijs & Harris, 2007). Distributed leadership is unlikely without focused leadership on the part of the school formal leader (Leithwood et al., 2007). Spillane et al. (2001) describes distributed leadership as an "interactive web" of leaders and followers who periodically change roles as the circumstances warrant (p. 23). Yet there are many limitations of this theory that revolve around the school principal, and the questions of who is making the decisions about who leads and when. Moreover, distributed leadership, when not executed properly or when exclusively implemented in a “top-down” approach, can be interpreted as misguided delegation and choosing to involve only those who support the administration’s agenda and exclude those who do not (Hatcher, 2005). This may involve principals creating conditions that intentionally limit the distribution of leadership, such as closed forms of distributed leadership, which limit collective and democratic management of schools through exclusion of certain individuals or groups from full participation (Hatcher, 2005).

While distributed leadership does provide a theoretical foundation upon which to examine leadership practices, there are many more challenges that must be addressed in order for
distributed leadership to be applied in practice. Distributed leadership not only involves tasks to get done, but also involves true delegation of responsibility and authority. Defining how leadership is distributed and who takes charge still remains in question, especially with dominance of the principal’s influence and the possibility of “misguided delegation” (Spillane cited in Harris, 2005, p. 261).

Another limitation illuminated by this research is that distributed leadership proposes that leadership be distributed to teachers, but makes no accommodations for the time needed to lead. This is demonstrated through the finding of time as the most frequently identified barrier constraining involvement in technology integration leadership. Therefore the challenge is to find the time for school librarians, who already have many responsibilities with the library program and teaching, to take on additional leadership responsibilities. Finally, the findings from this research show that expertise in the content area and in leadership skills are essential for accomplished school librarians in enacting a leadership role in technology integration. This presents the challenge of continued professional development or education in the areas of technology and leadership to obtain those skills found as enabling leadership. While the guiding proposition of distributed leadership is supported by this research, there is still much research to do in order to address the challenges and the operationalizing of distributed leadership for application to the leadership practices of school librarians.

Implications and Recommendations

This research serves as the initial identification of enablers and barriers that accomplished school librarians experience in enacting a technology integration leadership role. While the overall goal was not generalizability, there are implications of interest to the school library profession as a whole. The findings from this study have implications for the school librarian and teacher leader research and literature, including an adapted framework; for distributed leadership theory research and development; for the secondary analysis method; for school librarian preparation programs; and for the practice of school librarianship.
Research and Literature

The implication for the research and literature of school librarianship and teacher leadership is that this study fills a gap in the existing school librarian research and contributes to the literature regarding school librarians as leaders in technology integration. Currently there is very little research that examines leadership roles of school librarians and no research that examines school librarian leadership practices in technology integration within a teacher leader framework. This research informs the relevant literature in education and school librarianship.

While there is limited research on school librarians’ role in technology integration and separate research on the leadership role, there is little empirical research that combines the two areas to examine school librarians as technology integration leaders. The research-based literature from the two peer-reviewed journals of school librarianship offer less fewer than 10 articles that specifically address the topic of leadership over the past 15 years. Therefore, this research will address this void and contribute needed information about the technology integration leadership role and practices of school librarians. The findings from this research also have implications for future research in this area. This study serves as a foundational piece of research regarding the role of school librarians as technology leaders and provides a starting point for future investigations of the technology integration leadership of school librarians.

Conceptual framework. The need for an adaptive framework to classify the enablers and barriers to technology integration leadership enactment is an implication of this study. Zinn’s (1997) teacher leadership conceptual framework of enablers and barriers was applied in the context of school librarians as teacher leaders in technology integration. The researcher discovered a framework from the field of education that was relevant and applicable to school librarians, since none were identified in the school librarian literature. This framework is most relevant and applicable to this study of school librarians as technology integration leaders, because of the informal nature of the role and the expectation for school librarians to essentially act as teacher leaders in the area of technology integration. This study finds that while some of the factors that can both enable and constrain teacher leadership are the same factors that will impact school librarians in enacting leadership in technology integration, there are many enablers and barriers unique to the school librarian. Also this research did not exhibit the exact mirroring of enablers and barriers as did Zinn (1997). In this instance, distinct differences in factors may serve as enablers, but not barriers. Similarly, those serving as barriers may not serve as
enablers. These findings deem the creation of an adapted framework necessary. This proposed framework is shown in Figure 8.

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<tr>
<th>Domain 1: People and Interpersonal Relationships</th>
<th>Domain 2: Institutional Structure</th>
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<tbody>
<tr>
<td><strong>ENABLERS</strong></td>
<td><strong>BARRIERS</strong></td>
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<tr>
<td>- Personal support system at work (other teachers)</td>
<td>- Lack of personal support at work (other teachers - resistant to change, opposed to technology integration efforts)</td>
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<tr>
<td>- Positive working relationship with school administrators</td>
<td>- Passive or active opposition from administrators in sharing authority</td>
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<td>- Mentoring or modeling relationship from respected colleagues</td>
<td>- Tense relationship with principal or school administrators</td>
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<tr>
<td>- Collaborative team work with teachers</td>
<td>- Lack of collaboration, teachers work on their own</td>
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<tr>
<td>- Mutual respect and interdependency of the staff</td>
<td>- Lack of professional respect from other staff, resentment</td>
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<tr>
<td>- Supportive relationship with district library personnel</td>
<td>- Lack of support from district library personnel</td>
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<tr>
<td>- Collaborative relationship with school-based instructional technology specialist</td>
<td>- Competitive relationship with school-based instructional technology specialist</td>
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<td>- Support from membership in professional organizations</td>
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<tr>
<th>Domain 3: Personal Considerations and Commitments</th>
<th>Domain 4: Intellectual and Psycho-social Characteristics</th>
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<tr>
<td><strong>ENABLERS</strong></td>
<td><strong>BARRIERS</strong></td>
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<tr>
<td>- Support and encouragement of family members and friends</td>
<td>- Lack of support or active discouragement from family and friends</td>
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<td>- Resources to meet the demand of everyday life (e.g. financial)</td>
<td>- Family or other responsibilities that compete with leadership roles</td>
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<tr>
<td>- Major life transitions or crisis</td>
<td>- Personal health issues or concerns</td>
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<td>- Continued good health</td>
<td>- Cultural and/or religious values that conflict with responsibilities</td>
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<td>- Cultural and/or religious values affirming leadership efforts</td>
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Figure 8. Johnston’s Adapted Domains of Enablers and Barriers to School Librarian Technology Leadership. Changes from the original framework are italicized. Framework adapted from Supports and barriers to teacher leadership: Reports of teacher leaders by L. Zinn, Copyright 1997.
The original framework from Zinn (1997) focuses on the supports and barriers to teacher leadership. The adapted framework (see Figure 8 and Appendix G) reflects changes made to Zinn’s framework as a result from this research that focuses on school librarians as technology integration leaders. Since this research focuses on the role of school librarians as leaders in technology integration, many of the enablers and barriers are directly tied to the aspect of technology leadership. Each of these adaptations is discussed in relation to the domain in which they reside.

**Domain one.** The most distinct change to Domain One was the addition of the support from professional organizations. This emerged as an important difference. Thirty-three respondents note that the support and mentoring they receive in their technology integration leadership efforts came from their membership in professional organizations. This is rarely cited as an enabler in the teacher leadership literature. The other significant distinction is the relationship with the instructional technologist. While competitive relationships with other teachers is in the original framework, this very specific relationship is found to be one of the most frequent barriers constraining accomplished school librarians in enacting a leadership role in technology integration, although less frequently, it is also noted an enabler in some cases. Therefore this relationship has been added into the adapted framework.

Another relationship that emerged, and that has been added to Domain One, is the relationship with the district library administrator. Seventeen participants note a district school library coordinator or supervisor who facilitated their efforts in technology integration leadership, and others note the lack of a district library administrator as a barrier. This relationship with district administrators is not referenced in the teacher leadership literature and appears to be unique to school librarians.

**Domain two.** The adaptations to Domain Two are mainly attributed to the leadership focus of school librarians on technology. Overall, the enablers and barriers experienced by school librarians align with those of teacher leaders. The changes to the framework reflect the specialized nature of the resources needed by school librarians such as a flexible schedule, staffing that includes a full-time clerk, funding for technology and digital resources, up to date functioning technology equipment, and technical support. These are typically not resources that teacher leaders would expect. The lack of these same resources is found to constrain leadership efforts as well.
Another adaptation to this domain, focusing on personnel and role definition factors, is the addition of the dual role school librarians play as both librarians and instructional technologists. This is found to enable involvement in technology integration leadership, with school librarians highly involved in technology integration leadership identifying this dual role as an enabler more often than those not highly involved. For that reason, this dual role is added to this framework.

**Domain three.** There were no changes made to the adapted framework in this domain. This may be a reflection of the low occurrence of enablers and barriers found in this domain, or it may reflect the similarities in this area between teacher leaders and school librarians. The enablers and barriers in this domain of personal considerations and commitments suffice for both the school librarian and teacher leaders.

**Domain four.** The framework of Domain Four aligns with Zinn’s (1997) framework to a great extent, illustrating the parallels between teacher leaders and these highly accomplished school librarians in taking ownership of, and responsibility for, student learning. While teacher leaders feel this same sense to get involved, school librarians feel an additional call to improve technology integration and emphasize the importance of integrating technology to prepare students for 21st century learning. Again, this change in the framework reflects the purpose of this research, to examine the technology integration leadership role of school librarians.

The areas of technology expertise, knowledge, and skills emerged as differences that needed to be included in the adapted framework as a natural result of the focus of the survey. Zinn’s original framework notes that teacher leaders felt that a barrier was that they did not have enough expertise or experience to lead. School librarians reflect that lack of experience as well, but also demonstrate the need to add a lack of expertise specific to technology as constraining them in enacting a technology leadership integration role. Conversely, some respondents express their technology knowledge and personal skills as well as expertise in integrating technology into the curricular areas as facilitating technology integration leadership, so this was added as an enabler in the framework.

**Theory**

The findings of this research have implications for the distributed leadership theoretical foundation. The first implication is that this is the initial application of this theory to examine
the technology leadership role of school librarians and this study contributes the ongoing research into distributed leadership as a viable option for leadership in schools. The distributed leadership theoretical proposition that necessitates understanding how aspects of a situation can enable or constrain leadership practice is supported in this research in that the identification of these enablers and barriers does contribute to the understanding and definition of this leadership role for school librarians.

Yet there are also implications for distributed leadership theory that illuminate the continued limitations of this theory. The findings from this study reveal that there are many challenges to be addressed in order for distributed leadership to be implemented as intended. This study reinforces that the principal is key; distributed leadership requires involves true delegation of responsibility and authority, and without principal support distributed leadership cannot succeed. Implementation will require principals who understand and commit fully to the aspects of distributed leadership. Further examination and clarification are needed for the role of principals in distributed leadership, as well as defining to whom and how leadership is distributed. Additional challenges that need to be addressed include, time to lead and the professional development needed to develop the expertise and skills to lead.

Method

The implication for the secondary analysis method as a viable method for research is demonstrated through this study. Utilizing original survey research, which rarely uses all of the data collected, secondary analysis can provide answers or perspectives to other questions or issues different from those presented in primary study. In a time where technological advances have led to a wealth of data that has been collected, compiled, and archived, which is now easily accessible for social research, it is prudent to examine what research others previously conducted in the specified area of interest, including previously collected data.

This research demonstrates that secondary analysis is a systematic method with procedural and evaluative steps to be followed, just as in collecting and evaluating primary data (Stewart & Kamins, 1993). Researchers gain knowledge of the primary method as well as the secondary analysis method procedure. They can ensure congruency, appropriateness, and quality of the primary study and the resulting dataset through following this logical process to evaluate data that can alleviate many of the limitations expressed when utilizing this method. Yet, the
limitations to this method are apparent in this research and serve to contribute to a further understanding of this method.

**School Librarian Preparation Education**

Findings from this study have implications for school librarian preparation programs. The ambiguity surrounding the technology integration leadership role has led to school librarians who are ill-prepared to enact this vital role. The identification of the enablers and barriers that accomplished school librarians experience enacting a leadership role is valuable information for school library preparation professionals. Future school librarians can be taught how to identify enablers and develop strategies to use them to their advantage. Conversely, future school librarians can also be taught to identify barriers that even the most accomplished school librarians experience and develop strategies to reduce and overcome them in their future practice.

The findings from this research can be useful for planning curriculum to better prepare school librarians to assume an active leadership role. School librarian preparation programs need to include competencies that support the concept of teacher leadership and teach school librarians leadership skills such as effective communication, relationship building, problem solving, conflict resolution, time management, and other skills that will prepare them to assume leadership roles.

**Practice**

The primary implication of this research is the identification of the enablers and barriers that can facilitate and constrain accomplished school librarians’ involvement in technology integration leadership. The ambiguity surrounding the technology integration leadership role has led to school librarians who are uncertain how to perform this role in practice. This research informs practice by providing support for school librarians in searching out those factors that will enable enactment and in identifying the barriers that must be overcome in order to achieve this vital role in practice. These findings are useful to furthering the understanding of this role for practicing school librarians who seek to enact or expand their leadership role in technology integration.

**Relationships.** A critical implication for practicing and future school librarians is the importance of relationships. The enabling collaborative and supportive relationships with
teachers found in this study reflect once more that working with teachers is a crucial aspect of the job of school librarians. Yet, the most frequently identified enabler was found to be a supportive relationship with the principal. The principal’s overarching influence in relation to other enablers was also noted, making this relationship vital for leadership enactment. The identification of these enablers that facilitate leadership enactment, leads to the recommendation that practicing school librarians need develop strategies to cultivate relationships with the principal and teachers.

Conversely, the relationship with school instructional technologists is found to be one of the most frequently identified barriers experienced in enacting a leadership role in technology integration. This emerging relationship has important implications for the practicing school librarian. This relationship is one that lacks clarity and role definition, and as a result school librarians are experiencing a relationship identified by this study as competitive as instructional technologists assume many of the technology integration leadership responsibilities that school librarians view as part of their job. Communication between school librarians and instructional technologists is needed to define the two roles and areas of overlap. Research is recommended in this area to further define this relationship and to create professional guidelines to direct a collaborative relationship for supporting technology integration.

Another implication for practicing school librarians is the importance of maintaining relationships with other school librarians through professional organizations. This is found to be an enabler that many accomplished school librarians noted, and highly involved respondents identify professional organizations as an enabler more frequently than those less involved. Not only do professional organizations provide support for school librarians who often are isolated as the sole library professionals in their school buildings, but professional growth opportunities from professional organization activities such as conferences are noted by respondents as a valued type of professional growth needed to lead technology integration efforts. The recommendation is not only for practicing school librarians to become active in professional organizations to garner this support, but the importance of support from colleagues should be instilled in school library preparation programs through encouraging students to join and take an active role in professional organizations.

Leadership opportunities. Opportunities for leadership are found to be the second most frequently occurring enabler and the lack of these opportunities is noted as the second highest
occurring barrier. Additionally, opportunities for leadership are more frequently named as an enabler for those highly involved respondents. This also has implications for practice. This research demonstrates that accomplished school librarians are facilitated in their leadership efforts through their involvement in technology-related committees at the school and district levels, yet also constrained by exclusion from these type of opportunities. School librarians have to become proactive in volunteering for these leadership opportunities. The finding regarding district library coordinators or administrators as enablers also has critical implications. Respondents note district level representation as an enabler in giving school librarians a voice in the decision-making at the district level, yet many of these types of positions are being eliminated. Therefore, it becomes even more important for building level school librarians to assume active roles in district level technology-related committees.

**Administrators.** The findings of this study may be useful to school administrators who desire to expand the leadership role of their schools’ librarians in the area of technology integration. This information can contribute to principals’ understanding of those relationships and resources that both enable and constrain school librarians’ leadership involvement in technology integration. Findings demonstrate the roles that scheduling, staffing, funding, opportunities to participate in leadership, and other factors can play in school librarians’ involvement in technology integration leadership. This research serves to increase administrator awareness of technology integration as a role where school librarians can assume responsibilities of leadership and have the potential to increase the expertise of the teaching staff, and ensure that students are prepared to utilize technology as a tool for learning and to succeed and participate in a digital society.

**Future Research**

This study serves as foundational research to investigate school librarians as leaders in technology integration. This research identified the enablers and barriers accomplished school librarians experience in enacting a leadership role in technology integration. Since this study serves as the initial investigation of the enablers and barriers, the use of open-ended questions allowed participants to identify their enablers and barriers with out imposing any preconceived categories to limit their responses. This identification of what facilitates or constrains
accomplished school librarians’ technology integration leadership provides for many areas of future research.

Research is still needed to further define and develop the technology integration leadership role of school librarians. This research to investigate the enablers and barriers experienced by school librarians enacting a leadership role should be replicated with a broader population to include all school librarians nationwide in order to expand upon the population of accomplished National Board Certified school librarians targeted in this research. This will provide for further definition of the enablers and barriers, serve as comparison research, and adapt sampling for more robust statistical analysis. Also, replication will begin to establish reliability for the new instrument utilized in this study. Future research will also need to allow for a mixed method design that would include participant interviews as follow-up to the survey data collection to delve further into the experiences of practicing school librarians and what facilitates or constrains technology integration leadership.

Additional investigations need to be conducted into areas that were beyond the scope of the research questions for this study to further define and give an in-depth look at the enablers and barriers identified in this research. This would include possible correlations between the identified enablers and barriers with demographic variables such as age, gender, years of experience as a school librarian, and geographical location. Also, research is needed to determine if there are correlations between the enablers and barriers and factors like flexible or fixed schedules, adequate staffing, or a full-time clerks, and the presence of an instructional technologists.

The competitive relationship with instructional technologists emerged as one of the most frequently noted barriers experienced by accomplished school librarians. This is an area of limited research and as technology permeates schools, learning and instruction changes; therefore, changes in personnel are inevitable. Further research is needed into examining the roles of school librarians and instructional technologists to determine responsibilities, overlap, effectiveness, role clarification, and collaboration opportunities. Respondents also identify as an enabler serving in a dual role as both the school librarian and the instructional technologist. This is yet another emerging role that needs clarification and definition. Research that examines these three roles together may provide important insights to support future role designations.
This study reveals that the support of principals and teachers are vital in facilitating school librarians’ technology integration leadership. Further research needs to be conducted to examine these relationships, especially that of principal support due to its over-arching influence. This survey could be adapted for principal and teacher populations to gain insight into their perceptions of school librarians as technology integration leaders. Additionally, time was the most frequently identified barrier for technology integration leadership. Further research is needed to explore this barrier in order to determine what other factors contribute to this lack of time and possible strategies to address the problem.

The identification of professional organizations as an enabler needs further research. There is a survey question that asks respondents if they are members of a professional organization, but it does not give an option to specify which one. It would be beneficial to adapt the survey to add this question or to ask this question in follow-up interviews. The importance of professional organizations is evident in the frequency with which it was named as an enabler, but also activities of professional organizations such as conferences, workshops, and journals were identified as professional development. There is very little research to examine school librarians’ membership in professional organizations and additional research to explore the possible association between relationships with colleagues, professional development, expertise, and leadership enactment warrants investigation.
APPENDIX A

THE SCHOOL LIBRARY MEDIA SPECIALIST AND TECHNOLOGY INTEGRATION SURVEY QUESTIONS

1. Your gender
   CHOICES: Female, Male

2. Your ethnicity
   CHOICES: African American, Hispanic or Latino, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, White, More than one race

3. Your Age in years _______

4. Certification/Position
   CHOICES: Teacher-Librarian (State certified as both teacher and librarian/media specialist), Teacher (state certified as a teacher, but not as a librarian/media specialist), Librarian (State certified librarian/media specialist, or with a master's degree in library and information science, but not certified as a teacher), Other

5. In which State were you initially certified?

6. Years experience as a school library media specialist

7a. Are you a National Board Certified library media specialist?

7b. If so, what year did you obtain certification?

8a. Do you have experience as a classroom teacher?

8b. If so, at what level did you teach for the longest period?
   CHOICES: Elementary, Middle, High

8c (If answered ELEM) If yes, at what grade level did you teach?
   CHOICES: K, 1, 2, 3, 4, 5
   CHOICES: Art, music, physical education, foreign language, special education

8c (If answered MIDDLE) If yes, what subject area did you teach?
   CHOICES: language arts/English, science, mathematics, history, art, journalism, guidance career tech, physical education, foreign language, special education, reading, other
8c (If answered HIGH) If yes, what subject area did you teach?
CHOICES: language arts/English, science, mathematics, history, art, journalism, guidance, career tech, physical education, foreign language, special education, reading, other

9. How many schools do you currently serve?

10. What is your work status?
CHOICES: full-time, part-time

11. How many certified full-time school library media specialists work in your school? [Please include yourself in the count if you are full-time.] _________

12. How many certified part-time school library media specialists work in your school? [Please include yourself in the count if you are part-time.] _________

13a. Are there other paid staff working in your library who are not certified school library media specialists (e.g., clerk, aide, paraprofessional)?
CHOICES: Yes, No

13b. If yes, how many are full-time? _________

13c. If yes, how many are part-time? _________

14. How many hours a week do you have library volunteer help?
[Total hours = number of volunteers x number of hours each week. Example: 6 volunteers working 15 hours each per week is 90 hours of volunteer help] _________

15. Do you have any full-time instructional technology staff in your school?
CHOICES: Yes, No

16. Do you have any part-time instructional technology staff in your school?
CHOICES: Yes, No

17. On what type of schedule does your media center operate?
CHOICES: fixed, flexible, combination of fixed and flexible, block

18. What type of Internet access exists in your library?
CHOICES: none, dialup, broadband, don't know

19a. If there is Internet access in your library, does it have filtered or unfiltered access for students?
CHOICES: filtered, unfiltered, filtered but I disable it when necessary, don't know

19b. If there is Internet access in your library, does it have filtered or unfiltered access for professional staff (e.g., school library media specialists, classroom teachers)?
CHOICES: filtered, unfiltered, filtered but I disable it when necessary, don't know
20. Please provide the number of computers in the library media center.

<table>
<thead>
<tr>
<th>Number of Computers</th>
<th>Located in or under supervision of the school library media center</th>
<th>Located elsewhere in the school, not under library media center (LMC) control, but connected to LMC resources</th>
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</thead>
<tbody>
<tr>
<td>Desktops</td>
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<tr>
<td>Laptops</td>
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</table>

21a. Please select one choice as to how each activity applies to your current job situation.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Not my job</th>
<th>Not involved</th>
<th>Rarely involved</th>
<th>Partially involved</th>
<th>Substantially involved</th>
<th>Fully involved</th>
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<tbody>
<tr>
<td>I provide learners with technological tools to meet their needs.</td>
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<tr>
<td>I instruct learners in using the most appropriate technology to meet their needs.</td>
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<td>I impact school-wide decision-making concerning integrating technology and learning.</td>
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<tr>
<td>I provide assistive and adaptive technologies for learners.</td>
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<td>I use technology to differentiate my instruction.</td>
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<tr>
<td>I use technology to pique learners’ interest.</td>
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</table>
My instruction integrates technology that is aligned to local, state and/or national professional and technology standards.

In my instruction I model use of emerging technologies.

I teach learners how to identify the appropriate technology for their needs.

I collaborate with teachers to plan for using technology in their instruction.

<table>
<thead>
<tr>
<th>Pop up definitions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not involved (never involved)</td>
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<tr>
<td>Rarely involved (infrequently, hardly ever, not often seldom)</td>
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<tr>
<td>Partially involved (somewhat moderately)</td>
</tr>
<tr>
<td>Substantially involved (frequently, often, significantly)</td>
</tr>
<tr>
<td>Fully involved (Completely, entirely)</td>
</tr>
</tbody>
</table>

Please select one choice as to how each activity applies to your current job situation.

Choices: Not my job  Not involved  Rarely involved  Partially involved  Substantially involved  Fully involved

Activities:

- I provide teachers with access to technology that enhances their instruction.
- I provide teachers with a range of technological alternatives for assessing students learning.
- I advocate for the use of technology for alternative demonstrations of student learning.
- I am involved in the initial process of setting learning objectives and promoting the integration of technology in classroom instruction.
- I promote learning activities that connect the use of technology to content standards.
• I help learners create their products using various types of technology.
• I facilitate learners’ use of technology to create products that express new ideas.
• I apply evaluative criteria to select digital resources for acquisition.
• I collaborate with the school learning community to assess curricular needs for digital resources and incorporate this information when considering immediate and long-range budgets.
• I foster an information rich environment where learners can explore their personal interests.

21c. – same setup as above in table

Please select one choice as to how each activity applies to your current job situation.

Choices: Not my job  Not involved  Rarely involved  Partially involved  Substantially involved  Fully involved

Activities:
• I follow a consistent procedure to assess the effectiveness of digital resources.
• I ensure connections to a wide variety of digital resources within and beyond the school walls.
• I employ effective management skills in collecting, organizing, disseminating, and maintaining digital resources in order to enhance access.
• I possess the knowledge, confidence and courage to act as a technology leader.
• I maximize access to technology equipment for all members of the learning community.
• I manage a school library website.
• I take the lead in the delivery of information beyond the school walls.
• I seek grants and funding opportunities to provide technology and/or digital resources to the school community.
• I strive to reduce barriers to constructive use of digital resources.
• The technology training I provide to teachers is an integral part of my schools professional development plan.

21d. – same setup as above in table

Please select one choice as to how each activity applies to your current job situation.

Choices: Not my job  Not involved  Rarely involved  Partially involved  Substantially involved  Fully involved

Activities:
• I actively contribute to school committees or teams to make the learning community aware of the availability of technologies and how best to use them.
• I participate in the educational technology decision-making process in my district.
• I make partnerships throughout the community to increase digital resources and technologies offered to learners.
• I choose technology tools appropriate for administrative tasks.
• I use the reporting options of library management systems (e.g., circulation systems, reading programs, collection analysis).
• I ensure that the school library media center’s mission continues to evolve as technology changes.
• I organize special programs and events related to technology.
• I maintain technology equipment.
• I solicit feedback from teachers about technology.
• I solicit feedback from students about technology.

21e. – same setup as above in table

Please select one choice as to how each activity applies to your current job situation.

Choices: Not my job Not involved Rarely involved Partially involved Substantially involved Fully involved

Activities:
• I reflect on and learn from student assessments and modify instruction as necessary.
• I stay abreast of innovations in technology through reading professional materials in both print and online.
• I belong to professional organizations that promote the use of technology in education.
• I present technology related professional development activities at conferences. I present technology related professional development activities to the learning community.
• I engage in face-to-face and/or online professional interactions with peers and experts.
• I am aware of policies on the use of technology and digital resources.
• I provide input on policies on the use of technology and digital resources.
• I provide instruction for teachers on the ethical and legal policies and practices relating to technology and digital resources.
• I provide instruction for students on the ethical and legal policies and practices relating to technology and digital resources.

21f. – same setup as above in table

Please select one choice as to how each activity applies to your current job situation.

Choices: Not my job Not involved Rarely involved Partially involved Substantially involved Fully involved

Activities:
• I model the ethical and legal policies and practices relating to technology and digital resources.
• I ensure that digital resources reflect the diversity of cultural expression.
• I use technology to enable and empower learners with diverse backgrounds.
• I understand the new developments in Fair Use and Creative Commons and share that knowledge with learners using and producing media.
• I examine web-based and free or open-source alternatives to promote equity.
• I disseminate information about the use of technology and digital resources within the school to the community at large.
• I disseminate information about advances in educational technology and digital resources to the community at large.
• I advocate on local, state and/or national levels for the implementation of technology in education.
• I develop strategies and use technology to inspire students to make a contribution to the community at large.
• I am aware of information about advances in technology and digital resources.

22. Think back about the activities in the preceding statements, specifically those in which you are fully involved. What enables you to be involved at that level?

23. Again, think about those activities addressed earlier. Are there any activities in which you’d like to be more involved than you are right now? If so, please tell us about the barriers that hinder your involvement.

24. Do you have anything else you would like to add?
Date: 3/18/2009
To: Nancy Everhart
Dept.: COLLEGE OF INFORMATION

From: Thomas L. Jacobson, Chair
Re: Use of Human Subjects in Research
Leadership-in-Action: School Library Media Specialists for the 21st Century, Leaders Educated to Make a Difference

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 3/17/2010 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.
You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Larry Dennis, Chair
HSC No. 2009.2455
APPENDIX C

LETTER OF INVITATION TO PARTICIPATE IN WEB-BASED SURVEY:
SCHOOL LIBRARY MEDIA SPECIALIST AND TECHNOLOGY SURVEY

As an accomplished educator, you are being invited to participate in a research project being conducted at the Florida State University College of Information. We are interested in gathering information from National Board Certified school library media specialists on how they are integrating technology in their schools. While there are no direct benefits to individual subjects, we hope the information obtained will help national organizations, policy makers, and researchers further articulate this role. To access the survey go to the following website: (will insert). The survey will take approximately 15 minutes to complete.

Your participation in this study is completely voluntary. There are no foreseeable risks associated with this project. However, if you feel uncomfortable answering any questions, you can stop answering questions on the survey at any point without being penalized.

If you agree to participate in the study, you will be entered into a drawing for a $100 Amazon.com gift card. Approximately 1800 school library media specialists will be participating in the survey and entered into the drawing. If you decide NOT to participate in this study, you will NOT be penalized. Research staff will only use your name and address (if provided by you) to send you additional information or for the drawing for a $100 Amazon gift card, if you indicate you are willing.

It is very important for us to learn your opinions so that we can better articulate the role of the school library media specialist in technology integration. Your survey responses will be strictly confidential to the extent provided by law. Your name and contact information will not be shared with anyone outside the research project. All information from the study will be presented in the aggregate: no individual responses will be used. This project is being conducted by Dr. Nancy Everhart (Principal Investigator) and Dr. Marcia Mardis (Co-Principal Investigator) at the College of Information at the Florida State University. If you have any questions you can call research associate, Daniella Smith or you can email her. If you have further questions or concerns, you can contact the Florida State University Institutional Review Board (IRB) at 850-644-7900 or at jth5898@fsu.edu.

Thank you.
Nancy Everhart
Principal Investigator
Florida State University
APPENDIX D
DATA ACCESS PERMISSION APPROVAL

Florida State University
Human Subjects Committee Office
2010 Levy Avenue
Suite 276-C
Tallahassee, FL 32306-2743

Human Subject Committee Members,
This letter is to grant permission for doctoral student Melissa Johnston’s access to survey data collected during the Leadership-in-Action: School Library Media Specialists for the 21st Century, Leaders Educated to Make a Difference study. Johnston has requested to utilize data that was collected from two open-ended questions at the end of the original survey.

As Primary Investigator from the original study, I reviewed the original Institutional Review Board (IRB) application and found that this request is in compliance. The original IRB application states that research staff will have access to the collected data. Melissa Johnston is listed as a co-investigator on the original study IRB application. Additionally, participants in the survey were also made aware that research staff would have access to the data in the original letter of consent.

Most significant is that Johnston has not requested any personal or school identifiers from the original data, therefore all respondents will remain anonymous for the purposes of her research. Johnston has also reviewed the original IRB application and consent forms in order to align as much as possible with the topic the participants originally gave consent. Additionally, Johnston has reviewed the original research goals, the wording of the original consent, and compared it to her own in order to assure congruency with the aims of the original study.

Upon approval of this committee, Johnston will be allowed access to the requested data set to utilize in her secondary analysis.

Sincerely,

Dr. Nancy Everhart
APPENDIX E
IRB APPROVAL MEMORANDUM

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 9/21/2010

To: Melissa Johnston
Dept.: COLLEGE OF INFORMATION

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
The School Librarian as a Technology Integration Leader: Enablers and Barriers to Leadership Enactment

The application that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Secretary, the Chair, and two members of the Human Subjects Committee. Your project is determined to be Expedited per 45 CFR § 46.110(7) and has been approved by an expedited review process.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals, which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 9/19/2011 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request
renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the Chair of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Nancy Everhart, Advisor
HSC No. 2010.4958
## Zinn’s Framework: Four Domains of Supports and Barriers to Teacher Leadership

**Domain 1: People and Interpersonal Relationships**

<table>
<thead>
<tr>
<th>Enabling Factors</th>
<th>Impeding Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Support and encouragement of family members and friends</td>
<td>- Lack of support or active discouragement from family and friends</td>
</tr>
<tr>
<td>- Resources to meet the demand of everyday life</td>
<td>- Lack of support or active discouragement from family and friends</td>
</tr>
<tr>
<td>- Major life transitions or crisis</td>
<td>- Family or other responsibilities which compete with leadership roles</td>
</tr>
<tr>
<td>- Continued good health</td>
<td>- Personal health issues or concerns</td>
</tr>
<tr>
<td>- Cultural and/or religious values affirming leadership efforts</td>
<td>- Cultural and/or religious values that conflict</td>
</tr>
</tbody>
</table>

**Domain 2: Institutional Structure**

<table>
<thead>
<tr>
<th>Enabling Factors</th>
<th>Impeding Factors</th>
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</thead>
<tbody>
<tr>
<td>- Provision of necessary resources (e.g., funding, personnel, time, technology)</td>
<td>- Insufficient time during the school day or year for collegial work</td>
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<tr>
<td>- Opportunities for authentic leadership roles and responsibilities</td>
<td>- Lack of resources or access to resources</td>
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<tr>
<td>- Ongoing opportunities and time for formal and informal leadership training</td>
<td>- Rigid definition of teacher roles</td>
</tr>
<tr>
<td>- Clearly defined role definitions (leadership roles and responsibilities)</td>
<td>- Overly broad or ill-defined leadership roles and responsibilities</td>
</tr>
<tr>
<td>- Climate of collaboration and collegiality</td>
<td>- Lack of time and opportunity for leadership</td>
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**Domain 3: Personal Considerations and Commitments**

<table>
<thead>
<tr>
<th>Enabling Factors</th>
<th>Impeding Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Support and encouragement of family members and friends</td>
<td>- Sense of obligation to get involved</td>
</tr>
<tr>
<td>- Resources to meet the demand of everyday life</td>
<td>- Perception that one has a difference in the lives of students and teachers</td>
</tr>
<tr>
<td>- Major life transitions or crisis</td>
<td>- Enjoyment of learning and professional growth; curiosity</td>
</tr>
<tr>
<td>- Continued good health</td>
<td>- Expertise</td>
</tr>
<tr>
<td>- Cultural and/or religious values affirming leadership efforts</td>
<td>- Enjoyment of innovative issues</td>
</tr>
<tr>
<td>- Affirming leadership efforts</td>
<td>- Intrinsically rewarded</td>
</tr>
<tr>
<td></td>
<td>- Self-confidence which has developed with experience</td>
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<td></td>
<td>- Education</td>
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**Domain 4: Intellectual and Personal Characteristics**

<table>
<thead>
<tr>
<th>Enabling Factors</th>
<th>Impeding Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Strong personal beliefs which demand excellence</td>
<td>- Lack of commitment to excellence</td>
</tr>
<tr>
<td>- Sense of obligation to get involved</td>
<td>- Discomfort with leadership roles in general, or one role in particular</td>
</tr>
<tr>
<td>- Perception that one has a difference in the lives of students and teachers</td>
<td>- Feelings of discouragement or frustration</td>
</tr>
<tr>
<td>- Enjoyment of learning and professional growth; curiosity</td>
<td>- Feelings of exhaustion or burnout</td>
</tr>
<tr>
<td>- Expertise</td>
<td>- Need for extrinsic reward</td>
</tr>
<tr>
<td>- Enjoyment of innovative issues</td>
<td>- Perception that one has insufficient expertise</td>
</tr>
<tr>
<td>- Intrinsically rewarded</td>
<td>- Reluctance to let go of comfortable routines</td>
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<tr>
<td>- Self-confidence which has developed with experience</td>
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APPENDIX G
ADAPTED FRAMEWORK: JOHNSTON’S DOMAINS OF ENABLERS AND BARRIERS TO SCHOOL LIBRARIAN TECHNOLOGY LEADERSHIP

<table>
<thead>
<tr>
<th>Domain 1: People and Interpersonal Relationships</th>
<th>Domain 2: Institutional Structure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENABLERS</strong>&lt;br&gt;- Personal support system at work (other teachers)&lt;br&gt;- Positive working relationship with school administrators&lt;br&gt;- Mentoring or modeling relationship from respected colleagues&lt;br&gt;- Collaborative team work with teachers&lt;br&gt;- Mutual respect and interdependency of the staff&lt;br&gt;- Supportive relationship with district library personnel&lt;br&gt;- Collaborative relationship with school-based instructional technology specialist&lt;br&gt;- Support from membership in professional organizations</td>
<td><strong>BARRIERS</strong>&lt;br&gt;- Lack of personal support at work (other teachers - resistant to change, opposed to technology integration efforts)&lt;br&gt;- Passive or active opposition from administrators in sharing authority&lt;br&gt;- Tense relationship with principal or school administrators&lt;br&gt;- Lack of collaboration, teachers work on their own&lt;br&gt;- Lack of professional respect from other staff, resentment&lt;br&gt;- Lack of support from district library personnel&lt;br&gt;- Competitive relationship with school-based instructional technology specialist</td>
</tr>
<tr>
<td><strong>ENABLERS</strong>&lt;br&gt;- Provision of necessary resources (e.g. funding, personnel, time, technology)&lt;br&gt;- Flexible Scheduling&lt;br&gt;- Adequate Staffing (full-time clerk, 2nd school librarian)&lt;br&gt;- Funding for technology and digital collections&lt;br&gt;- Up to date, functioning technology equipment&lt;br&gt;- Technical support&lt;br&gt;- Serving in a dual role as school librarian and instructional technologist&lt;br&gt;- Opportunities for authentic leadership roles and responsibilities&lt;br&gt;- Ongoing opportunities and time for formal and informal leadership training&lt;br&gt;- Clearly defined role definitions (leadership roles and responsibilities)&lt;br&gt;- Climate of collaboration and collegiality</td>
<td><strong>BARRIERS</strong>&lt;br&gt;- Lack of resources or access to resources&lt;br&gt;- Fixed schedule&lt;br&gt;- Inadequate staffing (no clerk or only part-time clerk)&lt;br&gt;- Lack of funding for technology and digital collections&lt;br&gt;- Out-dated technology equipment&lt;br&gt;- Lack of technical support&lt;br&gt;- Lack of time and opportunities for leadership&lt;br&gt;- Insufficient time during the school day or year for collegial work&lt;br&gt;- Exclusion from leadership opportunities and responsibilities&lt;br&gt;- Lack of professional development&lt;br&gt;- Overly broad or ill-defined leadership roles and responsibilities&lt;br&gt;- Climate of competition&lt;br&gt;- Physical barriers</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain 3: Personal Considerations and Commitments</th>
<th>Domain 4: Intellectual and Psycho-social Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENABLERS</strong>&lt;br&gt;- Support and encouragement of family members and friends&lt;br&gt;- Resources to meet the demands of everyday life (e.g. financial)&lt;br&gt;- Major life transitions or crisis&lt;br&gt;- Continued good health&lt;br&gt;- Cultural and/or religious values affirming leadership efforts</td>
<td><strong>BARRIERS</strong>&lt;br&gt;- Lack of support or active discouragement from family and friends&lt;br&gt;- Family or other responsibilities that compete with leadership roles&lt;br&gt;- Personal health issues or concerns&lt;br&gt;- Cultural and/or religious values that conflict with responsibilities</td>
</tr>
<tr>
<td><strong>ENABLERS</strong>&lt;br&gt;- Strong personal beliefs and values that demand excellence&lt;br&gt;- Sense of obligation to get involved in technology integration&lt;br&gt;- Perception that one can make a difference in the lives of students and colleagues&lt;br&gt;- Commitment to learning, staying current, and continual professional growth (informal, self-motivated)&lt;br&gt;- Technology expertise (technical skills, but also integration for instructional purposes expertise)&lt;br&gt;- Experience&lt;br&gt;- Education or personal knowledge/skills</td>
<td><strong>BARRIERS</strong>&lt;br&gt;- Lack of commitment to excellence&lt;br&gt;- Discomfort with leadership roles in general, or one role in particular&lt;br&gt;- Feelings of discouragement or frustration&lt;br&gt;- Feeling of exhaustion or burnout&lt;br&gt;- Perception that one has insufficient expertise (technology expertise)&lt;br&gt;- Lack of experience&lt;br&gt;- Lack of education in leadership skills</td>
</tr>
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</table>
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BIOGRAPHICAL SKETCH

Melissa P. Johnston

Melissa P. Johnston earned a Bachelor’s degree in English from The University of Georgia in 1993 and a Master’s of Education in Instructional Technology from The University of Georgia in 1996. She worked as a school librarian for 13 years in Georgia before enrolling in the doctoral program at Florida State University College of Communication & Information, School of Library & Information Studies in 2008. She worked as a research assistant at The PALM Center: Partnerships Advancing Library Media on multiple research projects. Melissa’s research interests are school librarians as leaders, school librarians’ role in technology integration, and digital literacy.