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National Board Certified School Librarians' Leadership in Technology Integration: Results of a National Survey

[Nancy Everhart](#), Associate Professor and Director, Partnerships Advancing Library Media (PALM) Center School of Library and Information Studies, College of Communication and Information, The Florida State University, Tallahassee, Florida

[Marcia A. Mardis](#), Assistant Professor and Associate Director, Partnerships Advancing Library Media (PALM) Center, School of Library and Information Studies, College of Communication and Information, The Florida State University, Tallahassee, Florida

[Melissa Johnston](#), Assistant Professor, School of Library and Information Science, College of Communication and Information Studies, University of Kentucky, Lexington, Kentucky

Authors' Note: These findings originally appeared as "Initial Results of a Survey of Technology Integration Practices of Highly Qualified Teacher Librarians in the United States," in *Diversity Challenge Resilience: School Libraries in Action Proceedings of the 12th Biennial School Library Association of Queensland, the 39th International Association of School Librarianship Annual Conference Incorporating the 14th International Forum on Research in School Librarianship*, Brisbane, Queensland, Australia, Sept. 27–Oct. 1, 2010.

In an effort to address the lack of empirical knowledge about the school librarians' role in technology, the Institute for Museum and Library Services funded Project Leadership-in-Action (LIA) to study leadership practices of school librarians. This current grant project includes a survey of the technology integration practices of school librarians with National Board Certification. Survey results revealed that the 295 respondents work in well-resourced libraries with personnel assistance as well as numerous computers and devices. Respondents reported that they led school technology integration in many areas but also had areas in which to improve, such as providing services to special needs learners, building digital collections, participating in student assessment, and transferring their leadership success to professional and local communities.

Introduction

Technology integration is an increasingly crucial element of teaching and learning that requires school-based leadership to be consistent, relevant, and a connector of various aspects of students' learning experiences. Many theorists and researchers have argued that school librarians are well positioned to assume a leadership role in technology integration (e.g., Everhart and Dresang 2006; Hughes-Hassell and Hanson-Baldauf 2008; McCracken 2001; Shannon 2002; Vansickle 2000). School librarians have been continually directed to assume leadership roles in their schools in the professional guidelines of state, national, and international organizations, although research-based strategies to successfully exercise technology integration leadership have yet to be developed.

A starting point to defining these strategies is to determine the current technology leadership through today's school libraries. The study presented here provides this initial attempt to characterize school librarians' technology integration activities in the contexts of what school librarians know, what they do, and how they grow as professionals. This study reports the results of a survey of National Board Certified (NBC) school librarians who have already been deemed leaders in their schools and profession.

Literature Review

The changing and technology rich environment of twenty-first-century schools significantly is affecting and redefining the role of the school librarian. Whereas school libraries once were seen as repositories of information, the ubiquity of digital resources demands that learners master the ability to locate, use, and create information through multiple media and communicate their knowledge in multiple modes. These developments present school librarians with an imperative to assume leadership roles within their schools through their support for and promotion of technology integration (Asselin 2005; Hanson-Baldauf and Hughes-Hassell 2009; Hughes-Hassell and Hanson-Baldauf 2008). Yet researchers have suggested that school librarians have difficulty enacting a technology leadership role (McCracken 2001).

Technology Integration and School Librarian Leadership

The U.S. Department of Education's National Center for Education Statistics (NCES) has defined technology integration as "the incorporation of technology resources and technology-based practices into the daily routines, work, and management of schools. . . . It is important that integration be routine, seamless, and both efficient and effective in supporting school goals and purposes" (Forum on Education Statistics 2002, para. 3). The key to technology integration in education is understanding that technology should be used to enhance the learning experience and develop learners' thinking skills—not as an add-on or afterthought (Hew and Brush 2007).

Classroom Teachers Benefit from Technology Integration Support

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, and Peck 2001). School librarians can lead through modeling and collaborating 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 2009a; Asselin 2005). The changing information landscape of the twenty-first century, which includes interactive technologies and a participatory culture, requires that the school librarian must evolve as a leader to address the needs of this new generation of learners. Despite the calls for school librarians to embrace technology leadership roles in an age of digital information resources (Asselin 2005), a lack of research-based strategies to help school librarians enact this role remains.

Student Achievement is Enhanced by School Librarian Technology Leadership

A compilation of recent state studies' results examined the school librarian and the impact on student achievement and identifies two roles of the school librarian that influence student achievement: leader and technology facilitator (Scholastic 2008). In those studies, school librarians who exhibited technology leadership were more likely to plan cooperatively with teachers, teach cooperatively with teachers, provide training for teachers, and exhibit initiative with technology integration (e.g., Lance, Rodney, and Hamilton-Pennell 2000; Rodney, Lance, and Hamilton-Pennell 2002).

School libraries provide opportunities for students to access and utilize a variety of information resources. School librarians now have an imperative to prepare students for their future and "develop information skills that will enable them to use technology as an important tool for learning, both now and in the future" (AASL 2007, 2). Information literacy, or "the ability to find, evaluate, analyze, and synthesize information" (Smolin and Lawless 2003, 571), has expanded into new literacies that go beyond simply knowing how to use technology tools to include understanding how to apply them in learning (Asselin 2005; Smolin and Lawless 2003; Greenhow, Robelia, and Hughes 2009; Kuiper et al. 2005) and to create and communicate new learning (AASL 2007; Partnership for 21st Century Skills 2009). Students require skills to create, invent, design, and expand their world by actively participating in digital culture, but they also need new literacies to guide them in ethical, legal, and safe participation (Greenhow, Robelia, and Hughes 2009; Livingstone 2008; Nelson, Christopher, and Mims 2009; Todd 2008).

New literacies are vital for academic and career success and are due to the "interdisciplinary, collaborative, and information-rich nature of school librarianship, [school] librarians are in a prime position to make significant and meaningful contributions toward the integration of 21st century literacy skills" (Hanson-Baldauf and Hughes-Hassell 2009, 4). This important outcome requires active recognition of and support for the roles of all community stakeholders, including the technology leadership role of the school librarian.

School Administrators and School Librarian Technology Leadership

Researchers have reported that school administrators' opinions about technology planning, faculty leadership, professional development, curriculum alignment, technology use, and perceptions of technology's effect on learning is the primary influence on the way these activities occur in a school (Anderson and Dexter 2005; Kowch 2009; Owen and Demb 2004).

The principal's influence over the school librarian's opportunity to assume leadership roles is especially critical in the area of technology integration, yet in numerous studies (Scholastic 2008) researchers observed that teachers and principals rarely recognized the school librarian's importance; an extremely limited number of principals reported that school librarians should take on a leadership role (Hartzell 2002; Oberg, Hay, and Henri 2000; Smith 2006).

Despite authors who have suggested the need for, and the importance of, the school librarian to be a proactive leader in schools (Asselin 2005; Everhart and Dresang 2006; Shannon 2008), researchers have not empirically explored the extent to which school-based influences affect school librarians' technology leadership or rigorously defined circumstances in which administrators, teachers, and school librarians have effectively realized shared leadership.

Professional Standards and Technology Leadership

Although reports of school librarians' technology leadership are scant and inconclusive, the profession of school librarianship has codified leadership. Professional associations, standards, and guidelines not only define and benchmark practice, they also reflect the evolving demands of school librarian preparation and work. For example, the primary goal of the American Association of School Librarians (AASL) Strategic Plan (2009b) was for school librarians to achieve universal recognition as indispensable educational leaders. Similarly, AASL's national guidelines for professional practice, *Information Power* (1998), emphasized greater professional recognition through school librarian leadership.

Information Power also emphasized technology integration as an important function of an effective school library media program. Reflecting this value, in 2007 AASL released the *Standards for the 21st Century Learner*, one of the nine foundational "common" beliefs of which is that "technology skills are crucial for future employment needs. Today's students need 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, 2). These standards were incorporated into *Empowering Learners*, AASL's 2009 guidelines for school library programs and school librarian practice. The authors of *Empowering Learners* reiterate the belief that the school librarian should act as a leader within the school community and ensure that learners are equipped with the skills and knowledge they need to succeed in the twenty-first century. School librarians are required "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 2009a, 49).

Especially in the area of technology integration, when defining the responsibilities of the school librarian, each of the guidelines from AASL (2009) also reflect principles expressed in the National Council of Accreditation of Teacher Education (NCATE) professional preparation standards (2003), and the National Board for Professional Teaching Standards (NBPTS) NBC standards (2001) mentions the role of leadership. The importance of the leadership role of the school librarian also is emphasized by several other national organizations, including the International Society for Technology in Education (ISTE), the Association for Education Communications and Technology (AECT), and numerous state-level school librarian professional organizations.

Weaving technology into teaching and learning, driven by sound pedagogical principles, interdisciplinary perspective on curriculum, and thoughtful and fluent information use, seems to be an obvious area in which school librarians should assume leadership (Asselin 2005; Vansickle 2000). However, the research detailed in this section suggests that barriers, such as difficulties in establishing collaborative relationships with teachers and a lack of leadership recognition from administrators, can thwart some school librarians' technology leadership.

Despite the numerous mentions of technology leadership in professional preparation and performance standards, some researchers have suggested that few school librarians seem to have been prepared to understand or accept the leadership role (Asselin 2005; Everhart and Dresang 2006; Shannon 2002, 2008; Vansickle 2000). However, empirical research is lacking about the extent to which school librarians perceive and enact technology leadership activities.

Method

Research on technology integration in schools and the roles of school librarians provides an impetus to study the leadership role of school librarians in technology integration. This research is framed by a particular leadership perspective, as described in this section.

Theoretical Framework

Formative Leadership Theory was used for framing the research problem and research questions, the development of the survey instrument, and the analysis of results. Developed by Ash and Pearsall (2004), Formative Leadership Theory is based on the belief that there are numerous leadership possibilities and many leaders within the school. Leadership is not role-specific, reserved only for administrators; rather the job of the school leader is to facilitate learning opportunities for the faculty and staff so that they might develop into productive leaders. This theory of leadership supports the view of the school librarian as leader. It is grounded in the belief that educators should enhance not only student learning but also the learning of the adults within the school.

The formative leader must possess a high level of facilitation skills because team inquiry and learning and collaborative problem solving are essential ingredients of this leadership approach. Imagining future possibilities; examining shared beliefs; asking questions; collecting, analyzing, and interpreting data; and engaging the faculty in meaningful conversation about teaching and learning are all formative leadership behaviors. To determine the leadership role of school librarians in technology integration, this theory guided the research presented here.

In light of the research problem identified in the literature review and the possibilities for leadership outlined in Formative Leadership Theory, this study sought to answer the research question “What is the leadership role of the school librarian in technology integration?”

Procedure

A research team consisting of two professors, two doctoral students, and a statistical consultant developed, administered, and analyzed a nationwide survey that characterized the dominant technology integration activities of school librarian leaders.

Description of the Sample

Participants in this study are NBC school librarians. NBC is the highest credential in the teaching profession and less than 2 percent of school librarians in the United States are NBC. This sample was chosen for two reasons. First, documented accomplishments in technology integration and leadership form the basis of two of the four required portfolio entries for the rigorous NBC credential in library media. Second, a vast body of research exists concerning how NBC develops leaders (NBPTS 2010) but this research is exclusively based on teachers. Hence, this sample is uniquely positioned to both define and differentiate leadership roles in technology integration for school librarians.

After obtaining appropriate institutional review board approval, the authors solicited respondents by sending invitations to NBC school librarians whose e-mail addresses were available on the NBPTS website. This is approximately 35 percent of the population of 2,100 NBC school librarians in the United States. Participants also were obtained via postings on the following e-mail lists: Yahoo! Groups/Library Media (for school librarians seeking National Board Certification), LM_NET, AASLForum, and many state school librarian e-mail lists.

From these respondents, a stratified random sample of 295 cases representing elementary, middle, and high schools was constructed. 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.

Data Collection

A lack of recognition of the school librarian as a leader in technology integration means that no satisfactory data instruments existed that could define and measure this role. Members of the research team developed a survey instrument for this purpose based on national standards that included

1. AASL's *Empowering Learners: Guidelines for School Library Media Programs* (2009a);
2. The International Society for Technology in Education's (ISTE) *National Educational Technology Standards (NETS•T) and Performance Indicators for Teachers* (2008);
3. NBPTS's *Library Media* standards (2001); and
4. AASL and NCATE's *Standards for Initial Preparation Programs: School library Media Specialists* (2003).

To ensure that the survey accurately and rigorously reflected the phenomenon being studied, it was pretested with both an advisory board composed of experts in the field of library media and technology and a group of NBC school librarians. Several revisions were incorporated based on these results.

The final version of the survey consisted of three sections:

1. thirty demographic questions covering areas such as staffing levels, education and experience of the school librarian, and Internet access;
2. sixty statements related to levels of technology-integration activities; and
3. free-response questions that asked respondents to discuss barriers, enablers, and other factors that influenced their leadership practices.

In this paper, we report the first two sections of the survey. [Table 1](#) details the sections in which the 60 statements related to technology integration activities were organized. These headings reflect the sections of the NBPTS standards (2001).

Response choices for statements related to technology-integration activities reflected respondents' degree of leadership regarding the particular integration activity. A Likert scale was used: 0 = Not my job; 1 = Rarely involved; 2 = Partially involved; 3 = Substantially involved; 4 = Fully involved. Each of these response choices was fully explicated in the context of the survey instrument

A consulting group managed the web-based survey distribution. Subjects also were mailed a paper copy to assure contact to account for any e-mails that may have been blocked by their school's network firewalls. As an incentive, survey participants were given the opportunity to enter a drawing for a \$100 gift certificate to Amazon.com.

Data Analysis

Survey data was analyzed to determine the most prevalent leadership roles of school librarians in technology integration. The Statistical Package for the Social Sciences (SPSS) was used for quantitative analysis, including the frequencies presented here. Preliminary results of the survey were reviewed with the aforementioned national advisory board. This research report includes frequency analyses of demographic data and statements relating to technology integration activity; it does not include results of the open-ended questions pertaining to barriers, enablers, and additional feedback.

Limitations

This research has limitations. First, since not all NBC school librarians could be contacted directly, it may not be possible to assume that the sample is truly random or truly stratified. Second, by definition, NBC school librarians represent a small minority (about 2 percent) of all school librarians in the United States. Because the process of NBC is very rigorous, it is expected that this group would perform at a higher level than the norm and reflect a higher level of leadership.

Results

The initial survey questions prompted participants to provide information about themselves, their professional preparation, prior experience, and their work and technology environments.

Respondent demographics mirror the general population of school librarians (Kenney 2009). On average, the participants were Caucasian middle-aged women about fifty years old. Seventy-one percent (n = 210) were formerly classroom teachers. The majority of those who once taught in elementary schools (n = 80) worked in the upper grades (n = 45). For those who had been teachers in middle and high schools (n = 131), 14 percent taught language arts (n = 41), 8 percent taught history (n = 22), and 5 percent taught reading (n = 15).

Varying state certification requirements can make it difficult for school librarians to change jobs from state to state, but 16.9 percent (n = 50) of the respondents worked in a different state from where they received NBC. This high percentage suggests the NBPTS nationally recognized teaching credential allows for portability, which, for some, is a motivating factor to achieve the certification.

These NBC school librarians have above average work environments when compared to recent statistics collected by the U.S. Department of Education (Goldring 2009). Almost all (n = 291 or 98.7 percent) worked full-time in one school and nearly 75 percent (n = 221) had full-time paid support staff. Only 13 percent (n = 39) had a fixed schedule.

With very few participants reporting full-time (n = 123 or 42 percent) or part-time (n = 45 or 15 percent) technology support staff, the technology available in these school libraries was above national averages (Goldring 2009). The mean number of desktop computers was 165, and the mean number of laptop computers was 52. Almost all (n = 290 or 98 percent) of the Internet access in the school library is through filtered broadband. Only 7 percent (n = 21) of the school librarians in this study disabled filters for students, and about twice as many were as willing (n = 38 or 13 percent) to disable filters for teachers despite federal mandates that enable filter disabling for legitimate educational applications (Willard 2003).

Survey Section 1. What Library Media Specialists Know: Knowledge of Learners

[Note: The term library media specialist will be used in the following sections to remain consistent with the National Board standards.]

Questions in this section captured participants' "knowledge of learning styles and of human growth and development" (NBPTS 2001, 7). It also captured participants' use of that knowledge to meet a range of learners' needs.

Respondents overwhelmingly answered that they were fully or substantially involved in providing (n = 241 or 82 percent), instructing (n = 235 or 80 percent), and affecting (n = 210 or 71 percent) learning activities. The final example in the section, "I provide assistive and adaptive technologies for learners," had the lowest number of survey respondents fully or substantially participating in this activity (n = 103 or 35 percent), as illustrated in [figure 1](#).

Section 2. What Library Media Specialists Know: Knowledge of Teaching and Learning

Questions in this survey section focused on "the principles of teaching and learning that contribute to an active learning environment" (NBPTS 2001, 11). They also asked respondents to rate the extent to which they applied their knowledge of learning theory and instructional design and development as well as their abilities to establish an active and positive learning environment, develop group-management strategies, and strengthen and supporting school, district, and state curricula.

Respondents reported that they fully or substantially used technology to pique learners' interest (n = 281 or 95 percent), align to professional and technology standards (n = 273 or 93 percent), differentiate instruction (n = 255 or 87 percent), and model the use of technology (n = 233 or 79 percent). Most respondents also were substantially or fully involved in teaching learners to identify the appropriate technology for their needs (n = 243 or 82 percent).

Section 3. What Library Media Specialists Know: Knowledge of Library and Information Studies

This survey section included questions pertaining to “the principles of library and information studies needed to create effective, integrated library media programs” (NBPTS 2001, 15). Questions reflected knowledge of the principles of the profession; ethical and legal tenets; effective organization and practice; children’s, teen, and professional literature; information-processing strategies; and technology for creating and managing information.

A large majority of respondents reported being fully or substantially involved in collaborating with teachers to use technology in their instruction (n = 219 or 74 percent), providing teachers with access to technology that enhances their instruction (n = 235 or 80 percent), promoting learning activities that connect technology to content standards (n = 227 or 77 percent), and advocating for the use of technology for alternative demonstrations of student learning (n = 219 or 73 percent). Most respondents also were fully or substantially involved in helping learners create products using various technology (n = 215 or 72 percent) and facilitating learners’ use of technology to express new ideas (n = 207 or 70 percent).

However, few respondents were fully or substantially involved in the initial process of setting learning objectives and promoting the integration of technology in classroom instruction (n = 122 or 41 percent) and, as [figure 2](#) depicts, many fewer respondents fully or substantially provided teachers with technological alternatives for assessing student learning (n = 113 or 38 percent).

Section 4. What Library Media Specialists Do: Integrating Instruction

The NBPTS standards (2001) state that “accomplished library media specialists integrate information literacy through collaboration, planning, implementation, and assessment of learning.” This section contained questions pertaining to collaboration in planning learning, implementing instructional activities, and assessing learning and instruction.

The majority of respondents were fully or substantially involved in fostering an information-rich environment in which learners can explore their personal interests (n = 269 or 91 percent), employing effective collection-management practices for digital resources (n = 224 or 76 percent); and ensuring connections to a wide variety of digital resources within and beyond school walls (n = 213 or 72 percent).

Respondents were much less often fully or substantially involved in applying evaluative criteria to the selection of digital resources (n = 189 or 64 percent), collaborating with the school community to assess the needs for digital resources (n = 187 or 63 percent), and, as [figure 3](#) shows, following a consistent procedure for assessing the effectiveness of digital resources (n = 164 or 56 percent).

Section 5. What Library Media Specialists Do: Leading Innovation through the Library Media Program

This standard calls for school librarians to “lead in providing equitable access to and effective use of technologies and innovations” (NBPTS 2001, 23). Questions in this survey section pertained to providing access to technology information systems, teaching effective use of technology and other resources, engaging learners with technology, and enhancing learning.

The majority of respondents were fully or substantially involved in many areas measured by the questions in this section. Respondents possessed the knowledge and confidence to act as technology leaders (n = 253 or 86 percent), maximized access to technology for the learning community (n = 249 or 84 percent), strived to reduce barriers to the constructive use of digital resources (n = 228 or 77 percent), contributed to committees that raised awareness of technology (n = 223 or 76 percent), led the delivery of information beyond school walls (n = 213 or 72 percent), and managed school library websites (n = 209 or 71 percent).

However, fewer respondents were fully or substantially involved in providing technology training integral to the school’s professional development plan (n = 158 or 54 percent), seeking funding for technology or digital resources (n = 152 or 53 percent), participating in the technology decision-making process in the school district (n = 114 or 38 percent), and, as [figure 4](#) shows, forging partnerships in the community to increase technology and digital resource offerings (n = 84 or 29 percent).

Section 6. What Library Media Specialists Do: Administering the Library Media Program

In this section, questions focused on participants' abilities to "plan, develop, implement, manage, and evaluate library media programs to ensure that students and staff use ideas and information effectively" (NBPTS 2001, p. 27).

Most survey respondents were fully or substantially involved in using the reporting options of library management systems (n = 282 or 96 percent) and ensuring that the school library's mission evolved in step with technological change (n = 281 or 95 percent). Far fewer survey participants were fully or substantially involved in organizing special programs and events related to technology (n = 180 or 61 percent) and maintaining technological equipment (n = 166 or 56 percent).

Section 7. How Library Media Specialists Grow as Professionals: Reflective Practice

In this section, questions solicited the extent to which school librarians were able to "engage in reflective practice to increase their effectiveness" (NBPTS 2001, 31) through questions that pertained to both self-reflection and reflecting on the library media program.

Many respondents fully or substantially participated in the reflective process by reflecting on student assessments to modify instruction (n = 228 or 77 percent) and by soliciting feedback from teachers (n = 207 or 70 percent) and students (n = 203 or 66 percent) about the use of technology in the school library.

Section 8. How Library Media Specialists Grow as Professionals: Professional Growth

According to the NBPTS (2001), accomplished school librarians "model a strong commitment to lifelong learning and to their profession" (35). To measure this commitment, questions in this section focused on furthering professional education and networking opportunities.

This section captured the many ways in which school librarians ensured their continued growth by staying abreast of innovations. These include reading professional materials (n = 240 or 81 percent), belonging to professional organizations (n = 235 or 80 percent), and engaging in face-to-face and online professional development (n = 233 or 79 percent). However, as [figure 5](#) shows, school librarian leaders are much less likely to be fully or substantially involved in sharing their technology knowledge in the learning community (n = 163 or 55 percent) or by presenting at conferences (n = 114 or 39 percent).

Section 9. How Library Media Specialists Grow as Professionals: Ethics, Equity, and Diversity

This section focused on the abilities of the school librarian to "uphold professional ethics and promote equity and diversity" (39) through questions about the ethical use of information and promoting equity and diversity.

The majority of respondents were fully or substantially aware of technology and digital resource use policies (n = 273 or 94 percent), though many fewer gave considerable input into those policies (n = 167 or 57 percent). Many were highly involved in instructing students (n = 263 or 89 percent) and teachers (n = 230 or 78 percent) on the content of these policies despite the fact that an overwhelming majority of survey participants (n = 289 or 98 percent) modeled adherence to the policies including cultivating an understanding of Creative Commons and fair use (n = 225 or 76 percent).

Most school librarians fully or substantially empowered learners from diverse backgrounds with technology (n = 261 or 89 percent), ensured that their digital collections reflected cultural diversity (n = 237 or 80 percent), and were informed about cloud-based and open-source software options to promote economic equity (n = 208 or 71 percent).

Section 10. How Library Media Specialists Grow as Professionals: Leadership, Advocacy, and Community Partnerships

The final NBPTS standard calls for school librarians to “advocate for the library media program, involving the greater community” (43). To reflect this standard, the survey contained questions about leadership, advocacy, and community partnerships.

This section reflected many fewer school librarians achieving full or substantial involvement in disseminating information about technology use in the school (n = 181 or 61 percent) and about advances in technology (n = 159 or 53 percent) to the community and few were fully or substantially involved in advocating for the use of technology in schools (n = 106 or 35 percent), as [figure 6](#) shows.

Also, to a lesser extent, school librarians were fully or substantially involved in developing strategies and in using technology to inspire students to make a contribution to the community at large (n = 132 or 44 percent) and were aware of information about advances in technology and digital resources (n = 160 or 54 percent).

Conclusions and Implications

National Board Certified School Librarians

This survey represented the perspectives of experienced school librarian leaders and educators working in technology-rich environments in which they balanced the demands of a flexible schedule with often sole responsibility for a large number of desktop and laptop computers, professional development, and promotion of the use of a range of resources in teaching and learning. They had achieved National Board Certification, the highest credential in the teaching profession, whereby they had successfully demonstrated their ability to integrate technology into instruction and document accomplishments in working with various communities—school, professional, and external.

Due to the high level of materials and other support in these schools, the question arises as to whether well resourced schools attract NBC school librarians or do well-resourced schools have a higher percentage of school librarians who can be successful in the NBC process? In some instances, school librarians in low performing schools have been successful in achieving NBC (Everhart and Pearce-Webb 2004) and made differences in these schools. Economic conditions have restricted some of the bonuses for NBC teachers in various parts of the country and now award them only to those who are working in low performing schools. While it was initially believed that this would attract more NBCs to these schools, it has not been the case. However, it is anticipated that teachers already in these schools may now attempt NBC (Simpkins 2011).

Leadership in Technology Integration

Prior research on technology integration and leadership activities of school librarians has demonstrated that while professional guidelines and theory promote these roles as possible and preferable, they are not often realized because of a number of personal, school-based, and external factors. The survey results presented in this paper suggest that school librarians felt strong commitments to and experienced success with technology leadership with students to a great extent and with teachers to a lesser, but not insignificant, extent. However, when school librarians were asked to report their technology leadership outside of their school buildings, they reported much lower levels of involvement in district-wide policymaking and information-sharing activities as well as in dissemination to peers at conferences and community members.

Despite their strong self-identities as professionals capable of leading technology integration, these survey findings are consistent with Formative Leadership Theory in that school librarians experience the greatest leadership potential in their school environments, but are can often be unsuccessful in their transfer of technology leadership activities to their professional or local communities. Johnston’s (2011) further analysis of the enablers and barriers to technology integration leadership of this group found they had in place the following enablers to be technology leaders in their schools: support from professional associations, support from district administrators, serving in a dual role as a school librarian technology specialist, technology expertise, flexible scheduling, funding for technology and digital collections, and up-to-date

functioning technology equipment. Barriers included competitive relationships with the instructional technologist, lack of support from a district library administrator, lack of technology expertise, fixed scheduling, and limited funding and equipment. These barriers are significant ones that would hinder community involvement.

There are three key areas in which school librarians seem to have unrealized leadership potential:

- Participating in technology-based assessment and services to enhance opportunities for all learners, especially those with special needs
- Developing processes to systematically collect, manage, and assess the effectiveness of digital resources
- Sharing their knowledge and advocating for technology to with the profession and in the community

These findings support the anecdotal evidence found at the library media Yahoo! group's discussion list whereby school librarians who are planning to apply for NBC frequently express concerns about the portfolio entry "Documented Accomplishments" and how to demonstrate involvement in the school-wide and local communities, which is a requirement for this entry. Beyond this sample of NBC school librarians, all school librarians should be involved beyond their own four walls—particularly in these difficult economic times. This is an area where there is potential for enhanced professional development and further research to explore the interplay between technology leadership in the school building, and advocacy for technology and school libraries in the community could reveal positive effects on student learning.

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Tables and Figures: National Board Certified School Librarians' Leadership in Technology Integration: Results of a National Survey

Table 1. National Board for Professional Teaching Standards in Library Media used as a Foundation for Survey Categories

What Library Media Specialists Know
I. Knowledge of Learners
II. Knowledge of Teaching and Learning
III. Knowledge of Library and Information Studies
What Library Media Specialists Do
IV. Integrating Instruction
V. Leading Innovation through the Library Media Program
VI. Administering the Library Media Program
How Library Media Specialists Grow as Professionals
VII. Reflective Practice
VIII. Professional Growth
IX. Ethics, Equity, and Diversity
X. Leadership, Advocacy, and Community Partnerships

Figure 1. Survey Participant Responses to “I provide assistive and adaptive technologies for learners” (n = 292)

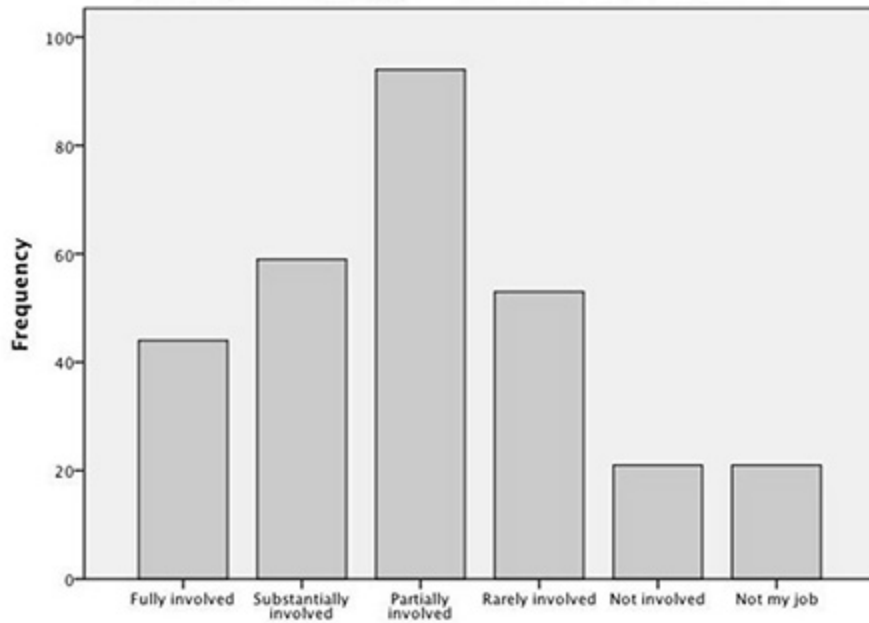


Figure 2. Participants' Responses to "I provide teachers with a range of technological alternatives for assessing students' learning" (n = 293)

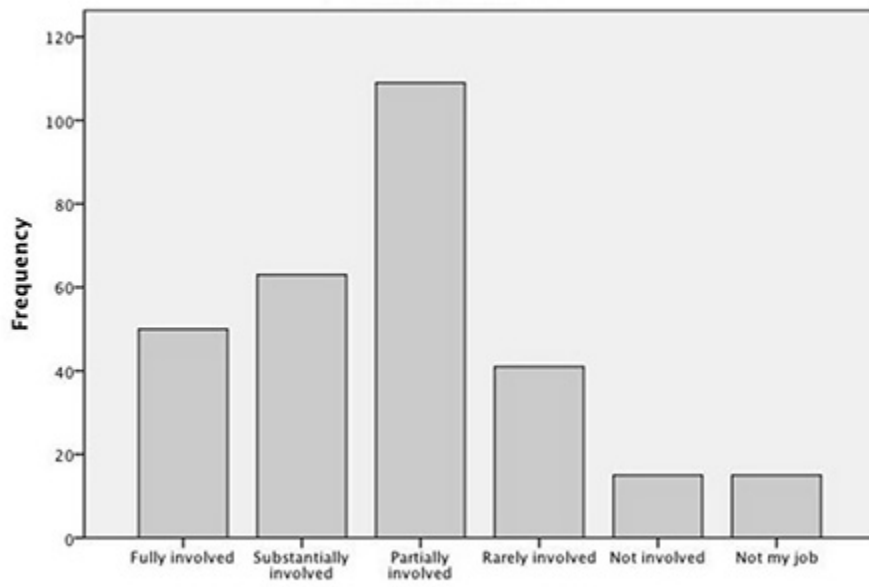


Figure 3. Survey Participants' Responses to "I follow a consistent procedure to assess the effectiveness of digital resources" (n = 295)

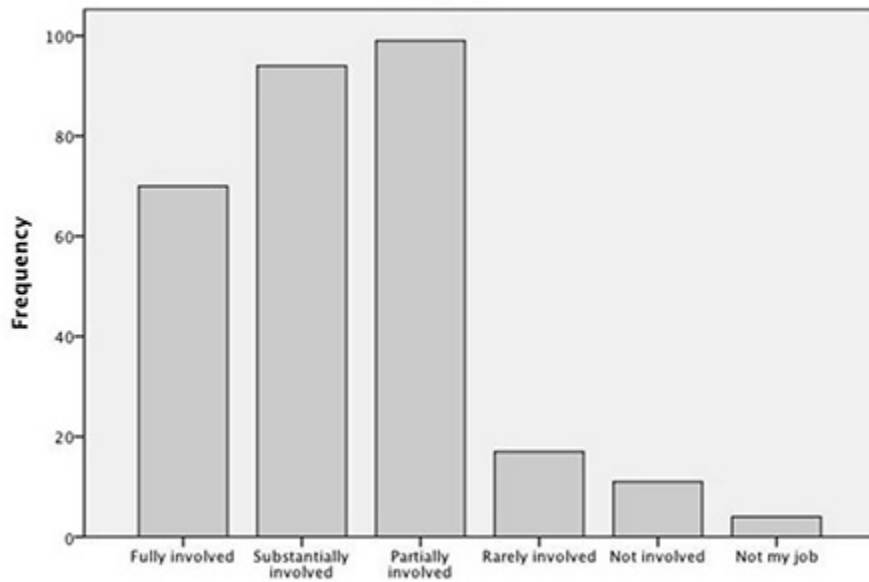


Figure 4. Survey Participants' Responses to "I make partnerships throughout the community to increase digital resources and technologies offered to learners" (n = 291)

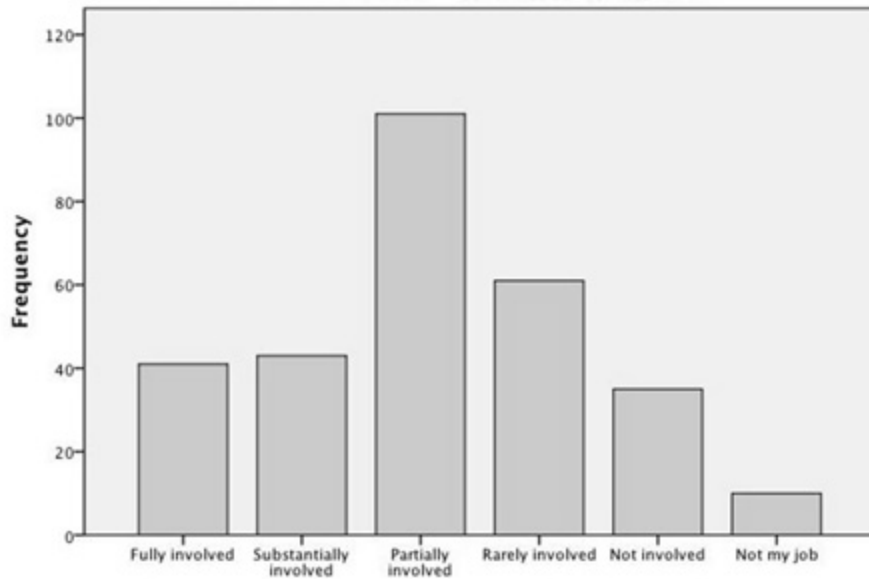


Figure 5. Survey Participants’ Responses to “I present technology-related professional development activities at conferences” (n = 292)

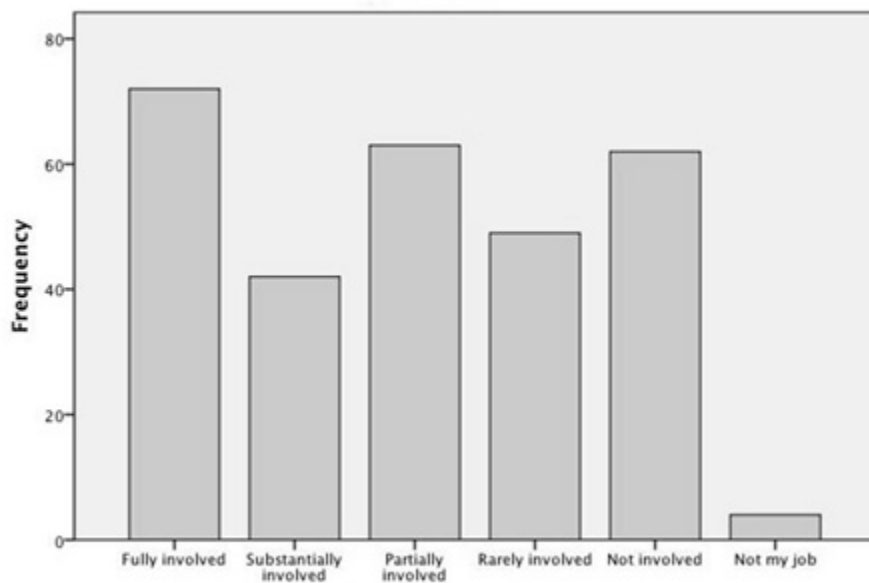
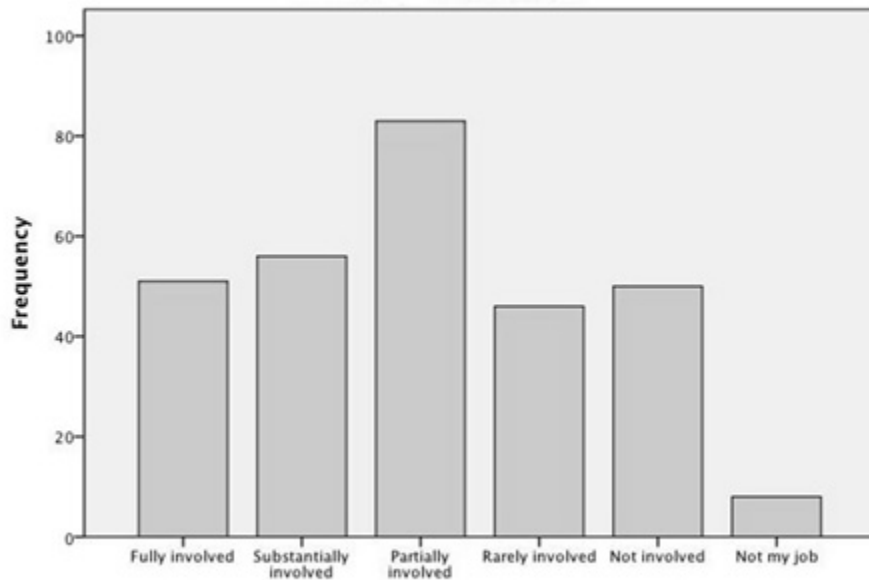


Figure 6. Survey Participants’ Responses to “I advocate on local, state, and/or national levels for the implementation of technology in education” (n = 295)



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