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TEACHER-LIBRARIANS AS TECHNOLOGY LEADERS: THE EVOLVING ROLE

BY

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Teacher-Librarians as Technology Leaders: The Evolving Role

Submitted by Carol Tonhauser

In Partial Fulfillment of the Requirements for the Degree of Master of Education

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“The more that you read, the more things you will know. The more that you learn, the more places you'll go.”

- Dr. Seuss

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Table of Contents

Introduction	2
<i>Defining the Teacher-Librarian</i>	3
<i>Information and Communication Technology (ICT)</i>	4
Literature Review	6
<i>Overview</i>	6
<i>Why Do We Need Technology Leadership?</i>	7
<i>Evolving Professional Competencies</i>	10
<i>Leadership</i>	12
<i>Twenty-first Century Learners</i>	16
<i>Assistive Technology for Learning (ATL)</i>	19
<i>Summary</i>	22
Reflection and Sharing	23
<i>Web 2.0 Tools</i>	23
<i>Professional Development</i>	24
<i>Future Directions</i>	26
References	28
Appendix A	38
Appendix B	40

Introduction

I have always had an enthusiastic interest in technology. It began back in junior high school where the computer lab quickly became one of my favourite classrooms. Even though the Internet was not yet part of the learning landscape, I thoroughly enjoyed sitting behind a computer exploring word processing. My technology interest from those days proved invaluable later in my teaching career as I found myself assigned the role of teacher-librarian in 2004. This new role seemed to be a great fit for me as there was an overabundance of new technologies making their way into schools. My school, in particular, was purchasing LCD (liquid crystal display) projectors, digital cameras, laptops, and wireless assistive technologies such as the AlphaSmart NEOs. I was given opportunity to put my previous experiences and knowledge into action as a professional technology leader and facilitator. The instructional possibilities seemed endless, as there was a plethora of exciting new hardware and software available for staff to incorporate into instruction and learning. While many of my strengths revolved around technology instruction, I knew very little about school library media programs in general. At the suggestion of my principal, I visited the University of Alberta to investigate the Teacher-Librarianship by Distance Learning (TL-DL) program and quickly found myself enrolled in the Diploma program. The first couple of courses in my program changed my professional and personal growth so profoundly that I transferred into the MEd program. From the beginning of my coursework, I wanted to explore the teacher-librarian role as an educational leader focusing on infusing current technologies and twenty-first century literacies into instruction.

My current teaching schedule contains a small portion of teacher-librarian time which is utilized primarily by exploring twenty-first century literacies with students, as well as collaborating and assisting with the integration of technology in supporting Information and Communication Technology (ICT) skills as outlined by Alberta Education. The continued commitment to purchasing new technologies confirms the need for school-based leadership. I see my role, as teacher-librarian, filling a necessary leadership gap to fully implement and sustain technology integration in all subject areas and all grade levels. It is not educationally advantageous for teachers and administrators to rely on industry experts or Central Office personnel to facilitate one-time introductory sessions for school staff. It could be quite a challenge to expect hesitant or inexperienced teachers to incorporate all of these newly available technologies into their instructional setting with limited exposure or limited training. Technology opens up a wonderful learning environment that melds together differentiated instruction and multiple intelligences by being able to engage all students in the learning process through audio, visual and information literacies. Exploring all of the components of technology leadership in this paper has expanded my expertise more than I ever imagined.

Defining the Teacher-librarian

The terms “teacher-librarian” (TL) or “school library media specialist” (SLMS) are two professional designations that are used interchangeably in this paper as both terms are found in the professional and research literature. With the recent arrival of rapidly evolving technologies in education, the twenty-first century teacher-librarian is a library media specialist and information specialist (McCracken, 2001). McCracken emphasizes the key elements to achieving the role as a media and information specialist

by displaying (a) willingness to move into the future, (b) continued interest in personal learning and professional development, (c) willingness to expand and try new ideas, (d) determination and creativity, (e) desire to support and serve, (f) a clear vision, and (g) genuine enjoyment in helping students and staff.

New and innovative technologies have significantly altered education and the defining role of the teacher-librarian (Kuhlthau, 1991). Teacher-librarians' professional contributions include involvement in professional learning communities, administration and management of information and technology resources, as well as meaningful involvement in classroom instruction (Kiefer, 2008). Now, more than ever, teacher-librarians act as “agents of change,” supporting, encouraging, assisting, nurturing and facilitating the adoption of technologies into daily practice (Harada, 2007). “The hallmark of a school library in the twenty-first century is not its collections, its systems, its technology, its staffing or its building, but the actions and evidence that show it makes a real difference to student learning” (Todd, 2003, p. 27).

Information and Communication Technology (ICT)

In 2003, Alberta Learning (now known as Alberta Education) created an Information and Communication Technology Program of Studies to address the importance of technology infused as part of regular instruction. The program emphasizes the K-12 technology content all students are expected to learn by stating that the curriculum will provide students with an extensive perspective “on the nature of technology, how to use and apply a variety of technologies, and the impact of information and communication technologies on themselves and on society” (Alberta Learning, 2003, p. 1). The Information and Communication Technology curriculum “is not intended to

stand alone, but rather to be infused within core courses and programs” (Alberta Education, 2009, p. 1).

With the advent of the ICT curriculum, teacher-librarians today go beyond the traditional library setting of supporting literacy, collection development, research, and informational organization (Murray, 2000). Infusing ICT outcomes into curriculum and instruction has been promoted—and mandated in some areas—in recent years (Lin, 2008). Alberta Education’s ICT Program of Studies published in 2003 provides a broad viewpoint on the nature of different technology, and the means by which students can utilize and apply technologies personally and within society (Alberta Learning, 2003). Today’s teacher-librarians are collaborative partners who incorporate ICT skills and outcomes through flexible teaching methods into all curriculum and instruction (Henri & Boyd, 2002).

In my capping paper, I wish to present a topic of focus exploring the question “What role do teacher-librarians, as media specialists, have in a school as technology leaders?” When I began my Master of Education program, I had already been involved in technology leadership, integration, and infusion and labelled myself a technological-savvy educator. I chose to enrol in graduate courses that focused on themes that would further strengthen my existing professional knowledge, skills, and leadership capacity in the area of educational technologies. The further I worked through my program, the more I realized that educational technology leadership is a twenty-first century competency that must be nurtured through the evolving role of the teacher-librarian.

Literature Review

Overview

Effective teacher-librarians work closely with all students and staff, and therefore can act as leaders to bring technology to the forefront. Professional and research literature addresses a key question found in schools today: “What role do teacher-librarians, as media specialists, have in a school as technology leaders?”

Leadership combined with professional competencies are two important characteristics associated with the twenty-first century teacher-librarian’s role. Today the teacher-librarians role is viewed as being an agent of change to encourage, nurture and support colleagues to evolve and adopt innovation into action (Harada & Hughes-Hassell, 2007). Loertscher (2006a) writes that teacher-librarians, as technology leaders, have a transformative power when building enthusiastic learning experiences for content educators. This transformative power also extends into the educational experiences of today’s learners who are growing up in the digital age and are known as “the Net Generation” or “Generation N” (Feiertag & Berge, 2008). Previous generations of young learners grew up with information media such as the radio or television. Feiertag and Berge corroborate that Generation N “has come of age in a digital universe” and thrive in a hands-on learning style combining technology, collaboration and active participation (p. 457). This new generation of learners reaffirms the need for school library media specialists to have current knowledge and to keep up digital learning literacies. Technology continues to transform education through a paradigm shift from concern with what teachers should be teaching to what today’s students are learning (Shannon, 2002). Shannon points out that SLMS instructional best practices will include active learning,

attention to learning diversity (differentiated instruction), and technology integration. One central question emerges from her statement: What competencies are required of teacher-librarians in order to effectively transform their school environment? (Shannon, 2002).

Why Do We Need Technology Leadership?

The school library media centre has drastically changed over the last decade and so has the school library media program. Concurrently, the role of the school library media specialist has evolved in significant ways (Farmer, 2005). The twenty-first century teacher-librarian now has electronic and digital resources, Internet and web-based resources, as well as a considerable number of technologies that serve as purposeful tools, not just entertaining add-ons. LCD projectors, document cameras, video-conferencing units, interactive whiteboards, assistive technology devices, and scanners give “more credibility and seriousness to the library’s technology-enhanced program” (p. 2). Not only are today’s teacher-librarians information generalists, but also information media specialists (Murray, 2000). Murray suggests that teacher-librarians should not only know how to use technology but provide professional leadership “in the adoption and use of information technologies” (p. 27). Although teachers are excited about the potential instructional benefits of the Internet, many are overwhelmed by its complexity (Oberg, 2003). Oberg’s statement affirms the need for leadership in this non-stop age of technology evolution.

In past decades, teacher-librarians have had a somewhat straightforward role in supporting electronic and digital resources such as portable CD players, DVD players, and word processing computers. Franklin and Stephens (2007) confirms that technology

has significantly and rapidly advanced over the past few years to include an extensive and complicated list of new technologies such as video-conferencing, interactive CD-ROMs, multimedia projectors, interactive whiteboards and wireless capabilities.

Much of the recent research indicates that the impact of today's technologies on education has enormous potential to transform education in beneficial ways (Muir-Herzig, 2004). Muir-Herzig's research results show that students use technology to organize and collect information, analyze data, enhance their learning, and problem solve. Muir-Herzig also cites that research carried out by Dwyer, Ringstaff and Sandholz in 1991 requests that educators take into account the various styles of student learning. The teacher-librarian, as a technology leader, can help support this through staff professional development by facilitating teachers' understanding about infusing technology into the curriculum. This will help ensure that all students have equal access and quality instruction. However, some of the obstacles and barriers classroom teachers encounter include limited access to equipment, lack of vision for use, and lack of personal understanding with technology (Muir-Herzig, 2004). Muir-Herzig also found that teachers do not always have enough time to prepare lessons infused with technology because of their own lack of training. "A major problem with technology in schools is that many schools could not afford to have full-time school-level computer coordinators" (p. 115). Teacher-librarians can help bridge this gap by providing technology collaboration, leadership, and workshops to their colleagues.

School library media centres have enhanced and expanded their collections outside that of traditional print resources. Resources now include those in digital or electronic formats such as Internet database subscriptions (Williams, 2004). School

library collections are responding to the new digital or electronic formats as “technology enables students to become active consumers of knowledge” (Chen, 2007, p. 115).

Williams (2004) cites research conducted by Levin and Arafah in 2002 that found close to 80 % of students between 12 and 17 are online users and use the Internet to reference resources. Other considerations the Williams (2004) article takes into account is how some teachers’ backgrounds or minimal training affects their comfort level in the use of digital resources. 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” (p. 2). One of the research questions Williams explored was if school library media centres should “develop a tool to bridge any gaps between teachers’ knowledge and opinions of electronic resources and how these resources are best used by students” (p. 6). Teachers were asked how they wanted to receive information about multimedia resources in the school and the top two rated responses were asking for one-on-one instruction and group or classroom instruction by the school library media specialist. The common consensus in teacher feedback for Williams’ (2004) open-ended questions generally stated that most teachers would use more technology tools and digital resources with the help and support of school in-servicing through the trained media specialist.

Lorertscher and Achterman (2003) ask technology leaders to consider five points as they plan to enhance learning in the classroom: that (a) technology is only a tool, “not an end in and of itself,” (b) technology can be used as an advantage or abused, (c) technology offers a variety of new paths for accessing information, (d) technology

provides innovative ways to engage students' different learning styles, and (e) technology is difficult to defend if it becomes outdated or lies unused. In a U.S. Department of Education survey of over 3,500 teachers, only 20% of the respondents felt "well-prepared" to incorporate computers in their instruction (Anderson, 2000). Today's emerging technologies have the capacity to also leave teachers feeling ill-prepared in the wake of continual digital-age teaching and learning norms. Eteokleous (2007) suggests that there is "a growing belief among the general public which suggests that computers are essential components of the educational and instructional systems" (p. 2). Schools today need technology leadership in order to enable educators to incorporate the most appropriate technology in an efficient and meaningful manner.

Evolving Professional Competencies

Anne McCracken's (2001) research compares with many authors in the field of school libraries by stating that "research demonstrated that there is a correlation between student achievement and the presence of a well-funded school library media center with a professional library media specialist" (p. 1). Although there can be confusion amongst administration and teachers on specific roles of the teacher-librarian as a media specialist, both the United States and Canada have published formal documents outlining the professional competencies these specialists should possess. In 1997, the Association for Teacher-Librarianship in Canada (ATLC) and the Canadian School Library Association (CSLA) outlined professional competencies for teacher-librarians. The CSLA document defines professional competencies relating to teacher-librarians' skills and knowledge in areas of leadership, collaboration, curriculum and instruction, program planning, teaching, information access, information resources, management and research,

technology and the capability to apply these skills as a foundation for providing information and library services (Canadian Library Association, 1997).

The role of the TL has evolved significantly since the CSLA document was created. Murray (2000) redefines the TL role as providing leadership with existing technologies and the introduction of new technologies, thus extending the role into a “cybrarian.” Cybrarian is “a person whose job is to find, collect, and manage information that is available on the World Wide Web” (Merriam-Webster Online, 2009, p. 1).

According to Murray (2000), teacher-librarians evolving as cybrarians have seven new roles that are fundamental in providing technology leadership in relation to the Internet:

1. Navigator: Learn to effectively navigate the Internet.
2. Teacher and Collaborator: Collaborate with colleagues to design authentic learning activities that utilize resources on the Internet.
3. Evaluator: Create evaluation tools to actively integrate into the curriculum.
4. Publisher: Develop resource guides that will assist administrators, teachers, students, and parents to locate valuable Internet websites relevant to the curriculum.
5. Program Administrator: Collaboratively work with stakeholders in the learning community to develop Internet-use protocols and policies.
6. Staff Developer: Take a leadership role in teaching administration and faculty to navigate the Internet effectively as well as to integrate Internet use into curriculum and instruction.
7. Family Resource: Promote creative and positive Internet use to school families.

Shannon (2002) confirms that technology and leadership has become a synonymous pair of prominent competencies in national standards for teacher-librarians as media specialists. As professionals, TLs are to be familiar with current informational technologies and have proficient competencies in place to evaluate multi-media resources to support instruction and implementation of change. Abilock (2005) suggests three key factors for teacher-librarians to keep in mind in their role as media specialists or digital librarians: (a) recognize that TLs have an essential role in supporting online learning, (b) recognize the need for background knowledge about how technology can support online learning, and (c) examine professional assumptions about digital and online learning environments.

One statement from Asselin's (2005) study says that "what is needed now is knowledge about if and how information literacy is being taught to students" (p. 17). Asselin gives readers a definition of information literacy by quoting the Ontario School Library Association saying it is a "proficiency in information retrieval, analysis, and communication in conjunction with highly developed technological skills" (p.20).

Teacher-librarian competencies include learning new knowledge and skills to address a list of literacies, including information literacy, fundamental in today's multidimensional learning environment.

Leadership

Teacher-librarians are often thrust into roles as educators who must forge professional relationships with the entire staff and student body, serving as a coordinator, information specialist and educational advocate (Everhart, 2007). "Leaders do not set themselves apart from the rest of the faculty, but consider themselves an integral part of

the team” (Everhart, 2007, p. 55). Part of demonstrating a leadership role on a school staff is to be proactive and establish partnerships with classroom teachers to learn and grow together in technology (Anderson, 1999). Branch and Oberg (2001) point out that research indicates teacher-librarians’ priorities must now be focused on school leadership activities. The leadership role often includes 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, 2003). Lambert (2003) also writes, “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” (p. vii). Loertscher (2006b) defines the teacher-librarian as a learning leader who, in building a strong library program, will display leadership in organization, information literacy, technology and learning. He expands his definition by including specific characteristics saying that (a) the TL as learning leader can influence learning experiences in a technology and information-rich environment, and (b) the TL as learning leader pushes the information literacy skills and technology learning agenda into as many learning experiences as possible (Loertscher, 2006b). A survey of principals’ perceptions of teacher-librarians in Australia cited that they saw these specialists as dynamic professionals committed to knowledge management and a role that has shifted from school librarian to cybrarian—enthusiastic, energetic, committed, lateral thinking and capable of articulating a broad vision for educational information services (Henri & Boyd, 2002). Henri and Boyd’s survey results go on further to report that teacher-librarians believe that organization, good management, efficiency, professional

knowledge and technology instruction helped them gain credibility as a professional leader.

Professional development, formal or informal, is an essential component in advancing leadership competencies for school library media specialists. (Shannon, 2002). Quality professional development created for teacher-librarians attends to both teacher learning and student learning thus concurrently investing in the educational growth of all stakeholders (Lambert, 2003). It can also lead to more opportunities to learn through “collegial conversations, coaching episodes, shared decision-making groups, reflective journals, parent forums, or other such occasions” (Lambert, 2003, p. 22). Expectations on teacher-librarian leadership skills require that they become advocates for both teachers and students. Being a leader is synonymous with becoming an active agent of change in the educational environment and maintaining one’s professional-development standards relevant to teaching and learning. “It means having the language and knowledge to move beyond the library into the wider school community” (Harada & Hughes-Hassell, 2007, p. 12). 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).

Technology permeates school libraries and in many cases falls under the direct supervision and administration of school library media specialists (Franklin & Stephens, 2007). Not only are SLMS instructional leaders, but “often serves as the technology

leader in the school by providing staff development and modeling ethical and effective uses of technology” (Everhart, 2007, p. 55). Jurkowski (2006) contends that going beyond the inventory and being aware of how technology hardware or software is used educationally displays sound leadership practice. To further assist staff with the school’s existing technology (hardware and software), SLMS can develop questions or a survey for teachers by collecting a written needs assessment of where their leadership expertise is required as found in the example Staff Technology Survey (see Appendix A).

Assessing the technology knowledge background of teachers will present a good indication of where to begin providing support. “Keeping knowledge and information to ourselves isn’t productive and doesn’t serve our students well” (p. 183). Jurkowski (2006) suggests professional leadership goals may include: (a) maintaining and enhancing current technology knowledge, (b) keeping abreast of current technology research and best practices, (c) working to obtain an equitable budget for all stakeholders, (d) collaborating to assess the school’s needs, and (e) promoting and facilitating ongoing staff professional development.

The impact of today’s technologies on education has enormous potential to transform education in beneficial ways (Muir-Herzig, 2004). Technology applies to all subject areas and all learning but some of the obstacles and barriers classroom teachers encounter includes limited access to equipment, lack of vision for technology use, and lack of professional understanding and support in regards to implementation (Muir-Herzig, 2004). Many teachers do not have enough time to prepare technology infused lessons because of their own lack of training. Now, more than ever, teacher-librarians are in a position to share their skills and expertise through school-based workshops and in-

services. Not having technology leadership can leave teachers with a lack of adequate knowledge, as well as a lack of confidence that prevents them from embracing new technologies (Williams, 2004). To further understand the scope of leadership needed, Williams (2004) developed a set of self-reflective questions: (a) “What training, in-servicing or orientation sessions would be most effective to increase teacher and student understanding of technology?” and (b) “Does the level of training, in-servicing or instruction differ among grade levels, subject areas or ability levels?” (p. 6).

Technology has been viewed, by some teachers, as disruptive to instruction but today’s new digital net generation differs from past generations. These young people are arguably very comfortable with technologies, unlike many teachers teaching the lessons (Conole, de Laat, Dillon, & Darby, 2008). Through school-based leadership, teacher-librarians can harmoniously bring together teachers and students in a coordinated effort to reach their full potential in teaching and in learning.

Twenty-first Century Learners

Today’s learners are gravitating towards diverse Internet-based technologies and engaging in information searches that requires new and sophisticated skills and abilities (McPherson, 2008). Growing up in a digital information age, students are accomplished in technical skills such as Internet downloading, word-processing, and instant messaging (Asselin, 2005). The education system today is faced with a dilemma that “pits a student body that has grown up immersed in technology against a teaching faculty that is less facile with the tools of the trade” (Richardson, 2006, p. 6). Learners today are known as “digital natives,” the “Net Generation, Millennials,” or “Generation Y” (Combes, 2008). Richardson (2006) defines digital natives as being “well versed in the uses and etiquette

of computers, digital cameras, cell phones, text messaging, Weblogs, and the like” (p. 6). These are students who “have been born into a world filled with gadgets and online community, and to most of them it’s a way of life” (p. 6). A National Technology Plan released in 2005 admitted that students today are much farther ahead in computer literacy than the teachers in their classrooms (Richardson, 2006). From infancy, this generation has grown up in a technological environment using web browsers, laptops, instant messenger services, and video games (Geck, 2006). Growing up in the digital age, students have very specific learning needs and expectations within their learning environments (Andone, Dron, Pemberton & Boyne, 2007). Andone et al.’s research found that in reality many students did not display all of the characteristics associated with the generational term “digital student,” and therefore choose to refer to today’s students as “digitally-minded.” Their study developed a “research effort to generate a digitally-minded student profile” (p. 43). Results showed significant levels of students’ multi-dimensional technology use (Internet, computer, mobile technologies) confirming technology is strongly embedded in their lives (Andone et al., 2007).

Global research from the Organisation for Economic Co-operation and Development observed students’ increased availability and practice in using information communication technologies (in school and out) from 2001 to 2005 in 41 participating countries (McPherson, 2008). This increased usage of ICT has created new and different literacy learning environments. A Canadian study from the Media Awareness Network in 2005 surveyed computer tendencies of over 5,000 students randomly selected (ages 9 to 17) and discovered that 94% of survey respondents used their home computer for Internet access and 91% of 13-year-olds favoured using the Internet to access resources over print

resources (McPherson, 2008). Digital natives are sometimes stereotyped as being much more tech-savvy than parents and educators, however this study found that 70% of students desired assistance in identifying the authenticity of online information (McPherson, 2008). What has become apparent from this study is that students' literacy practices are (a) shifting away from print resources and moving towards digitized Internet-based media and information, (b) accessing uncontrolled online content and participating in "risky" information and communication contexts, and (c) requiring educational direction from educators and mentors, like SLMS, in the development of their critical-thinking skills (McPherson, 2008).

Prensky (2005) characterizes school-aged generations from three to four decades ago as not expecting always to be engaged in their learning. Students' lives were less communication-and information-rich, however today's "engage me or enrage me" generation subscribes to an opposite viewpoint as students demand educators work hard to earn their attention (p. 60). The literature written involving today's youth and current technologies uncovers unique ways in which this age group learns, and the distinct traits in their learning and social identities (Asselin & Doiron, 2008). Asselin and Doiron (2008) review research literature by describing how this group of learners are growing up and living connected with each other: (a) they use various technologies to communicate with others (known and unknown); (b) they use technology as a primary tool; (c) their personal identities are defined by shared experiences; (d) they view themselves as capable pioneers.

The Net Generation theory subscribes to the claim that children born into the digital age have "intuitive" skills and knowledge in using technology because they have

grown up with the Internet (Combes, 2008). In recent years, a body of research has debunked the theory of an intuitive user and confirmed that the Net Generation has increased access to online information, which fosters independence as well as the ability to confront information as exploratory learners. A consequence of this is that educators, in particular teacher-librarians, need to become more concerned with teaching students to effectively navigate electronic environments (Combes, 2008). Johnson (2005-2006) advises assisting the Net Genners in selecting appropriate search tools and helping them develop effective search strategies to determine information relevance. It is more important than ever for teacher-librarians to guide Net Generation students through the complexities of information seeking, helping them establish effective technology-savvy attitudes and behaviours thus creating a meaningful and safe learning experience (Johnson, 2005-2006).

Assistive Technology for Learning (ATL)

Among the different branches of technology leadership and instruction, assistive technology for learning (ATL) is increasingly becoming a current and ubiquitous term in education, combining special education and technology.

Arguably, all technology can be described as assistive technology—it assists us in doing something better, easier or faster. Assistive technology for learning (ATL) refers to a broad range of classroom materials, devices, media and other technologies that give individual students increased access to learning opportunities. Like other technologies, ATL ranges from simple tools to complex systems. It could be as simple as providing a pencil grip for writing or as complex

as a computer with screen reading software for reading and learning. (Alberta Education 2005, p. 1)

I have a particular interest in this field as more ATL hardware and software is being incorporated as a regular component of technology infused instruction. Depending on a particular day, students may need several educational routes offered to them by the teacher to attain a learning goal. One unmistakable hallmark in using ATL is the differentiated instructional approach, which is putting students at the centre of the learning process. In the role of technology facilitator, teacher-librarians have a responsibility to differentiate technology infusion just as a teacher would in a traditional classroom setting. When learning opportunities are not equal for all, it is normal to conclude that the learning environment may prove to be unfair (Brown, 2005). How should technology integration and the learning process be equal and equitable for all?

The ATL field is relatively new, but increasingly prompting instructional leaders to explore different ways of addressing technology integration for all learners (Hopkins, 2004). Technology leaders must keep in mind the extensive, rather diverse complex nature of the student population within a school community. School library media specialists are knowledgeable and comfortable with the familiar educational technologies already employed as learning tools, but extending technology leadership into the realm of special education pushes the envelope to include knowledge in the area of ATL.

“Teacher-librarians can help students with disabilities make the most of media-rich school library resources by implementing accessible technology options” (Hopkins, 2004, p. 15). A partnership with other experts in the school such as the special education coordinator, counsellor, and/or administrator can help expand learning opportunities for

students by developing and promoting ATL through the entire school community.

Teacher-librarians can display sound instructional leadership practices by proactively recognizing student diversity, as well as designing an environment to support technology success for all learners. The use of technology infused in instruction can be very exciting and motivational for students, especially for those experiencing difficulty with traditional methods of instruction. Assistive technologies can be used as a valuable tool for improving instruction, however integrating this new technology within the curriculum is not quickly achieved, nor easily understood (Edyburn, 1998). ATL is specialized and sometimes more complex than regular technologies, but leads to opening up learning for students with barriers due to learning or physical disabilities (Alberta Education, 2005).

The American Association of School Librarians' *Standards for the 21st- Century Learner* document stipulates that all students merit equitable access to reading, books, information, and technology in a safe environment conducive to learning (Gavigan & Kurtts, 2009). Okolo and Bouck's (2007) research studying assistive technology, between 2000 and 2006, discovered that 32% of the studies undertaken wanted students' literacy skills to remain a primary focus. As such, professionals including SLMS, continually search for effective, engaging, and innovative instructional approaches that will provide learning opportunities for diverse student populations (Gavigan & Kurtts, 2009). A number of worthy websites are available to help educate those who are unfamiliar with ATL, or who are in the beginning stages dealing with these technologies (see Appendix B).

Assistive technology developer, Steve Timmer states that one must recognize assistive technology for learning "is rapidly becoming common in regular classrooms"

(Jackson, 2004, p. 1), by supporting and engaging more students than ever. Three key ATL outcomes that enhance learning for students are to (a) increase student independence, (b) increase student productivity, and c) increase student success in all educational settings (Howery, 2005). To enhance integration of ATL, teacher-librarians must have an educational understanding and be able to recognize where and when these technologies are necessary and how integration is best achieved.

Summary

The educational landscape has experienced exponential technology growth and change; it will continue to do so whether we welcome it or not. Educators are clearly dealing with a new generation of digital learners who have technology unquestionably embedded in their lives. The literature that I have reviewed indicates that teacher-librarians are positioned to fill a leadership role that guides students and staff through instruction infused with technology. There are no easy answers in dealing with the never-ending explosion of new technologies emerging into classrooms across the grade levels and subject areas. Despite the fact that a school acknowledges technology as an important component of the learning community does not automatically translate it into successful selection and implementation. I plan to forge ahead in my TL role by nurturing relationships with teachers and supporting technology infused education in conjunction with the provincial curriculum and ICT outcomes. I believe that cultivating collegial relationships can invite and expand technology opportunities available for all students, leading to rich and fulfilling educational experiences.

Reflection and Sharing

Reflecting on all the articles, books, websites and research that I have come across on my studies leads me to share a couple key thoughts on the future of technology and how this relates to the need for quality teacher-librarian training and professional development through post-secondary institutions.

Web 2.0 Tools

The most recent significant change in the technology revolution is the advent of Web 2.0 tools. Defined by Sljsummit Wiki, (n.d.):

Web. 2.0 is referred to as the “read/write” Web, where users are both consumers and producers of information. Unlike previous websites that were focused on information interactions between the website and a single viewer, Web 2.0 is centered around human-to-human conversations and data sharing. It also incorporates the shift to Web as computing platform—the use of Web-based applications in place of commercially produced software. (p. 1)



(2Learn.ca Education Society, 2009)

Web 2.0 tools permeate the Internet through an abundance of free applications that are available through web-based and mobile technologies. This means students have 24-hour access to learning, socialization, collaboration, sharing, retrieving, viewing and

uploading. The number of Web 2.0 tools I use has become so numerous that I have had to create a database of user names and passwords to keep up with my growing list of interactive applications. Web 2.0 teaching and learning possibilities are endless for staff and students. Technology projects such as podcasting, Voicethreads and blogging are just a few of the exciting and current applications making their way into my current instructional environment.

One alarming point about the shifting Web 2.0 is that there is a great deal of online speculation and discussion about defining the next phase of learning in a Web 3.0 environment. How many educators right now are left behind, still searching and existing in the Web 1.0? Trying to keep abreast of the latest or newest trend in Web 2.0 tools is an impossible task. 2.0 applications are constantly being developed, revised and uploaded to the Internet. “By collaborating with young people and their teachers on effective and efficient applications of technology in learning, the media specialist models best practices as well as encourages inquiry and life long learning” (Lamb & Johnson, 2008, p. 77). I have begun participating in and using Web 2.0 applications on a regular basis. I now feel that I am in position to move students and staff ahead into a Web 2.0 learning environment because they are embedded in my own learning and instruction.

Professional Development

Over the past couple months I have welcomed new approaches in technology learning (personally and professionally) by exploring new applications and researching the educational implications of Web 2.0 tools. I blog, Twitter, follow RSS (Really Simple Syndication) feeds, participate in Wiki development and my interactive Web 2.0 list goes on. My exposure to and active involvement in Web 2.0 social applications

began in my final regular graduate course. In the fall of 2008, I enrolled in EDEL 501 Exploration of Web 2.0 for Teaching and Learning course instructed by Joanne de Groot. That course has influenced the way I interact with technologies and has changed the way I infuse technologies into my instructional practices. Taking that course has also enhanced my technology knowledge and expertise considerably by authentically engaging me in social interaction, professional conversation, community sharing, online collaboration and twenty-first century discussion forums. I believe it is more important than ever for teacher-librarians to thrust school technology integration and infusion into a 2.0 world. As more teacher-librarians face the full impact of Web 2.0, or what is sometimes called an emerging “learning 2.0 environment”, it becomes imperative to expand instruction to meet the most current literacy learning needs of the young Net Generation (Asselin & Doiron, 2008, p. 1). I highly recommend that teacher-librarians or technology leaders take advantage of courses offered through post secondary institutions as part of their professional development and personal growth. Graduate level professional development is paramount to moving forward as an instructional and technology 2.0 leader.

The University of Alberta is now redesigning the Web 2.0 technology course “to provide graduate students with the opportunity to explore these Web 2.0 tools” by introducing educators to blogs, wikis, video/photo sharing, social networking and much more (de Groot & Branch, 2008, p. 1). Two instructors within the TL-DL program developed a study as a result of the first Web 2.0 online course offered in the winter of 2008 by focusing on two underlying questions. The questions asked were “How effective is a graduate-level course in helping teachers and teacher-librarians learn about and

integrate new Web 2.0 technologies? Second, what are the knowledge, skills and attributes that these teachers and teacher-librarians develop as a result of undertaking this inquiry?” (de Groot & Branch, 2008, p. 2). The TL-DL program changes are helping transform the educational experiences and competencies of teacher-librarians registered in graduate studies. Ultimately, teacher-librarians are responsible for their own professional development and must investigate all academic opportunities afforded to them in well-established programs like that found at the University of Alberta. Upgrading education and entering into a Master’s program is not an easy decision. It takes dedicated professional time and invested personal time to truly meet the challenges of bringing ourselves into a learning and leading environment. Investing in graduate studies is a necessity too great to ignore and a benefit not easily measured.

Future Directions

Where do we go from here? It is difficult to predict the future of teacher-librarian positions in school districts throughout Alberta, but the fact remains that teacher-librarians are in unique positions to take on twenty-first century education and promote a comprehensive, global technology vision. The number one challenge I face each year is the uncertainty of having little or no teacher-librarian time in my teaching assignment. It is essential that I actively advocate the importance of my role by increasing school-based and district level administrators’ knowledge and perception of the importance of TL positions. I am concentrating my advocacy efforts by promoting technology projects taking place within my assigned instructional time. These efforts are paying off as my graduate studies and technology instructional experiences are leading to involvement in facilitating school-based and district-level technology sessions for educators. There has

never been a more urgent time for well-trained teacher-librarians to seize the opportunity and take on technology leadership.

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Appendix A
Staff Technology Survey

Name: _____

1. Please check off the appropriate box regarding your familiarity with the following technology at school.

Technology	Beginner	Intermediate	Advanced
Video-Conferencing Unit			
Document Camera			
LCD Projector			
Digital Camera			
Scanner			
Video Camera			
Wireless Laptop			
Promethean Board			
AlphaSmart Neo			

2. Please check off the appropriate box regarding your familiarity with the following software at school.

Software	Beginner	Intermediate	Advanced
Microsoft Outlook			
Microsoft Word			
Microsoft Excel			
Microsoft PowerPoint			
Read & Write Gold			
Kidspiration 2			
Hyperstudio 4			
Photo Shop Elements			
HP Digital Camera Software			
Online Reference Centre			

Other comments, concerns, or questions:

Appendix B

Assistive Technology Websites for Research and Learning

Alberta Education Assistive Technology for Learning (ATL)

<http://education.alberta.ca/admin/technology/atl.aspx>

Information listed regarding Alberta Education's upcoming events, resources, devices, services, and best practices for special education in Alberta.

Advancing Accessibility through Technology

<http://www.2learn.ca/advance/>

Alberta's 2Learn.ca Education Society provides educators with case studies, multimedia presentations, 'how-to' resources, and product information.

Closing the Gap

www.closingthegap.com

Closing the Gap highlights special education resources, as well as hardware and software related to assistive technologies. The website includes a bi-monthly newsletter, upcoming conference details, a resource directory, as well as a free online educational discussion forum.

I CAN Centre for Assistive Technology

www.capitalhealth.ca/icancentre

I CAN Centre for Assistive Technology is located in the Glenrose Rehabilitation Hospital (Edmonton, Alberta). This centre provides assessment, education and research services

for children and adults who need alternative communication strategies through assistive technologies. Professionals, families and support workers are welcomed to visit the centre during monthly ‘drop-in demo’ days. The centre is host to an extensive resource lending library.

LD Online

www.ldonline.com

LD online is a leading web resource on information about learning disabilities. The site contains articles from leading experts, a free online newsletter, essays, as well as discussion forums. Also found on this site is a feature section that includes tips and strategies for teachers on inclusive education.

SET-BC

<http://www.setbc.org/>

SET-BC refers to the Special Education Technology—British Columbia program, set up to assist provincial school boards in supporting special needs learning using technology. The website provides professional-development information, organizational links, practical learning resources, best practices, webcasts and student tutorials.

The SETT Framework: The Assessment Process

<http://atto.buffalo.edu/registered/ATBasics/Foundation/Assessment/sett.asp>

The SETT Framework created by Dr. Joy Zabala outlines guidelines for effective ATL decision making and implementation.