

UNIVERSITY OF ALBERTA

THE ESSENTIAL TEACHER-LIBRARIAN:
CLARIFYING THE CONTRIBUTIONS OF TEACHER-LIBRARIANS TO THE
DEVELOPMENT OF INFORMATION LITERACY SKILLS IN 21ST CENTURY LEARNERS

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Dedication

This paper is dedicated to my husband Kevin and my daughters Chloe and Abigail.

Kevin, I never could have done this without you. These last three years you were my sounding board, my cheerleader, and my support. You kept me going, kept me sane and kept me fed! You picked up the slack when I was consumed and did a wonderful job keeping our family on track. You were a wonderful father when I couldn't be the mom I wanted to be. You endured this process as much as I did and for that I will be forever grateful. I love you.

Chloe and Abigail I did this for you. I know it was hard on you and I know that you missed mommy a lot of the time. I can only hope that this short time will be but a speck in your lives and that you will come to understand that hard work and perseverance can get you almost anywhere you want to be. I love you girls.

Special thanks go to my mother for showing me that pursuing higher education is a plausible endeavor even while raising a family. Mom, thanks for supporting me and listening to my struggles and for reminding me that I am not Superwoman and I don't have to do it all.

TABLE OF CONTENTS

INTRODUCTION

Learning Information Literacy Skills.....	5
Research with Students.....	5
Becoming a Teacher-Librarian.....	7
<i>The Literacy with ICT Continuum</i>	8
What is Our Role?.....	10

LITERATURE REVIEW

Introduction.....	11
Redefining Information Literacy for the 21 st Century.....	12
Information in the 21 st Century	12
Literacy in the 21 st Century	13
Information Literacy in the 21 st Century.....	14
Unique Learners and Essential Skills.....	15
21st Century Learners	15
The Needs of 21 st Century Learners.....	16
Essential 21 st Century Skills	17
Teaching Information Literacy in the 21 st Century	21
What is Inquiry?	21
Guided Inquiry, Information Literacy and 21 st Century Skills	23
What is the Role of the 21 st Century Teacher-Librarian?	24
Teacher-Librarian as Instructional Leader	24
Teacher-Librarian as Expert on Inquiry and Information Literacy	26

Teacher-Librarian as Professional Leader.....	27
Summary	27
REFLECTIONS	
Initial Thoughts.....	29
The Manitoba Context.....	30
<i>The Literacy with ICT Continuum</i> in Manitoba Curriculum	32
Implications of the Literature Review.....	34
Implications for Teacher-Librarian Scholarship in Manitoba.....	34
Implications for Curriculum Development in Manitoba.....	34
Implications for Teacher Education Programs in Manitoba.....	36
Implications for Manitoba School Divisions.....	37
Implications for Teacher-Librarians in Manitoba.....	37
Implications for the Manitoba School Library Association.....	38
Final Thought.....	38
REFERENCES.....	39
APPENDICES.....	48
Appendix A: Characteristics of 21 st Century Learners.....	49
Appendix B: Essential 21 st Century Skills Identified in the Literature.....	50
Appendix C: 21 st Century Frameworks and Skills.....	53
Appendix D: Inquiry Models in Canada.....	54
Appendix E: Information Literacy and Essential Skills	55
Appendix F: Selected Professional Resources for Teacher-Librarians.....	56

INTRODUCTION

Learning Information Literacy Skills

When I returned to university at the age of 23, I had no idea how to do research. I struggled through the first year of my Education degree focusing on my major in History. When doing research in the library I was baffled by the databases, unable to locate the microfiches I needed and instead of searching the catalogue I spent hours trolling the stacks of the bound journals looking for articles that pertained to my topics. I remember feeling frustrated, angry, upset and stressed. I remember many tears shed and many angry mutterings.

Thankfully I was the type of student who always did well in school and so I had many of the necessary skills to help me figure out what I needed to learn, and then to learn it. I also had the wherewithal to ask for help. Through trial and error, and with the help of some excellent university library staff, I eventually learned how to search the library databases to find pertinent articles. I figured out where the microfiches were stored, how to access them and how to use the microfiche viewers. I handed in assignments that got me a solid B+ GPA. I learned information literacy skills through a trial by fire. However, I never used the Internet as a source for research and I often wonder if I would have been able to wade through the sea of the Internet to find what I needed, given my skill level at the time.

Research with Students

My first teaching assignment was Grade 7 Math and English Language Arts and so I spent my first five years of teaching focusing on numeracy and literacy. Although I came to be interested in content area literacy and text structures, I left the research projects to my teaching partner who taught Social Studies and Science. I remember her commenting in frustration that research took students too long and the quality of their assignments afterwards was subpar.

It wasn't until my teaching assignment changed to Grade 8 Science and Social Studies that I realized what my teaching partner had been talking about. For one of my first research assignments I scheduled more than sufficient time in the computer lab, given the assignment. However, the task took my students far longer and the result was many assignments of the "copy and paste" variety. I also had a general feeling that although many students found the "right" answers they still lacked a deep understanding of the topic. Also, not a single student cited their references because I hadn't made it a requirement of the assignment. I was frustrated with my own lack of detailed instruction and disappointed in my students' quality of work. After that experience I tried to be more detailed in my own instructions for the assignments; I required my students to cite their references, by simply giving the URL of the website they had used, and I stressed the importance of paraphrasing. This is how I continued to assign research projects and although the quality improved, I was still frustrated with the whole process. I found myself avoiding assigning research projects. I remember having many conversations with colleagues about how to improve the process, to no avail.

It was not until I entered the University of Alberta and took EDES 501 Exploration of Web 2.0 and its companion course EDES 545 Information Technology for Learning that I realized what I was missing in my teaching. I assumed students knew how to find information on the Internet. I assumed they knew how to do a good Internet search, how to evaluate a source and how to synthesize and paraphrase the information they found. I assumed that students could tell if information was relevant or pertinent to their topic. I made the same mistake that many adults often make; I assumed that just because my students looked comfortable online, that they could use the Internet for academic purposes and that they had the critical thinking skills needed to evaluate the information they found. My University of Alberta courses helped me recognize

that students needed to be explicitly taught these skills; however, I also recognized that I didn't know how to do these things either and I came to understand that neither did my teaching colleagues.

Becoming a Teacher-Librarian

After completing my first year in the Teacher-Librarianship by Distance Learning Program at the University of Alberta I was offered a full time teacher-librarian position at a large junior high school in my school division. This school had recently undergone a renovation that affected the school library, resulting in a new, larger library space. I felt lucky and privileged to be the new teacher-librarian at a school with a new library space and access to three full computer labs, one located inside the library and two located directly off the library. The teachers were welcoming and the principal was supportive of my role in the school, both financially and pedagogically; it was a dream come true.

I quickly understood, however, that it was not the ideal situation. Although the computer labs were well used, I came to understand that the teachers at my new school were struggling with the same issues with regards to research that I had struggled with. Students didn't know how to do research and the teachers didn't know how to teach them to do it. I endeavored to define my role as one of information literacy teacher and many teachers were willing and happy to have my help. Throughout this first year I reflected many times on how grateful I was for my training from the University of Alberta. I realized that I could never have done my job as a teacher-librarian effectively had I not had additional training in the specific areas related to teacher-librarianship, specifically information literacy and inquiry-based learning. I also found myself falling back on my years of experience as a classroom teacher, both for teaching strategies and classroom management strategies.

I was new to teacher-librarianship and spent much of the year simply being thankful that teachers were letting me teach their classes information literacy skills. As a result of my inexperience, I taught information literacy out of context of the classroom experience, but tried to include topics being covered in class to make the instruction more relevant. I developed lessons on how to do a good Internet search, how to evaluate websites, how to avoid plagiarism with note-taking strategies and about bias, copyright, citation and creative commons. I also taught some technology skills needed for synthesizing, analyzing and presenting the information students had found.

Although I knew what students needed, I found my first year as a teacher-librarian difficult for several reasons. Firstly, teachers didn't understand my role and I failed to clearly define that role for them. In fact, I failed to clearly define my role for myself and as a result I became the teacher-librarian who taught technology skills. Secondly, I thought there were no guidelines in place in my province or school division for information literacy instruction and so I struggled to create my own program of instruction using bits and pieces from documents I was familiar with from my University of Alberta studies. Finally, it was not just students who needed to be taught information literacy skills and I struggled with how to approach the teachers about their own lack of abilities in this area.

The Literacy with ICT Continuum

In 2006, Manitoba Education Citizenship and Youth (MECY) published the *Literacy with ICT* (information and communication technology) *Continuum*. The document defines literacy with ICT as “choosing and using ICT, responsibly and ethically, to support critical and creative thinking about information and about communication across the curriculum,” (MECY, 2006b, p. 8). After attending an in-service on the *Literacy with ICT Continuum* (MECY, 2006b), I finally

realized the link between this document and the inquiry process that I was learning about in my EDES 542: Inquiry Based Instruction course. The role of the teacher-librarian in Manitoba suddenly became clear to me. The *Literacy with ICT Continuum* (MECY, 2006b) with its organization based on the inquiry process and its content based on information literacy skills was obviously the document that could provide those guidelines I was so desperately in need of. I was surprised none of my teacher-librarian colleagues had pointed this out to me.

Unfortunately, the *Literacy with ICT* (MECY, 2006b) document defines information literacy in terms of technology use only, and in fact does not use the term ‘information literacy’ at all. I realized there was much confusion in my school division regarding the multiple definitions of information literacy in the 21st century and uncertainty about the role of the 21st century teacher-librarian. This resulted in a perception that caused teachers, administrators and other divisional staff to interpret the *Literacy with ICT* (MECY, 2006b) document as something to be addressed by the “technology department” only, leaving a glaring gap in the ability of teacher-librarians to address the information literacy needs of students.

Through further investigations and involvement in local and provincial professional associations, I came to realize that it isn’t just the teachers in my school and division that struggle with the role of the teacher-librarian; it is our entire provincial education system. Teacher-librarianship in Manitoba was in a state of confusion.

With a government mandated continuum comes funding. As a result of the impetus to infuse technology throughout the curriculum through the use of the *Literacy with ICT Continuum* (MECY, 2006b), school divisions have spent a lot of monies on technology. There exists a perception that the technology department of my school division has been quite well funded at the expense of libraries which have suffered cost cutting measures such as reduced staffing.

Regrettably this opinion and its implications have caused much uncertainty about who should be helping teachers to implement and integrate the *Literacy with ICT Continuum* (MECY, 2006b).

Teacher-librarians have been left in the cold with regards to information literacy programming in Manitoba, yet hope exists for our renewed role in schools. The inquiry and information literacy structures that exist within the *Literacy with ICT Continuum* (MECY, 2006b) can allow teacher-librarians in Manitoba to re-establish their expertise with information literacy and clarify their roles as both teachers and leaders in our schools.

What is our Role?

For teacher-librarians to clarify the essential nature of their position in Manitoba schools, it is first important for the role of the 21st century teacher-librarian to be well defined. A clear definition of our role in information literacy instruction and our expertise with inquiry based learning will lead to an understanding of how our role coincides with the *Literacy with ICT Continuum* (MECY, 2006b). To that end this paper will examine the question *How can the role of the 21st century teacher-librarian be clarified and defined within the context of the already existing curriculum structure in Manitoba?*

To help me answer this question I will investigate pertinent professional and academic literature to answer the following questions:

- How is information literacy defined in the 21st Century?
- What is unique about 21st century learners and the essential skills necessary in the 21st century?
- What role does inquiry-based learning play in information literacy programming and instruction?
- What is the role of the 21st century teacher-librarian?

After reviewing the literature I will reflect on how teacher-librarians can define their role within the context of the already existing curriculum structure in Manitoba. Additionally I will include implications of the literature review for various stakeholders in Manitoba.

LITERATURE REVIEW

Introduction

The first ten years of the 21st century have proven that the moniker “information age” is an accurate one for this century. We now have access to vast amounts of information of various types (academic, news, gossip, literary, opinion blogs and editorials, etc.) in various formats (print, digital, audio, professional and amateur video, etc.) and at speeds only dreamed of just twenty years ago. Teenagers in 2011 have never known a world without the Internet, Facebook or iTunes and they will be the generation to redefine what “multimedia” means. By early adolescence, our children network socially on a regular basis, get their news, gossip, entertainment and music online and can create the most visually stunning “mashups” using a variety of online tools. They are quite technologically savvy, but are they information literate?

Literature shows that 21st century information literacy has come to be defined as a fusion of literacies, traditional and new, and it is clear that becoming information literate in the 21st century is a complex process. Many of the essential skills necessary in the 21st century can be defined within the contexts of this fusion of literacies now known as information literacy. In addition, our learners today are distinct from any generation we have known before. The needs of our learners and the unique applications of essential 21st century skills greatly influence the way we teach. Qualified teacher-librarians are instructional leaders, professional leaders and experts in inquiry, information literacy and in educating students in the 21st century.

Redefining Information Literacy for the 21st Century

Information in the 21st Century

In his report of two studies done at Marist Sisters' College in Australia, Todd (1995) describes "the starting point for explicating a philosophical framework for information literacy instruction [by first looking at] . . . the meaning of the central concept of information" (p. 1). He presents two perspectives of the definition of "information." The first perspective is the traditional view of information that library programs have historically been based on, specifically the concept that information is a thing to be obtained from objects (Todd, 1995). The second perspective is the idea that information is a process that changes the person who engages with it (Todd, 1995).

Asselin and Doiron (2008) conducted an extensive study of the literature in order to create a new pedagogical framework for school libraries in the 21st century. In discussing the new concepts of "knowledge" in the 21st century, the authors noted:

Knowledge in the Industrial Age was viewed as fixed, authoritative, discipline-bound, obtained and owned by individuals, and regarded as 'the truth.' In contrast, knowledge in a knowledge-based society is constantly changing, contested, interdisciplinary, and collaboratively constructed and re-constructed by 'amateurs' for massive audiences.

(Asselin & Doiron, 2008, p. 3)

In *Born Digital*, Palfrey and Gasser (2008) also note two important characteristics of information in the 21st century which are applicable to this investigation. Firstly, the authors assert that "every piece of information has a unique relationship to the person using it" (Palfrey & Glasser, 2008, p. 164) and this relationship shapes how that person will search, access and interpret the information he or she finds. Secondly, Palfrey and Gasser (2008) argue that

information is contextual, noting that “the same piece of information can have a completely different quality in different contexts for the same recipient” (p. 164). This supports Asselin and Doiron’s (2008) assertions that 21st century knowledge can be elusive and is constantly changing.

According to Todd (1995), “conceptualizing information as it is internalized by people rather than as an objective product destined for passive recipients is a fundamental element of effective information literacy instruction” (p. 2). In Todd’s (1995) opinion, this definition of information allows one to extend the concept of information literacy programming outside the traditional view of library usage skills.

Literacy in the 21st Century

The Internet has changed the very definition of literacy (Langford, 1998; Leu, Zawilinski, Castek, Banerjee, Housand, Liu & O’Neil, 2007). To be literate in the 21st century, the learner will need to be able to read and understand the complicated information that is increasingly available online (Leu, et al., 2007, p. 38). Langford (1998) notes that “the concept of literacy really depends on the information needs of the society of the time. . . . [and that the very meaning of literacy is] transforming, from a functional literacy through to a set of literacies, tied to advances in technological society” (p. 6).

In the information age it seems impossible to separate literacy from information and even reading from writing and communicating from comprehension. In fact, reading and writing are so interdependent in online environments that “online reading often has elements of communication that are simultaneous with comprehension” (Leu, et al., 2007, p. 56). Langford (1998) even suggests that, “all literacy [in the information age] is information literacy” (p. 7).

Information Literacy in the 21st Century

In the document *Achieving Information Literacy: Standards for School Library Programs in Canada*, the Canadian Association for School Libraries (CASL) defines information literacy as “the ability to find and use information with critical discrimination in order to build knowledge” (Asselin, Branch & Oberg, 2003, p. ix). Specifically the document notes that information literacy is:

The ability to: recognize the need for information to solve problems and develop ideas; pose important questions; use a variety of information gathering strategies; locate relevant and appropriate information; assess information for quality, authority, accuracy, and authenticity. (Asselin, Branch & Oberg, 2003, p. 85)

The definition of information literacy is clearly defined by both CASL and the American Association of School Librarians (AASL); however, AASL notes the following:

The definition of information literacy has become more complex as resources and technologies have changed. Information literacy has progressed from the simple definition of using reference resources to find information. Multiple literacies, including digital, visual, textual and technological, have now joined information literacy as crucial skills for this century. (AASL, 2007, p. 3)

Given the definition of “literacy” and of “information” and the inextricable link between them in the 21st century, it is not surprising that the term “information literacy” has become an umbrella term “best envisioned as a broader concept that encompasses all of the other literacies” (Breivik, 2005, p. 23). The literature suggests that critical literacy (Breivik, 2005; Hay & Todd, 2010; Langford, 2007; McPherson, 2008), multiliteracy or multi-modal literacies (Hamilton, 2009; Leu, et al., 2007; McPherson, 2008), media literacy, technical new literacies of ICTs and

Internet use (Asselin, Early, Filipenko & Lam, 2005; Leu, et al., 2007), global literacy (McPherson, 2008), emotional literacy (Branch & Oberg 2001; Oberg, 2004), functional literacy and lifelong learning (Langford, 1998; Leu, et al., 2007) all fall under the umbrella of information literacy.

Unique Learners and Essential Skills

21st Century Learners

Considering the changing definitions of information and of literacy, it stands to reason that the students with whom teachers and teacher-librarians work are also distinct in the 21st century. In *Grown Up Digital*, Don Tapscott (2009) identifies eight common norms of what he calls “Net Geners,” people between the ages of 11 and 31. The author identified these norms from his extensive research and surveys of the youth of the net generation. “The eight norms are: 1) freedom; 2) customization; 3) scrutiny; 4) integrity; 5) collaboration; 6) entertainment; 7) speed; and 8) innovation” (Tapscott, 2009, p. 74).

The eight norms identified by Tapscott (2009) closely mirror the ten characteristics identified by Asselin and Doiron (2008) in their review of the literature on 21st century learners (see *Appendix A: Characteristics of 21st Century Learners*). Asselin and Doiron (2008) describe “new learners” in this way:

They are growing up connected to the world and each other; they use technologies to communicate with known and unknown others and to shape their lives; they are action-oriented problem solvers and see technology as their primary tool; they define their identities by shared interests and experiences; they herald creative thinking, empowerment, and problem solving as key qualities in the new global economies; and they see themselves as competent pioneers in their personal and shared futures. (p. 2)

Students today have grown up immersed in a technological age in which they have easy and fast access to more information than any previous generation (Breivik, 2005; Geck, 2006). They seem more confident and comfortable with technology and are often early adopters of new formats of communication and technology (Geck, 2006; Kirkland, 2010; Valenza, 2007a). They want to innovate, create, discuss, interact, collaborate and participate in their own learning (Asselin & Doiron, 2008; Tapscott, 2009). Above all they want to use technology in school the same way they use it in all other aspects of their lives (Tapscott, 2009). It is especially important for educators to consider these unique characteristics of 21st century learners when developing learning experiences (Asselin & Doiron, 2008; Tapscott, 2009).

The Needs of 21st Century Learners

Even given Tapscott's (2009) glowing illustrations of 21st century learners, there still exists a gap between perception and reality. Although some literature identifies youth today as exceptionally skilled with technology, still other literature notes that this view of the student of the 21st century as an information literate user is a misconception (Breivik, 2005; Geck, 2006; Islam & Murno, 2006; McPherson, 2008; Sykes, 2010; Valenza, 2007a). A position paper released by the Center for International Scholarship in School Libraries (CISSL) states "the fallacy that the Millennium generation have information skills to be successful in the 21st century learning and working environments underestimates the sophisticated skills needed for increasingly complex information tasks" (Todd & Gordon, n.d., p. 5). Geck (2006) even goes so far as to suggest that students today are information illiterate.

In describing the rationale behind their study of information literacy programs in high schools, Islam and Murno (2006) noted that college students were ill-prepared for the information seeking demands their professors placed on them and that their information literacy

skills were sorely lacking. In addition, Valenza (2007a) cited “Griffiths and Brophy (2005) [who] observed that college students’ use of academic resources was low and that students had little awareness of alternative information-seeking methods beyond their favorite search engine” (p. 227).

Geck (2006) notes that students are lacking many information literacy skills, such as the fact that students “do not have a deep understanding of the inner workings of the Internet. . . . are unfamiliar with electronic resources that are not free. . . . [and] tend not to place time constraints on themselves” (p. 20). Students who are not information literate are also at greater risk of being victims of nefarious internet based activities (Breivik, 2005; McPherson, 2008), and are “frequently fooled about the reliability of the information they locate, even when they know that they cannot trust information on the Internet” (Leu, et al., 2007, p. 47). Islam and Murno (2006) cite an inability to “effectively evaluate [or] appropriately use the information they find” (p. 492) as a major problem for college freshmen. Valenza (2007a) points out that “students are not planners. . . . they tend to repeat flawed strategies in different search tools, with little or no knowledge of search syntax. . . . [and they] have trouble naming their information needs” (p. 227).

Essential 21st Century Skills

There are three interesting studies that identify 21st century skills. The first is the pedagogical framework for 21st century school libraries created by Asselin and Doiron (2008) through an extensive review of the literature. The second is a study conducted by the North Central Regional Educational Laboratory (NCREL) titled *enGauge 21st Century Skills: Digital Literacies for a Digital Age* (Lemke, 2002) and was also based on extensive literature reviews. Although based mostly on American literature and focused on employment skills in the 21st

century, this second study still provides a pertinent and detailed look at 21st century skills for these purposes. Finally, in *21st Century Skills: Learning for Life in Our Times*, Trilling and Fadel (2009) describe the “Framework for 21st Century Skills” that was created by the Partnership for 21st Century Skills (P21).

The three studies noted above define the essential 21st century skills needed for success. These skills can be categorized into eight areas: basic literacy; information skills; critical thinking skills; creativity and innovation skills; collaboration and teamwork skills; multimedia skills; technology skills; ethical thinking skills; and skills for lifelong learning (see *Appendix B: Essential 21st Century Skills Identified in the Literature*).

Basic literacy will be essential for the 21st century citizen (Asselin & Doiron, 2008; Lemke, 2002; Trilling & Fadel, 2009). The ability to read, write and comprehend will always be essential; however, just as important now is the ability to read and write in an online, information-rich (Kuhlthau, 2003), hyper-mediated and hyper-linked environment (Asselin, 2005; Branch & Oberg, 2001; Leu et al., 2007). Accessing prior knowledge to define a need for information and framing a search for that information (Kuhlthau, Maniotes & Caspari, 2007) are essential skills in a knowledge and information based society.

Information skills, including effective questioning skills, will be important for the 21st century learner (Kuhlthau et al., 2007; Oberg 2009), as will other search skills such as “generating search terms” (Branch & Oberg, 2001), brainstorming and concept mapping (Oberg, 2004). Students need to gain an awareness of multiple search strategies for information seeking (Geck, 2006; Hay & Todd, 2010; Islam & Murno, 2006; Valenza, 2007a) and be able to recognize where to look for information (Branch & Oberg, 2001; Sellen, 2002). Skimming and scanning for pertinent information (Branch, 2000; Branch & Oberg, 2001), paraphrasing,

summarizing, recalling and extending information (Kuhlthau et al., 2007), choosing suitable resources, knowing how to avoid plagiarism by citing and documenting references, and developing a topic by broadening and narrowing inquiry questions (Hay & Todd, 2010; Islam & Murno, 2006) are skills that will take on an even more important role in the basic and information literacy instruction of the 21st century. Indeed, in her study of high school students' inquiry learning, Oberg (2009) found that students identified “ ‘narrowing the topic’ or ‘finding keywords or search terms’ ” (p.7) as areas in which they would have preferred focused instruction.

In the 21st century, critical thinking and analysis will also be imperative skills (Asselin, et al., 2005; Asselin & Doiron, 2008; Hay & Todd, 2010; Leu, et al., 2007). Langford (2007), a proponent for critical literacy “as a subset of information literacy, . . . [argues that critical thinking skills are] more vital than ever to school curricula” (p. 250).

One important aspect of critical thinking for the 21st century is the evaluation of information (Hay & Todd, 2010; Leu, et al., 2007; Sellen, 2002). Evaluating information in the 21st century will involve the ability to recognize the quality, reliability (Geck, 2006; Hay & Todd, 2010), “authority, accuracy, timeliness and bias of a wide variety of sources” (Islam & Murno, 2006, p. 504). The Internet has not only changed the definitions of literacy and information, it has also changed how we evaluate information (Sellen, 2002). Hamilton (2009) comments that “the nature of information and the strategies for evaluating it are rapidly changing . . . disrupting many traditional, long-held concepts of authenticity” (p. 48). Breivik (2005) argues that “it has become one of education’s greatest challenges to teach students the skills needed to test the reliability, currency, and relevance of the information they find” (p. 22). Successful 21st century learners will be able to evaluate information for pertinence or relevance

to their inquiry (Branch & Oberg, 2001; Oberg, 2004), judge if it is misinformation, disinformation, opinion or fact (Langford, 2007; Sellen, 2002), and will understand the “impact of [present and emerging] technologies on the decisions and choices they make” (Sellen, 2002, p. 125).

Problem-solving skills are also an important element of learning in the 21st century. Successful 21st century learners will be able to use information to “solve problems, make decisions and create new knowledge” (Asselin & Doiron, 2008, p. 8). Trilling and Fadel (2009) define problem solving skills as the ability to “reason effectively. . . . use systems thinking. . . . make judgments and decisions [and] solve problems” (p. 52). These skills help learners approach their search for information and to define and refine their information needs (Asselin & Doiron, 2008; Lemke, 2002). Problem solving skills will also be useful in the personal lives of 21st century citizens (Sellen, 2002).

Identifying essential 21st century skills is something that many organizations have done. CASL’s *Achieving Information Literacy* (Asselin, Branch & Oberg, 2003), AASL’s *Standards for the 21st-Century Learner* (AASL, 2007), and the International Society for Technology in Education’s (ISTE) *National Educational Technology Standards and Performance Indicators for Students* (NET-S) (ISTE, 2007) are only a few examples. There exist many similarities between the standards frameworks and the essential 21st century skills identified in the literature (see *Appendix C: 21st Century Frameworks and Skills*). These similarities indicate that the skills identified are in fact going to define life and learning in the 21st century.

Teaching Information Literacy in the 21st Century

What is Inquiry?

Alberta Learning created *Focus on Inquiry* in 2004. This document presents a process approach to research and “provides supports for implementing inquiry based learning activities in the classroom” (Alberta Learning, 2004, p. ix). The document defines inquiry as:

A process where students are involved in their learning, formulate questions, investigate widely and then build new understandings, meanings and knowledge. That knowledge is new to the students and may be used to answer a question, to develop a solution or to support a position or point of view. The knowledge is usually presented to others and may result in some sort of action. (Alberta Learning, 2004, p. 1)

In the book, *Guided Inquiry: Learning in the 21st Century*, Kuhlthau et al. describe their model of inquiry. The authors define inquiry in this way:

Inquiry is an approach to learning whereby students find and use a variety of sources of information and ideas to increase their understanding of a problem, topic or issue. It requires more of them than simply answering questions or getting the right answer. It espouses investigation, exploration, search, quest, research, pursuit and study. (Kuhlthau et al., 2007, p. 2)

The authors argue that this process is complex and is best learned by students being guided through each step of the process. According to Kuhlthau et al., “Guided Inquiry requires careful planning, close supervision, ongoing assessment, and targeted intervention by an instructional team of school librarians and teachers” (2007, p.3).

In *Building Guided Inquiry Teams for 21st Century Learners*, Kuhlthau and Maniotes describe the idea of a team approach to teaching guided inquiry. The authors’ explain that this

approach is best “because the implementation of learning through inquiry is complex and multifaceted, [thus] it takes a team to teach and assess” (Kuhlthau & Maniotes, 2010, p. 2). It is for this reason that Kuhlthau consistently recommends a three-member team comprised of a classroom teacher, a teacher-librarian and one other teacher who brings some other expertise to the inquiry experience (Kuhlthau, 2010; Kuhlthau & Maniotes, 2010, Kuhlthau et al., 2007).

Inherent in both inquiry-based learning and the guided inquiry model are constructivist ideals about how children learn (Alberta Learning, 2004; Kuhlthau et al., 2007; Kuhlthau, 2010) as well as metacognition skills (Alberta Learning, 2004). Kuhlthau et al. (2007) indicate that “a constructivist approach . . . [involves students] in an active process of constructing deep understanding. . . . [and] builds knowledge by engaging students in stimulating encounters with information and ideas” (p. 14). This allows students to construct knowledge from their inquiries rather than “approach the process as a simple collecting and presenting assignment that leads to copying and pasting with little real learning” (Kuhlthau, 2010, p. 4).

With regards to metacognition, the document *Focus on Inquiry* notes that “in the inquiry process, metacognition means becoming aware of one’s own thinking processes (thinking about thinking) and acknowledging and understanding the feelings associated with each of the phases” (Alberta Learning, 2004, p. 3). Teaching students metacognitive skills also allows for the identification of timely interventions by teachers with regards to skills and knowledge that students need along the way (Kuhlthau et al., 2007). Metacognitive skills also help students persevere through an inquiry process that can include strong feelings such as “enthusiasm, apprehension, frustration and excitement” (Alberta Learning, 2004, p. 8). This is why most models for inquiry-based learning include an affective domain as well as a cognitive domain. According to *Focus on Inquiry*, it is important for students to understand and be “taught that

these feelings are a normal part of the inquiry process, experienced by all inquirers” (Alberta Learning, 2004, p. 8).

There are currently many models for inquiry in place in Canadian provinces (see *Appendix D: Inquiry Models in Canada* for a comparison of these models). Each of these models or frameworks is slightly different; however, they all include similar stages in the inquiry process. These frameworks also recognize that inquiry is not a linear or sequential process but in fact it is cyclical and at times messy. Interestingly, all the models also mention skills associated with 21st century learning.

Guided Inquiry, Information Literacy and 21st Century Skills

Using a systematic approach to teaching inquiry helps students gain the knowledge and skills they need for the 21st century (Alberta Learning, 2004; Kuhlthau et al., 2007; Kuhlthau, 2010). In fact, Kuhlthau argues that “inquiry is a way of learning new skills and knowledge for understanding and creating in the midst of rapid technological change. . . . [and that] guided inquiry is a way of learning that accomplishes the objectives of 21st century schools” (2010, pp. 2-3). “The ultimate goal [of guided inquiry] is to develop independent learners who know how to expand their knowledge and expertise through skilled use of a variety of information sources employed both inside and outside the school” (Kuhlthau et al., 2007, p. 3).

Carol Kuhlthau has been researching and writing about the Information Search Process for over 20 years (Kuhlthau, 2003) and is considered an expert in her field. In *Guided Inquiry: Learning in the 21st Century*, Kuhlthau and her co-authors Maniotes and Caspari (2007), dedicate an entire chapter to “Information Literacy through Guided Inquiry” (pp. 77-91). In this chapter the authors discuss the information literacy standards of the AASL and state that “guided inquiry takes [these standards] into account. . . . [and in fact] augments these in several important ways”

(Kuhlthau et al., 2007, p. 79). The authors claim that “Guided Inquiry takes a concept approach to information literacy. . . [and] that it integrates these information literacy concepts into inquiry units in the same way that curriculum standards are met through inquiry learning” (Kuhlthau et al. 2007, p. 79). The rest of the chapter is dedicated to detailing the various concepts of inquiry that relate to information literacy, specifically “concepts for locating, evaluating and using information” (Kuhlthau et al., 2007, pp. 79-90), finally concluding that “Guided Inquiry prepares students for living in the technological information society” (p. 91).

In *Guided Inquiry: School Libraries in the 21st Century*, Kuhlthau (2010) summarizes the reasons that Guided Inquiry is ideal for teaching information literacy and 21st century skills. She specifically notes “five kinds of learning [that] are accomplished through inquiry: information literacy, learning how to learn, curriculum content, literacy competence and social skills” (Kuhlthau, 2010, p. 6). In another article written in 2003, Kuhlthau notes that “inquiry underlies information literacy” (p. 3) and lists the abilities that students will need in order to be successful in the 21st century, which mirror those already identified above. Again she emphasizes that “these abilities are developed through engaging in inquiry as a way of learning” (Kuhlthau, 2003, p. 4). Guided inquiry offers a promising approach for teaching information literacy skills and for ensuring that essential skills are deeply embedded in learning for 21st century learners.

What is the Role of the 21st Century Teacher-Librarian?

Teacher-Librarian as Instructional Leader

While many other roles and responsibilities for teacher-librarians are identified in the literature, it is apparent that the 21st century teacher-librarian must first be a qualified teacher (Asselin, 2001; Church, 2008; Hay & Todd, 2010; Mikalishen, 2001; Mokhtar, Foo, & Majid, 2007; Oberg, 2003, 2004, 2010). Equally important, according to much of the literature

reviewed here, is that teacher-librarians need to have extra qualifications in the specific field of teacher-librarianship in order to be the most effective in their positions (Asselin, 2001; Doiron & Davies, 1997; Kirkland, 2010; Miller, 2004; Mokhtar et al., 2007; Oberg, 2010; Todd, 1995; Whitehead & Quinlan, 2002). In fact, Asselin, Branch and Oberg (2003) note that not only are teacher-librarians “qualified teachers with additional training and expertise in school librarianship and information literacy,” (p. 7) but they also note that “a minimum of two years of successful classroom experience” (p. 84) is necessary for the role of teacher-librarian. Additionally, Kirkland (2010) suggests it is a teacher-librarian’s professional duty “to be informed and knowledgeable about the great shifts that are taking place in the technology and context of information today” (p. 74). It is for these reasons that all subsequent uses of the term “teacher-librarian” in this paper will refer to a teacher-librarian who is a qualified teacher, has additional qualifications in teacher-librarianship and has at least two years of successful classroom experience.

It is important to note that it is through the process of obtaining additional qualifications that teacher-librarians become instructional leaders in the school. In fact, teacher-librarians are expected to take on a leadership role in schools with regards to using best practices and proven instructional strategies (Church, 2008; Hay & Todd, 2010; Killeen, 2009; Kirkland, 2010; Mikalishen, 2001) such as collaborating, co-teaching and co-planning (Asselin, 2001; Church, 2008; Doiron & Davies, 1997; Hay & Todd, 2010; Killeen, 2009; Kuhlthau & Maniotes, 2010; Mikalishen, 2001; Oberg, 2003, 2004, 2010; Riedling, 2001) and integrating technology (Asselin, et al., 2005; Doiron & Davies, 1997; Hay & Todd, 2010; Killeen, 2009; Oberg, 2003).

Teacher-Librarian as Expert on Inquiry and Information Literacy

Qualified teacher-librarians also take on a leadership role with regards to inquiry-based learning and information literacy (Ekdahl, 2010; Hay & Todd, 2010; Kirkland, 2010; Kuhlthau, 2010; Kuhlthau et al., 2007). Teacher-librarians are experts in the ways in which to teach students to be information literate for the 21st century (Branch & Oberg, 2001; Church, 2008; Doiron & Davies, 1997; Hay & Todd, 2010; Killeen, 2009; Kuhlthau et al., 2007; Kuhlthau, 2010; Mokhtar, et al., 2007; Oberg, 2004; Riedling, 2001). “School librarians have the state-of-the-art technical and pedagogical expertise to engage 21st century learners through Guided Inquiry” (Todd & Gordon, n.d., p. 3). This expertise is leveraged by teacher-librarians to enable students to master information literacy skills and essential 21st century skills through the inquiry process.

Asselin, et al. (2005), in their examination of multiple Canadian studies about the instruction and assessment of information literacy, noted that “teacher-librarians need to reposition themselves as leaders of the new literacies required for ... the Internet and ICT. In particular there is a strong need for instructional leadership in . . . assessment and evaluation of all aspects of the new literacies of the Information Age” (p. 13). Hay and Todd’s (2010) study on 21st century school libraries supports this assertion, finding that the teacher-librarian “was identified as a key person in leveraging emerging technologies – trialing, taking risks, modeling and mentoring teachers and students” (p. 15). The authors then recommend that teacher-librarians “recast their primary role and function as supporting student inquiry and engagement with critical literacies” (Hay & Todd, 2010, p. 43).

Teacher-Librarian as Professional Leader

Teacher-librarians of the 21st century are professional leaders. As a professional leader, the teacher-librarian provides professional development for teachers, administrators, parents, and other teacher-librarian colleagues on key issues relating to 21st century learners, essential 21st century skills, information literacy, guided inquiry and often on the use and integration of technology or web 2.0 tools (Anderson, 2000; Asselin, 2001, 2004; Branch & Oberg, 2001; Church, 2008; Doiron & Davies, 1997; Hay & Todd, 2010; Killeen, 2009; Oberg, 2003; Riedling, 2001; Zmuda & Harada, 2008). Teacher-librarians who are considered professional leaders usually belong to or are involved in professional organizations (Asselin, 2001; Branch & Oberg, 2001; Killeen, 2009; Riedling, 2001), and are active members of leadership teams or committees at the school, division, and even the provincial level (Anderson, 2000; Asselin, 2001; Branch & Oberg, 2001; Hay & Todd, 2010; Killeen, 2009; Riedling, 2001; Zmuda & Harada, 2008). These teacher-librarian leaders often stay abreast of current research. They may even engage in action research and put that research into practice (Branch & Oberg, 2001; Hay & Todd, 2010; Riedling, 2001). A teacher-librarian who is a professional leader is an agent for change in the school, division or province (Hamilton, 2009; Oberg, 2010; Zmuda & Harada, 2008).

Summary

How is information literacy defined in the 21st century? Through my review of selected literature, I found that information in the knowledge age of the 21st century is no longer static, nor is it something that someone can own or necessarily trust. Information is ever changing and highly contextual. Furthermore, seeking information has become a process by which the seeker experiences greater transformation from that process than from the attainment of knowledge.

Similarly, literacy in the knowledge age has moved well beyond reading and writing. To be literate in the 21st century one must be able to access, comprehend and communicate with digital media as well as print media. “Although information literacy figures prominently in descriptions of 21st century education, other ‘new’ literacies are integral to new school library programs as well, thus creating a ‘literacy of fusion’ ” (Asselin & Doiron, 2008, p. 10). Information literacy is consequently transformed in the 21st century to a fusion of multiple literacies needed to function and succeed in the 21st century.

What is unique about 21st century learners? Many authors agree that students in the 21st century appear to be technologically savvy. However, a number of articles and studies I examined suggest that these things do not contribute to 21st century learners’ information literacy. Students are often ill prepared for the information demands of college or university, often unwittingly put themselves at risk online and are often unable to effectively evaluate the information they find and use.

What skills are essential for success in the 21st century? According to the literature that has been examined and highlighted, the following interrelated and interdependent categories will be imperative for 21st century learners to master: basic literacy; information skills; critical thinking skills; creativity and innovation skills; collaboration and teamwork skills; multimedia skills; technology skills; ethical thinking skills; and skills for lifelong learning. These categories cross all boundaries in the fusion of literacies that has come to be defined as information literacy. To become successful in the 21st century “students will not only need to master reading and writing, but also learn how to communicate – to compose, to problem solve, and understand” (McPherson, 2008, p. 37).

What is the role of inquiry-based learning in information literacy programming? A number of authors reviewed in the literature review have indicated that the inquiry process and inquiry-based learning are excellent ways to teach both information literacy and essential 21st century skills such as those listed in the above noted categories.

What is the role of the 21st century teacher-librarian? A teacher-librarian who is qualified can most effectively become an instructional leader by utilizing and demonstrating best practices and current instructional strategies. This instructional leadership that many qualified teacher-librarians exhibit extends to an expertise with inquiry-based learning and teaching 21st century skills to 21st century learners. Additionally, I found that qualified teacher-librarians are often professional leaders who share their expertise in the areas of inquiry and 21st century skills with colleagues, allowing all members of the school to benefit from said expertise through collaboration on inquiry projects or through professional development provided by the teacher-librarian.

REFLECTIONS

Initial Thoughts

One of the most significant things I learned from my review of the literature is the fact that the multiple literacies that now define information literacy mirror almost exactly the categories of skills identified as essential for success in the 21st century (see *Appendix E: Information Literacy and Essential Skills*). This leads me to determine that information literacy not only encompasses all of these essential skills, but that it is a necessary component of 21st century education. If, as the literature I reviewed suggests, inquiry-based learning is an effective way to teach information literacy, and if, as the literature suggests, qualified teacher-librarians are more likely to be experts in teaching information literacy and inquiry-based learning, then it

follows that teacher-librarians will be an essential component of the education system in the 21st century.

Knowing that our role is so important is reassuring. In fact, the literature review has provided me with ammunition for dealing with the wrongly held belief that the Internet will cause teacher-librarians to become obsolete. However, now the question becomes how can Manitoba teacher-librarians do the job we clearly are supposed to be doing if we have no framework in this province that governs information literacy? Also, how can we justify our necessity if no scholarly study on the impacts of teacher-librarians in schools has been conducted here in Manitoba? It is difficult to convince school boards and administrators of the importance of having a qualified teacher-librarian on staff and teachers of the importance of working with a qualified teacher-librarian if there is no explicitly mandated curriculum document or any specific provincial evidence that supports our role. All that we can do is work within the existing curriculum structure while at the same time advocate for either a revision of current curriculum or the creation of a new document for inquiry and information literacy.

In the following sections I will reflect on the implications of the literature review for our particular situation in Manitoba. I will examine the Manitoba curriculum and the *Literacy with ICT Continuum* (MECY, 2006b) for specific references to inquiry and information literacy as they have been defined above. Implications for the various stakeholders here in Manitoba will be noted.

The Manitoba Context

Every Manitoba curriculum document includes an explanation of the vision and beliefs about teaching that particular content area as well as a description of the important learning that is central to that subject prior to the listing of general and specific outcomes. Each of the

Science curriculum, Social Studies curriculum and English Language Arts curriculum include comments about constructivist ideals and include some type of inquiry, problem solving and/or information literacy skills. For example, the Science curriculum (Manitoba Education and Training [MET], 2000) includes a cluster of specific learning outcomes known as Cluster Zero which includes the scientific processes common across all scientific genres. This cluster contains scientific inquiry, problem solving and decision making processes through an inquiry based approach. In addition, the English Language Arts curriculum (MET, 1998) dedicates a whole General Learning Outcome (GLO) to information management and also promotes the use of inquiry-based learning. Finally, the Social Studies curriculum (MECY, 2006a) includes a skills component that is essentially a list of information literacy skills and also encourages the use of inquiry for learning social studies concepts.

Our curriculum documents are either brief frameworks, or comprehensive foundation documents that include details about each outcome. These documents include examples of what the learning outcome looks like, suggestions for instruction, suggestions for assessment and suggestions for resources. However, in no curriculum document is there a specific section where suggestions for technology integration or inquiry-based learning opportunities are included. Instead inquiry, technology integration, and the information literacy skills that accompany this integration, are lumped into the suggestions for instruction.

While it is apparent that curriculum documents in Manitoba do incorporate inquiry based learning and information literacy as essential elements of the outcomes, strategies and skills students must master, none of the curriculum documents I examined mentioned the teacher-librarian or the school library program. Incredibly, when inquiry is suggested as a strategy, there is no mention of the teacher-librarian or the school library. Inquiry and information literacy

instruction already exist in our curriculum frameworks, however perhaps a more explicit document would ensure inquiry and information literacy skills are being addressed more effectively. The findings of the literature review clarify that of all the personnel in the school system, the teacher-librarian is best prepared to help teachers address the inquiry and information literacy outcomes already included in our curriculum documents.

The Literacy with ICT Continuum in Manitoba Curriculum

The only curriculum document that comes close to governing the role of teacher-librarians in Manitoba schools is the *Literacy with ICT Continuum* (MECY, 2006b) that was created to guide technology integration in our province. The document uses many terms and phrases that teacher-librarians are familiar with, such as, “a process of inquiry across the curriculum,” (MECY, 2006b, p. 8), “inquiry model,” (p. 9 & 11), “constructivist learning,” (p. 13), “critical and creative thinking,” (p. 14), “gradual release of responsibility,” (p. 16), “digital citizenship,” (p. 17) and “multiple literacies for the 21st century,” (p. 18). The *Literacy with ICT Continuum* (MECY, 2006b) is organized using an inquiry based framework and is infused with inquiry concepts and strategies. In fact, the inquiry model was one of the models used to frame the continuum (MECY, 2006b).

Although this document clearly describes information literacy in the 21st century, the term “information literacy” is not included once. Instead the document defines literacy with ICT as “choosing and using ICT, responsibly and ethically, to support critical and creative thinking about information and about communication across the curriculum,” (MECY, 2006, p. 8). Interestingly, the definition of “literacy with ICT” used by MECY is similar to the definition of “information literacy” provided by Asselin, Branch and Oberg (2003) in *Achieving Information Literacy*.

The *Literacy with ICT Continuum* (MECY, 2006b) is a developmental continuum and thus does not include general or specific outcomes for Literacy with ICT, inquiry-based learning or information literacy. Instead it provides a continuum of behaviors that teachers can assess through observation. Unfortunately, this means there are no mandated outcomes that are clearly associated with information literacy, nor are there any suggestions for ways to integrate the continuum, or teach and assess the skills and knowledge associated with the it. Although an extensive website was created to provide further support and resources for teachers, this site does not include outcomes, nor does it mention the teacher-librarian as a resource or expert in information literacy. The rationale given for the lack of specific learning outcomes is that because the document is required to be “infused with existing concepts across the curriculum” (MECY, 2006b, p. 9) it doesn’t need its own separate curriculum. However, without specifically mandated outcomes, it becomes possible for teachers to overlook the importance of information literacy and subsequently the importance of the role of the teacher-librarian.

MECY (2007) created and published a curriculum framework for high school students titled *Senior Years Information and Communication Technology* (ICT). This document suggests ways to continue the *Literacy with ICT Continuum* (MECY, 2006b) into the high school setting. The courses Applying ICT 1 and Applying ICT 2 are specifically intended to continue the *Literacy with ICT Continuum* (MECY, 2006b) into the high school. This document includes outcomes and an integrated inquiry process. It is a better example of how an information literacy curriculum could look in our province.

The *Literacy with ICT Continuum* (MECY, 2006b) focuses on technology integration as a means of teaching our students in the 21st century, but does not explicitly identify that technology integration must be accompanied by information literacy skills. Technology is

merely a tool and students need to know how to use that tool effectively and appropriately. As a result of my examination of selected literature, I believe Literacy with ICT cannot be accomplished without information literacy. Although the *Literacy with ICT Continuum* (MECY, 2006b) includes an affective domain to address ethics, social responsibility, collaboration and motivation, it does not consider the more emotional aspects of the information search process, inquiry process and of using ICT as described by Kuhlthau et al. (2007).

To help implement the *Literacy with ICT Continuum* (MECY, 2006b) at the school level, MECY sought out “technology leaders” or those who either had an interest or demonstrated skill in technology integration. Unfortunately, the strategy of targeting “technology leaders” did not recognize the knowledge and expertise of as teacher-librarians as an asset for the implementation process. In fact, the funding for the implementation of this document went directly to the technology departments of school divisions, ensuring that teacher-librarians were not involved in any implementation efforts.

Implications of the Literature Review

Implications for Teacher-Librarian Scholarship in Manitoba

When collecting literature for the literature review I found:

- There were few scholarly articles on teacher-librarianship or the impacts of teacher-librarians in schools written by Manitoba authors or about Manitoba situations.

The implication of this is that:

- Teacher-librarians in Manitoba would benefit from Manitoba based scholarly study on the impacts of teacher-librarians in schools.

Implications for Curriculum Development in Manitoba

The literature review revealed:

- Information literacy in the 21st century is a fusion of literacies that encompass all other literacies.
- Technology skill doesn't necessarily translate into being information literate and many 21st century learners need explicit instruction in information literacy.
- Essential 21st century skills can be placed in categories that closely mirror the multiple literacies identified as being a part of information literacy in the 21st century.
- Inquiry based learning is an excellent way to teach information literacy.
- Teacher-librarians in the 21st century are qualified teachers with additional training and classroom experience many of whom have expertise with inquiry-based learning and teaching information literacy to 21st century learners.

The implications of this are:

- Teachers and students would benefit from a revision the *Literacy with ICT Continuum* (MECY, 2006b) to specifically and explicitly identify information literacy outcomes and the role of the teacher-librarian.
- Teachers and students would benefit from the creation of a foundation document for information literacy that provides suggestions for infusion, instruction and assessment of information literacy through inquiry.
- Teachers and students would benefit from suggestions for collaboration between teacher-librarians and teachers on inquiry and information literacy instruction in future curriculum development.
- Manitoba Education and Literacy would benefit from the expertise of qualified teacher-librarians when revising or creating new curriculum documents in Manitoba.

- All stakeholders would benefit from the creation of a position at Manitoba Education and Literacy that specifically relates to information literacy and 21st century literacies with a qualified teacher-librarian in the role.
- All stakeholders would benefit from linking the *Literacy with ICT Continuum* (MECY, 2006b) to the role of teacher-librarian.

Implications for Teacher-Education Programs in Manitoba

The literature review noted:

- Net Geners are currently between the ages of 11 and 31 indicating that many current teachers and new graduates from Education faculties in Manitoba are 21st century learners.
- Although Net Geners seem technologically savvy, they may not possess information literacy skills.
- Inquiry based learning is as an excellent way to teach information literacy skills to 21st century learners.

The implications of this are that:

- Teacher candidates would benefit from the inclusion of an information literacy course in their program of studies.
- Teacher candidates would benefit from the inclusion of an inquiry-based learning course in their program of studies.
- Teacher candidates would benefit from learning how to work with a teacher-librarian on a collaboratively planned and taught inquiry-based learning experience.

Implications for Manitoba School Divisions

The literature review indicated:

- In many cases qualified teacher-librarians demonstrate expertise in areas such as instructional leadership, knowledge of inquiry-based learning and information literacy and providing professional development to teachers.

The implications of this are:

- All stakeholders would benefit from having a qualified teacher-librarian in every school.
- All stakeholders would benefit from having a qualified teacher-librarian at the divisional level to address the information literacy needs of the school division as a whole.

Implications for Teacher-Librarians in Manitoba

The literature review established:

- Teacher-librarians are qualified teachers with previous successful classroom experience.
- Teacher-librarians need additional qualifications to be effective in their job.
- Qualified teacher-librarians are often instructional leaders who model best practices.
- Qualified teacher-librarians are often professional leaders who provide professional development opportunities for school staff.

The implications of this are:

- Teacher-librarians would benefit from developing a personal professional development plan that allows them to gain expertise with inquiry-based learning, information literacy skills in the 21st century, and the needs of 21st century learners.
- Teacher-librarians would benefit from staying abreast of current literature. See *Appendix F: Selected Professional Resources for Teacher-Librarians*.

- Teacher-librarians who may not already have a certificate, diploma or Master's degree in teacher-librarianship would benefit from seeking out higher learning opportunities related to their teacher-librarian role.

Implications for the Manitoba School Library Association

The literature review showed:

- A qualified teacher-librarian has additional training in school-librarianship and information literacy as well as successful classroom experience.

The implications of this are that:

- Teacher-librarians in Manitoba would benefit from a definition of “qualified” within the contexts of the situation in Manitoba which was then shared with Manitoba Education and Literacy and senior school division staff.
- Teacher-librarians in Manitoba would benefit from a Teacher-Librarian Certificate program that would allow them to obtain the qualifications for their job through targeted professional development combined with university course work.

Final Thought

The two most important things I learned from this inquiry are that the role of the teacher-librarian in the education system of the 21st century is a vital one and that a strong case can be made for having teacher-librarians in every school in Manitoba.

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APPENDICES

Appendix A: Characteristics of 21 st Century Learners	49
Appendix B: Essential 21 st Century Skills Identified in the Literature	50
Appendix C: 21 st Century Frameworks and Skills	53
Appendix D: Inquiry Models in Canada.....	54
Appendix E: Information Literacy and Essential Skills	55
Appendix F: Selected Professional Resources for Teacher-Librarians	56

APPENDIX A

Characteristics of 21st Century Learners

Tapscott's Eight Norms of "Net Geners"	Asselin & Doiron's New Learners
Freedom	Multi-tasking, multi-modal, multi-resourcing
Customization	Personal Landscape Creators
Scrutiny	A force for social transformation
Integrity	Passionately Tolerant
Collaboration	Connectivity and community
	Interactive participants
Entertainment	An economic force
Speed	Take Action Approach
Innovation	Early Adopters
	Learn by doing

Note. Adapted from Asselin and Doiron (2008) and Tapscott (2009).

APPENDIX B

Essential 21st Century Skills Identified in the Literature

Category	Skills
Basic Literacy Skills	<ul style="list-style-type: none"> • Read, write, listen, speak and comprehend various forms and genres • Read, write, listen, speak and comprehend in hyper-mediated, hyper-linked environment • Brainstorm and create concept maps • Skimming and scanning • Paraphrasing, summarizing, recalling, and extending • Decipher meaning
Information Skills	<ul style="list-style-type: none"> • Assess prior knowledge • Define needs for information • Framing a search for information • Recognize where to look for information • Ask effective and relevant questions • Generate search terms and keywords • Be aware of and perform and use multiple search strategies • Choosing suitable resources for information needs • Access a variety of types and resources • Cite and document references to avoid plagiarism • Narrow and broaden inquiry questions • Navigate and browse the internet effectively
Critical Thinking and Problem Solving Skills	<ul style="list-style-type: none"> • Evaluate information for quality, reliability, authority, accuracy, timeliness, and bias • Recognize relevance and pertinence of information to an inquiry • Recognize fact, opinion, misinformation, disinformation and propaganda • Understand the impact of information on the decision making process • Think critically about information by questioning its intent and assessing how it fits with what is already known • Use information to solve problems and create new knowledge • Know and use multiple and varied problem solving strategies • Use information to make judgement and decisions • Reason effectively

Creativity and Innovation Skills	<ul style="list-style-type: none"> • Use creativity when seeking, accessing and creating information • Be open to new ideas • View failure as an opportunity • Act on creative ideas • Use information and knowledge in creative and innovative ways • Express ideas through a variety of forms and media • “Decipher, interpret and express ideas using images, graphics, icons, charts, graphs and video” (Lemke, 2002, p. 13) • Use visualization tools to represent and communicate ideas, data and learning
Collaboration and Teamwork Skills	<ul style="list-style-type: none"> • Communicate effectively using a variety of communication modes and methods • Understand the best form and format to communicate the desired message to a particular audience • Collaborate virtually and digitally • Have knowledge of multiple Web 2.0 tools to facilitate ease of digital and virtual collaboration • Appreciate the diversity of people and cultures (Lemke, 2002) • Cooperate to achieve a goal • Strategize to divide work load • Solve problems and conflict within the group • Work collaboratively in person AND at a distance
Multimedia Skills	<ul style="list-style-type: none"> • Use multimedia tools in new and creative ways • Use multimedia to extend and expand understanding • Use multimedia tools to create new meaning • Use multimedia to communicate to various different audiences • Use multimedia appropriately for selected audiences • Use multimedia in collaboration with others
Technology Skills	<ul style="list-style-type: none"> • Have an understanding of technological systems and operations • Able to work with multiple and varied technologies • Apply technology skills in the context of learning and solving problems • Adapt to new technological situations and systems with ease • “Transfer current knowledge to learning of new technologies” (ISTE, 2007) • Understand the benefits and applications of certain software, hardware and various other technologies • Choose the appropriate technology for the task

	<ul style="list-style-type: none"> • “Select and use applications effectively and productively” (ISTE, 2007) • Use technology to solve problems • Troubleshoot technological problems
Ethical Thinking Skills	<ul style="list-style-type: none"> • Consider how information and data are obtained and can be obtained ethically • Consider how information and data can be used ethically • Apply ethical thinking when searching, using, communicating, remixing and reusing information • Cite sources appropriately • Consider privacy and ownership when using images, information, video, audio and other multimedia • Consider the impacts of one’s actions when using, reusing and remixing information • “Develop respect for open source and open knowledge principles which allow for equitable distribution and access to knowledge for all” (Asselin & Doiron, 2008, p. 9)

Note. Adapted from Asselin and Doiron (2008), ISTE (2007), Lemke (2002), OECD (2009) and Trilling and Fadel (2009).

APPENDIX C

21st Century Frameworks and Skills

<i>Achieving Information Literacy</i> CASL (2003)	<i>Standards for the 21st-Century Learner</i> AASL (2007)	NET-S ISTE (2007)	Skills Identified as Being Essential for 21 st Century Success
1. Uses Information with Aesthetic Appreciation.	1. Inquire, think critically and gain knowledge.	1. Creativity and Innovation.	Basic literacy skills
2. Uses Information Responsibly.	2. Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.	2. Communication and Collaboration.	Information skills
3. Uses Information Respectfully.	3. Share knowledge and participate ethically and productively as members of our democratic society.	3. Research and Information Fluency	Ethical thinking skills
4. Uses Information Critically.	4. Pursue personal and aesthetic growth.	4. Critical Thinking, Problem Solving, and Decision Making.	Critical thinking skills
5. Uses Information Strategically.		5. Digital Citizenship.	Multimedia skills
6. Uses Information for Decision-Making.		6. Technology Operations and Concepts.	Collaboration and teamwork skills
7. Uses Information Expressively			Creativity and innovation skills
8. Uses Information and Media Tools with Technical Competence.			Technology skills
			Skills for lifelong learning

Note. The standards frameworks above can be found online:

Achieving Information Literacy (CASL, 2003): <http://www.clatoolbox.ca/casl/slic/ail110217.pdf>

Standards for the 21st-Century Learner (AASL, 2007):

http://www.ala.org/ala/mgrps/divs/aasl/guidelinesandstandards/learningstandards/AASL_Learning_Standards_2007.pdf

The ISTE National Educational Technology Standards (NET-S) and Performance Indicators for Students (ISTE, 2007): http://www.iste.org/Libraries/PDFs/NETS_for_Student_2007_EN.sflb.ashx

APPENDIX D

Inquiry Models in Canada

Guided Inquiry Kuhlthau, Maniotes & Caspari (2007)	Focus on Inquiry Alberta Learning (2004)	A Model for Inquiry OSLA (2010)	Points of Inquiry BCTLA (2011)	Literacy with ICT MECY (2006)
Initiating	Planning	Exploring	Connect and Wonder	Plan and Question
Exploration	Retrieving	Investigating	Investigate	Gather and Make Sense
Formulation	Processing	Processing	Construct	Produce to show Understanding
Create	Creating	Creating	Express	Communicate
Communicate	Sharing			
Reflect	Evaluating		Reflect	Reflect

Note. The models above can be found online:

Focus on Inquiry (Alberta Learning, 2004): <http://education.alberta.ca/media/313361/focusoninquiry.pdf>

A Model for Inquiry (OSLA, 2010, p. 23 & pp. 44-51):
http://www.accessola.com/data/6/rec_docs/677_OLATogetherforLearning.pdf

Points of Inquiry BCTLA (Ekdahl et al., 2011):
<http://bctf.ca/bctla/pub/documents/Points%20of%20Inquiry/PointsofInquiry.pdf>

Literacy with ICT Continuum (MECY, 2006b): <http://www.edu.gov.mb.ca/k12/tech/lict/>

APPENDIX E

Information Literacy and Essential Skills

Fusion of Literacies Identified as Information Literacy	Skills Identified as Being Essential for 21 st Century Success
Functional & basic literacy	Basic literacy skills
Traditional information literacy	Information skills
Emotional literacy	
Critical literacy (problem-solving & ethics)	Critical thinking skills
Media literacy	Ethical thinking skills
Multi-modal or multi-media literacy	Multimedia skills
	Creativity and innovation skills
Technology literacy	Technology skills
Global literacy	Collaboration and teamwork skills
Life-long learning	Skills for lifelong learning

Note. Adapted from *Appendix B: Essential 21st Century Skills Identified in the Literature* and AASL (2007), Asselin et al. (2005), Branch and Oberg (2001), Breivik (2005), Hamilton (2009), Hay and Todd (2010), Langford (1998 & 2007), Leu et al. (2007), McPherson (2008) and Oberg (2004).

APPENDIX F

Selected Professional Resources for Teacher-Librarians

Selected Articles

- Asselin, M., & Doiron, R. (2008). Towards a transformative pedagogy for school libraries 2.0. *School Libraries Worldwide*, 14(2), 1-18. Retrieved from <http://www.iasl-online.org/pubs/slww/>
- Ekdahl, M. (2010). The points about inquiry, and there are many. In C. Koechlin (Ed.), *Leading journeys: Papers of treasure mountain Canada research retreat, Edmonton, Canada, June 2-3, 2010* (105-114). Salt Lake City, UT: Hi Willow Research and Publishing.
- Kuhkthau, C. C. (2010). Guided inquiry: School libraries in the 21st century. *School Libraries Worldwide*, 16(1), 1-12. Retrieved from <http://www.iasl-online.org/pubs/slww/>
- Ontario School Library Association. (2010). *Together for learning: School libraries and the emergence of the learning commons*. Toronto, Canada: Ontario Library Association
- Valenza, J. (2007b). You know you're a 21st century teacher-librarian if . . . In E. Rosenfeld & D. V. Loertscher (Eds.), *Toward a 21st-century school library media program* (pp. 104-107). Lanham, MD: Scarecrow Press, Inc.

Selected Books

- Alberta Learning. (2004). *Focus on inquiry: A teacher's guide to implementing inquiry-based learning*. Edmonton, Canada: Author.
- Alberta's inquiry document. Find it online here:
<http://education.alberta.ca/media/313361/focusoninquiry.pdf>
- Palfrey, J., & Gasser, U. (2008). *Born digital: Understanding the first generation of digital natives*. New York, NY: Basic Books.
- See a description of this book on the publisher's website here:
http://www.perseusbooksgroup.com/basic/book_detail.jsp?isbn=0465018564
- Tapscott, D. (2009). *Grown up digital: how the net generation is changing your world*. New York, NY: McGraw Hill.

See a description of this book on the author's website here: <http://dontapscott.com/books/grown-up-digital/>

Trilling, B., & Fadel, C. (2009). *21st century skills: Learning for life in our times*. San Francisco, CA: Jossey-Bass.

See a description of the book and find additional resources on the 21st Century Skills website here: <http://www.21stcenturyskillsbook.com/>

Selected Professional Journals

School Library Journal: <http://www.schoollibraryjournal.com/>

Teacher-Librarian: <http://www.teacherlibrarian.com/>

VOYA (Voices of Youth Advocates): <http://www.voya.com/>

School Libraries Worldwide: <http://www.iasl-online.org/pubs/slw/>

School Libraries in Canada: <http://www.clatoolbox.ca/casl/slic/>

School Library Media Research:

<http://www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/slmrb/schoollibrary.cfm>