UNIVERSITY OF ALBERTA

LIBRARIES: THE PLACE TO FOSTER INQUIRY AND CURIOSITY IN ISOLATED, RURAL SCHOOLS

Sandra P. Gunson

This Capping Course Document is Submitted in Partial

Fulfillment of the Requirements for the Degree of

MASTER OF EDUCATION

DEPARTMENT OF ELEMENTARY EDUCATION

EDMONTON, ALBERTA

Winter, 2010

UNIVERSITY OF ALBERTA

RELEASE FORM

NAME OF AUTHOR: SANDRA P. GUNSON

TITLE: LIBRARIES: THE PLACE TO FOSTER INQUIRY AND CURIOSITY IN ISOLATED, RURAL SCHOOLS

DEGREE: MASTER OF EDUCATION

YEAR THIS DEGREE GRANTED: 2010

Sandra P. Gunson (Nee Prestwich)
7700 Duval Ave.
Port Hardy, B.C.
V0N 2P0
Canada

Date: April 15, 2010

UNIVERSITY OF ALBERTA

DEPARTMENT OF ELEMENTARY EDUCTAION

The Undersigned Certify That They Have Read, And Accept The Document Entitled

"Libraries: The Place to Foster Inquiry and Curiosity in Isolated, Rural Schools"

Submitted by: Sandra P. Gunson

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

_____

Dr. Julia Ellis

Capping Course Instructor

April, 15, 2010

Dedication

This paper is dedicated to my dad, Thomas Alexander Prestwich, whose endless enthusiasm, patience, love, appreciation of life, and curiosity about the world gently nurtured my thirst for knowledge and impacted my desire to be a life-long learner. Dad, your passion for learning lives on through the thousands of students whose curiosity I have nurtured throughout my teaching career. Thank you.

June 28, 1924 – November 16, 2007

Acknowledgements

To my mom Patricia Prestwich, and son Alexander Gunson, thank you for your support, encouragement and understanding, It has been a long journey.

To Mark Walther, thank you for your love, compassion, positive thoughts, and for always believing in me.

To my colleagues and instructors in the TLDL program at the University of Alberta, thank you for sharing your expertise, questions, and suggestions in such a caring, supportive manner. I will miss the leadership, online interaction, and friendships developed over the years.

To my amazing reading partners— Joanie Proske, Arlis Folkerts, Diana Maliszewski, Robin van Gessel, and Kathleen McArthur— who worked so diligently throughout this capping experience. I can not thank you deeply enough for your academic and emotional support, time and suggestions.

To Dr. Marie-Claire Shanahan who believed in my potential, encouraging my inquiry and divergent thinking. To Dr. Julia Ellis who propelled my writing to new levels of competence and challenged me to create a new personal best.

To my principal, George Markides, and staff at Eagle View Elementary school who have demonstrated constant support, interest, and understanding during the duration of my Master's program.

Finally, to my students whose wonderment, excitement, questions, observations and insights illuminate and inspire me as an educator. You are the reason I selected this profession.

TABLE OF CONTENTS

Table of Contents 5

Introduction 7

My personal journey in inquiry 7

Early childhood teaching experiences 7

Different expectations in higher grades 8

Change in assignment—Becoming a Teacher-Librarian 9

Defining inquiry-based learning 10

Types of inquiry 11

Problem-based inquiry learning from squid to spiders 12

The context for my interests 13

Literature Review 15

Understanding the library as a place 15

Libraries as places 15

Nurturing students' curiosity and inquiry 22

Defining curiosity 22

Interest in inquiry in education 23

Strategies for supporting student inquisitiveness 24

Different types of inquiry 28

Structured inquiry 28

Guided inquiry 29

Open inquiry 33

Supporting curiosity and inquiry through local and global communities 34

Connecting information spaces… 34

Engaging students through environmental based studies 37

Expected benefits from environmental initiatives.....40

Reflections and Implications.....42

Library as a place.....42

Supporting student curiosity and inquiry 45

Extending beyond the school walls.....48

Conclusion 51

References.....54

List of Figures

Figure 1. Structural Formations of Place.....17

Figure 2. General Questioning Frame 27

Figure 3. Problem-Based Learning Spectrum of Strategies 32

INTRODUCTION

My Personal Journey in Inquiry

I grew up in a home that was filled with curiosity about life and immense interest in all aspects of our world—from past events to future possibilities. Books, music, nature, and world travel were all introduced at a young age. The thirst for knowledge and understanding were constant drives in my family's daily existence. My dad brought home unusual items from his travels—which included elephant shrews to cultural artifacts. We lived on a hobby farm in isolated northern Vancouver Island and were encouraged to assist with newborn lambs or rounding up escaped pigs, sheep, turkeys or goats. My brother and I were taken everywhere—from libraries and museums to musical venues and machine shops. Our sense of curiosity was feverously fed and experiences related to our questions were readily provided. When I questioned how sound was produced in tape recorders, my dad and I took machines apart. When I became interested in fairy penguins, we researched their habits in encyclopedias and books from the libraries. We then travelled to a penguin rookery and sat in the grassy darkness for hours until the birds emerged from the surf and waddled up the beach to their nests.

Early Childhood Teaching Experiences

Influenced by the charisma of knowledge seeking instilled by my family, and the love of learning, I knew at an early age that I wanted to share this excitement of our world with other children by becoming a teacher. Commencing my teaching career with Kindergarten students, we shared our curiosity about life and explored the community in our search for understanding of ourselves and of our world. When the first snow fell we rushed outside to explore our senses and answer our questions. Curiosity and excitement

towards learning thrived as we learned about life through eyes filled with wonder. I offered experiences and opportunities which might lead to answers for the constant stream of "why?" questions. We raised chickens, watched a house being built near the school, took apart computers, played, explored, and during the process learned about life. All was grand!

Different Expectations in Higher Grades

When I changed schools, my new teaching assignments included working with older students throughout the elementary grades. I observed that the wonder expressed by young children seemed to dissipate in higher grades. In contrast to the flexible scheduling and curriculum offered in Kindergarten, I found I was now teaching in a classroom more focused on prescribed learning outcomes and assessment. Grade outcomes were achieved, but the spark of impromptu learning, student choice, leadership, and teachable moments were the exceptions, rather than the norm. I felt confined and creatively limited and I imagined that the students probably shared similar frustrations.

In this more structured school setting, eager animation and excitement about learning seemed to be diminished and students were less willing to take risks or ask questions. Working in desks for lengthy periods of time, completing assigned tasks that were presented with little or no relevance to their personal lives produced many restless, unmotivated students. This type of learning was in drastic contrast to the way I had learned at home and had taught my younger students. I knew there must be a more effective way to stimulate learning for students. How could I teach skills and still cover curriculum in a way that made learning more authentic and engaging to students?

Change in Assignment--Becoming a Teacher-Librarian

Following our elementary school's teacher-librarian's retirement in 2004, I was asked to consider accepting this position. The job offered a flexible schedule of 50% teacher-librarian time at our school. I was attracted to the position by the invitation to work with all students and staff in a setting filled with a wide variety of resources and a less confining curriculum structure. The potential to bond with all students over extended periods of time in a safe, supportive, positive haven filled with exciting learning resources and opportunities definitely interested me. As I accepted the position, I wondered if inquiry could be re-ignited in older students.

Currently, in my new role as the school's teacher-librarian I have been sharing literature and information, unusual items, worldly experiences, and discoveries. I have encouraged questioning, and designed activities that posed real life concerns about our local and global community. I believe that integrating varied and unusual resources, offering greater access to technology, and making the library facility a more open and welcoming space before and after school, has resulted in a marked increase in student questioning and general curiosity. Intuitively, this type of learning felt more natural and successful to me. However, in my small isolated school district I lacked mentorship and camaraderie of other teacher-librarians to support my approaches to promoting natural curiosity. Was I being radical or naïve in my instructional approaches? I decided to commence the Master of Education program for Teacher-Librarianship through the University of Alberta's Distance learning (TL-DL) program to enhance my skills and qualifications as a teacher-librarian. It was my hope that enrolling in this program would

provide insight into current practices in teacher-librarianship and help me to develop connections with like-minded individuals in the profession.

Defining Inquiry-based Learning

I completed an Inquiry-based learning course with Dr. Sweeney from the University of Alberta and found this constructivist approach to learning enlightening, freeing, and a perfect fit for my teaching style. During the duration of this course the B.C. Ferry vessel *Queen of the North* sank south of Prince Rupert en route to Port Hardy. This disaster had a profound effect on our small isolated town. In the library, the students and I turned this event into a school wide inquiry exploration. Led by student questions and curiosity we collected information and perspectives on this event. We monitored and compared media coverage locally, nationally, and internationally; utilized Google Earth to pinpoint the location of the sunken ship; observed YouTube video of mini submarines surveying the damage; communicated with local residents who worked for B.C. Ferries and those in the nearby Aboriginal village; accumulated details of the disaster, and created graphs and displays. The students were enthusiastic about learning more on this relevant topic and were very engaged while researching information, discussing opinions and working collaboratively on activities. The enthusiasm for this project convinced me that inquiry-based learning was the obvious direction for our students. Documents such as Alberta's *Focus on Inquiry* (Alberta Learning, 2004), featured the recursive design model I was also using with my students as we investigated the sinking of the ferry. I knew that this type of constructivist learning was promoted and accepted in many provinces and districts and was featured as an important consideration in quality school library programs.

However, in order to successfully extend inquiry school wide, a shared vision must exist. Without principal support, a library program is limited. Fortunately, my principal was supportive and quick to assist my enthusiastic approaches to learning—at least within the confines of his budget. His focus has always centered on the best interests of the students in our school. The major limitation to establishing a shared vision of school wide inquiry was, in my best estimation, the limited flexible time available for the teacher-librarian to work collaboratively with staff. Unfortunately, the reality in my district is extremely limited teacher-librarian time and the added responsibility of preparation time coverage. In my school this translated to less than three hours per week of flexible library time in my library schedule. With such limited time for collaboration provided in the teacher-librarian's schedule, the question was how could I build in an approach to nurture school wide inquiry?

Types of Inquiry

My interest in developing a place where students could safely and confidently ask questions and explore ideas continued to be a priority for my work in the school library. During an educational research course with Dr. Shanahan as part of my continuing university education, I focused on environmental based studies. I explored connecting schools with community organizations—from school community gardens to an environmental leadership educational curriculum in Hawaii. These studies reflected a common passion for student curiosity about local environmental issues in their communities, often resulting in project-based learning. I wondered if I could also develop this type of inquiry learning within my school and explore topics which were student driven, held personal relevance and held real-world connections. The more I learned about

inquiry learning, the more I was drawn to this instructional approach and became interested in integrating it into the school library program.

Problem-based Inquiry Learning from Squid to Spiders

School library articles referring to *inquiry* tend to imply systematically teaching students to question and formulate answers using an inquiry model. In addition to teaching students phases of progression presented in inquiry models, such as *Focus on Inquiry* or *Guided Inquiry*, it is my personal experience that curiosity and wonder could also be promoted through spontaneous inquiry and problem-based inquiry as engaging real life opportunities present themselves.

In late October 2009, hundreds of dead Humboldt squid washed up around Port Hardy shores. Immediately upon hearing of the event, I explored the scene, took photos, and collected specimens from a squid. Outside the school library, a bulletin board display about squid, including information about worldwide currents and maps was created. Monday morning, our school library was a hum of activity as students started asking questions and searching for answers. I encouraged students and parents to explore this bizarre phenomenon on our shores. Although we rarely see television crews, a city T.V. news crew visited our little town of Port Hardy and interviewed some of my students as they were investigating the squid. The students were fascinated by the interest shown by these outsiders and soon were excitedly engaged in the multiple questions, research, contemplation, and student led activities that developed from this example of real life learning.

Many students in our small town have very limited exposure to special events, culture, geography, history, transportation, animals or concerns beyond northern

Vancouver Island. In the school library I regularly present mementos, artifacts, or environmental items that evoke student curiosity. A woolly bear caterpillar crawling up my arm or an unusual spider in a jar lead to excited inquiry, research, debate, discovery and often, new questions. Whether we are investigating a major disaster or exploring an unusual item, once a spark of curiosity is ignited, the energy and enthusiasm seems to spread within the students as they work collaboratively to find answers. In the school library, students seem to develop a comfortable sense of belonging and their confidence to ask questions and take risks increases as their sense of wonder and opinions are promoted and valued.

The Context for my Interests

My interest and purpose for this capping paper has arisen from my life and work context. Having resided on northern Vancouver Island for over 45 years, I have spent most of my time living and teaching in small, isolated communities. Our rugged geography offers an outdoor adventure paradise, but also creates limitations in transportation, communication (especially during power outages), and access to conveniences typical in most cities. In spite of gallant efforts by community organizations to offer educational opportunities to our children, including visits from distant science and musical venues, many of our students have never been on a plane, train, subway, or visited a science facility such as Science World, a museum or aquarium. My family ensured we travelled regularly, visited cities each summer, and basically reaped the benefits of living in a rural, isolated community supplemented by the benefits of global exposure. My childhood sense of curiosity and knowledge of myself and the surrounding world was molded by my

father's wisdom, guidance and provision of real life opportunities. Many students in our community do not have the same opportunities I experienced.

As a teacher-librarian I see my role as much more than a literacy leader, and the school library as much more than a facility housing a collection of resources. Relationships with students are built over extended periods of time developing trust and rapport concerning student needs, interests, and learning styles. I have the opportunity to ignite curiosity and wonder about the world, while introducing equal opportunity access to resources and technology, utilizing local and global sources.

Ideally, I would love to promote collaborative inquiry-based learning as a school focus. Unfortunately, the fiscal reality in my school district does not offer this as a plausible goal. However, as teacher-librarians I believe we still have the opportunity to establish a place where students can belong, feel comfortable and safe to ask questions, contemplate, and nurture their curiosity. From this base, I envision learning extending outward and becoming connected with real life through affiliation with community organizations, such as regional libraries, environmental agencies, museum curators, local authors, elders, Aboriginal educational leaders, and global experts via Internet and social networking, and by doing so enable students to become life-long learners. I want to encourage students to connect to the realm of possibilities that exist outside their own small, and sometimes limited world.

Is it possible to establish a rationale, supported by research, enabling school libraries to be viewed beyond literacy centers, as significant and necessary to students in isolated communities? In this capping paper I explore the question: *How can teacher-librarians create a place where inquiry and curiosity can be fostered in isolated, rural*

schools? Research studies and professional literature will be examined relating to the following sub-questions:

- What is the importance of "place" to students and how does this relate to school libraries?
- How can student curiosity and inquiry be nurtured? What types of inquiry are available for supporting student inquisitiveness?
- How can curiosity and inquiry be extended beyond the school library to local and global communities?

In conclusion, the third section of this paper will synthesize reflections and implications for teacher-librarians and educators concerning how the blending of these three sub-questions relates to students in small, isolated schools.

LITERATURE REVIEW

Understanding the library as a place

Libraries as places

Cultural geographers have long explored the concept of *place* in cultural geography literature. Brey (as cited in Ellis, 2005), suggests a definition of place as "an area or space that is a habitual site of human activity and/or is conceived of in this way by communities or individuals" (p. 58). Brey's explanation of place implies the term place refers to more than just a physical space, location or site. Ellis (2005) concurs that place is not merely a location in physical space. Within the physical space, location, or site human activity and interaction can create new levels of understanding and significance. Interactions occur within the place that Relph refers to as "a territory of meanings" adding that "these

meanings are created both by what one receives from and by what one gives to a particular environmental context". The consequence of meaning building interaction is the creation of the *placeness* of the place. Relph (as cited in Ellis, 2005) further clarifies that placeness is a "subjective or intersubjective creation" only understood by individuals or group members who created it (p. 58). Relph (as cited in Ellis, 2005) notes that place is an evolving, dynamic, changing entity influenced by the way it is inhabited and Ashcroft notes that it is "intimately bound up with the culture and identity of its inhabitants" (p. 58). These definitions suggest that place is more than just a space but is a multi-dimensional entity involving everyday life experiences, social structures, and relationships. Eyles (as cited in Ellis, 2003) makes the following observations about the significance of place:

> Place is seen as a centre of felt value, incarnating the experience and aspirations of people. Thus it is not only an arena for everyday life—its geographical or spatial coordinates—it, in itself, provides *meaning* to that life. To be attached to a place is seen as a fundamental human need and, particularly as home, as the foundation of our selves and our identities. Places are thus conceived as profound centers of human existence. (p. 119)

In addition, Eyles (1989) explains the relationships amongst place, everyday life, and identity in terms of an interpretive framework. Ellis (2005) draws from Eyle's interpretive framework about the structures of place and their influences on everyday life and identities developed from these everyday lives as she defines i*dentities* as "the commonsense ideas, values, roles, and motivations that shape our ways of seeing and acting in the world—being built, maintained and reconstructed through *actions in everyday life*" (p. 62). She

clarifies that e*veryday life* "entails all of our routines and interactions in our sites of daily activity" (p.63). Ellis drawing on Eyles' work explains "the kinds of everyday lives people can shape for themselves in a place are limited or enabled by *social structures* such as rules and resources and the relationships available with individuals, institutions or ideas" (p. 63). In *Figure 1* illustrated below*,* Ellis (2005) created a visual depiction of Eyles' (1989) ideas summarizing the structural formations of place.

Figure 1.
Structural Formations of Place

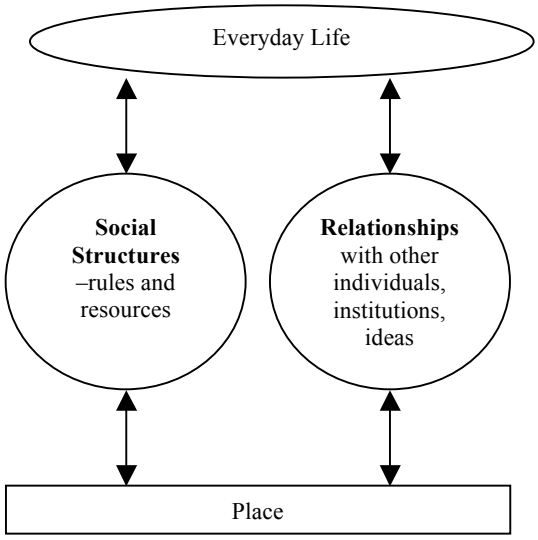

Figure 1. A visual representation of Eyles' ideas regarding the structural formations of place, by Ellis, 2005, *Place and Identity for Children in Classrooms and Schools,* p. 63. Copyright 2005 by Journal of the Canadian Association for Curriculum Studies.

As this diagram illustrates, place can evolve and change incorporating new relationships, personal dynamics, and activities. Cultural researchers note habitual routines and familiarity may even elevate place to another level. Tuan (as cited in Larkin-Lieffers, 2007) explains that "what begins as undifferentiated space becomes place as we get to know it better and *endow it with value* [italics added]" and the process of endowing

meaning to a place "involves the living in it, the experiences we have of the place, and the way we perceive it" (p, 3). Creating a place that may entice children requires knowledge of attributes of children's favorite places. Chawla (as cited in Ellis, 2005) is credited with conducting the first major literature review on the topic of children's favorite places. She noted that "children's place attachment" is based on children's experience of place and concluded that "place provides children with three types of satisfaction: *security, social affiliation,* and *creative expression* and *exploration"* (p. 60). Chawla (as cited in Ellis, 2005) further suggested development of self-identity can occur when place supports young children's need for "undefined space" where children can play, explore, practice independence, and "formulate their own worlds" (p. 60). Chawla (as cited in Ellis, 2005) concluded that:

> …while security must be a primary feature of place experience in the preschool years for the development of healthy place attachments, and probably remains a taken-for-granted prerequisite, the empirical literature showed the greatest sources of satisfaction to come from opportunities for social or creative self-development. (p. 120)

Langhout (2003) has conducted research in the field of children and place, including a case study focusing on a Grade 3 boy at school. Langout (as cited in Ellis, 2005 reviewed literature on children's favorite places and found, commonly identified attributes of student's favorite places: "*autonomy, social support,* and *positive feelings* are associated with children's place attachment or sense of place" (p. 60). Langhout's work (cited in Ellis, 2005) offered examples of statements the boy made revealing autonomy and positive

feelings, such as “He liked going to the library because he was able to choose his own book” (p. 61). These research studies by Chawla, Ellis, and Langhout identify autonomy, social support, and positive feelings as being common attributes of children’s favorite places.

Ellis (2005) offers this example of how place may be interpreted in a school setting when she explains that “the classroom as a place isn’t just the walls and furniture, but rather the whole experience that results from the way people inhabit it, and how they inhabit it is influenced by identities they have already created in other places” (p. 58). Larkin-Leiffers (2007) suggests the library should be understood through the “concept of place—a social dynamic, with a sense of living in its routines, opportunities and constraints (Eyles, 1989), and full of meaning for those who are involved with it (Larkin-Leiffers, p. 2). In a library, children can access resources to learn about the world and have a space for creative self-development or exploration. Ellis (2005) suggests “schools may increasingly be important sources of security, belonging, identity, social affiliation, space for creative self-development, and opportunities to learn about the world and be connected to it” (p. 70). Students discover school libraries at a young age and can establish familiarity and personal connection with the place during their years at school.

Osterman (2000) synthesizes research regarding students’ sense of acceptance, or *belonging*, within school communities. She defines *belonging* in terms of caring for and feeling cared about by other students, then extends the concept to caring for and valuing other students in turn. The *sense of community* is defined as a feeling that members belong, that they matter to each other and the group, and a faith is shared that the commitment to be together will ensure members’ needs are met. Osterman’s analysis also suggests that the

"basic psychological need of students is to experience belongingness", which in turn affects overall behavior and motivation to learn (p. 323). In her conclusion, Osterman indicates a sense of belongingness is crucial in establishing self-esteem, forming a connection to adults, and in motivating the desire to learn and behave in a positive manner. The library can be cultivated as a place where students can feel acceptance and a sense of community through relationships.

Libraries can be a *safe haven* for students. Bush (2007) defines a safe haven as a "sanctuary not only for language and mutual respect, but constancy and openness and acceptance and tolerance" (p. 416). This place offers students safety, community, equal opportunity, a reprieve from classroom curriculum, and access to the world. Evarts (2007) notes the safe, accepting, non-structured environment of a library can also benefit students who are isolates in the school who would benefit from a belonging to a community. Hay (as cited in Larkin-Lieffers, 2007) suggests that a "sense of belonging brings with it security, a rootedness, an identity with and from the place, and a resulting confidence" (p. 8). Bush (2007) summarizes elements that foster place attachment in the library:

- The environment (chairs, view, plants, human activity;
- A place (space to meet, home base);
- Judgments (none allowed);
- Familiarity (same staff);
- An oasis (leisure time, independent choices);
- Everyone is welcome (no exclusion);
- A constant (before and after school from the start to the end of school years); and
- Relationships (connections to students) (pp. 417-418).

Relationships within the library can affect student learning. Limberg and Alexandersson (2003) investigated Swedish studies exploring "what meanings student construct through the school library and how these meanings are constructed" (p. 1). Data was accumulated from seven schools in four municipalities in Sweden during 2001-2002 and approximately 90 school visits, 260 questionnaires and 72 observation sessions were conducted from schools with mixed socioeconomic conditions representative of Swedish schools (p. 4). The study acknowledged the special characteristics of school libraries, noting that the differences between the library and other rooms include: layout of facilities, public space, computer work-stations, a classification system organizing knowledge, and equal access. Limberg and Alexandersson concluded from their findings that school libraries as a space for learning have limited effectiveness if the facility organization and staff personnel limit the students access to exploration and collective, communicative interaction. The authors summarized that the librarians' rules were too strict, limiting social interaction and students' development of critical thinking; the organization of space limited group interaction; and students had very weak knowledge of researching methods. Limberg and Alexandersson suggested library organization should encourage collective work, and librarians should direct interest and activities more to student inquiry and increase "space for free discourse and intellectual and creative activity" (p.14). This research highlighted the importance of the librarian's role and the structural organization of the library for successful student learning.

The research on place clarifies the elements that need to be considered when endeavoring to construct a place that students can experience in particular ways. When considering the library as a place, both the physical structure of the facility and the internal

structures such as relationships and rules/routines should be considered. Students can establish relationships with an adult figure and with their peers. The familiarity, history, and culture within the library also promote a sense of community and belongingness. Students can practice autonomy and creative exploration in the less structured setting of a school library while routines are supported, habits established, and motivation to seek knowledge reinforced. The development of student work routines in the library by teacher-librarians supports students to see and experience themselves as inquirers who can approach organization and the inquiry process competently as they seek to answer their inquiry.

Nurturing students' curiosity and inquiry

"Inquiry is the dynamic process of being open to wonder and puzzlements and coming to know and understand the world"

(Galileo Educational Network cited in Focus on Inquiry, 2004)

Defining curiosity

Berlyne (as cited in Small, 1998) describes curiosity as "a state of arousal brought about by complex stimuli and uncertainty in the environment which leads to exploratory behavior" (p. 3). Curiosity escalates when the item or stimulus is unfamiliar, ambiguous, perplexing, or has an element of novelty (Ananka, 2005; Barell, 2003; Berlyne as cited in Small, 1998). Barell (2003) defines curiosity as the need to be a skeptic, contemplate, and strive to "find out and figure out what seems strange, unusual, or novel" (p. 13). Curiosity can impel one to seek answers and solve problems.

Interest in inquiry in education

Development of a school setting that promotes curiosity and inquiry is based on Dewey's (1938) learning theory of *constructivism.* Kuhlthau (2003) defines constructivist theory as "the process of thinking that builds understanding by engaging students in stimulating encounters with information and ideas" (p. 4). Promotion of inquiry, acknowledgement of students' needs to be social questioning individuals, and extrapolation of a child's personal knowledge while building new meaning, are constructivist beliefs grounded in Dewey's early educational philosophy. Dewey's insight, philosophy, and leadership towards student's acquisition of knowledge has made him an icon for constructivist, child centered learning incorporating inquiry, questioning, relevance, and a social environment (Barell, 2003; Kuhlthau, Maniotes, & Caspari, 2007; Ritzo, Nam, & Bruce, 2009). The notion of inquiry has held long-term interest in the field of education (Kuhlthau, 2003; Kuhlthau et al., 2007; Ritzo et al., 2009).

Authors and researchers present opposing views on whether the promotion of inquiry in schools, as reflected in Dewey's vision, is a reality. Koechlin and Zwaan (2002) argue that somewhere along the educational process, usually after primary and prior to middle school, something happens to "dampen their 'natural inquiry' approach to life" (p. 9). The authors suggest that pressure to obtain marks and complete teacher defined projects becomes the focus of learning rather than development of personal understanding. They explain that projects where all students investigate the same thing can be more a matter of recalling facts and information rather than inquiry.

Current researchers and authors advocate the promotion of curiosity in schools.

Barell (2003) suggests that "curiosity should be the focus of education, and every day we should be challenged with novel experiences that beg us to pose wondrous sorts of questions" (p.16). A number of authors recommend that embracing and empowering student curiosity would be a worthwhile goal for educators (Barell, 2003; Fontichiaro, 2009; Knodt, 2009; Small 1998; Zion & Sadeh, 2007). Setting goals for supporting or stimulating students' curiosity would be a first step in giving more attention to the same in curriculum. Teachers can be purposeful and strategic when utilizing strategies which can foster curiosity and inquiry for students in their classes.

Strategies for supporting student inquisitiveness

The development of student inquisitiveness is possible through the use of strategies that honor student diversity and promote students in becoming self-regulated learners. Teachers can promote inquiry by being "inquiry guides" and providing modeling and instruction in the use of strategies for learning (Alberta Assessment Consortium, as cited in Folkerts, 2010, p. 41).

> Inquiry work with students is an active interchange…[which is] supportive, discursive, adaptive, interactive and reflective. Teachers suggest how students can move forward, see things from new perspectives, make connections between previous and new knowledge, and see the patterns of the learning.
>
> (Alberta Learning, 2004, p. 41)

Purposeful strategies which guide students' inquisitiveness include: modeling, learning approaches, effective questions, and use of models for questions.

Inquisitiveness can be modeled by educators when they share curiosity about the world, the community, and our society (Barell, 2003; Koechlin & Zwaan, 2002). Educators

model inquiry by explaining their personal investigations, questions, and problem solving strategies (Barell, 2003; Kuhlthau et al., 2007). Koechlin and Zwaan (2002) suggest that educators who are proactive about their own learning, are actively inquiring while teaching and investigating educational research and new methodology. Teachers who model inquiry learning impact students by allowing them to witness the teacher's process of wonder, questioning, development of problem solving strategies, and the verbal acknowledgement of connections to personal experiences or knowledge.

According to Kuhlthau, Maniotes and Caspari (2007), Zion and Sadeh (2007), and Knodt (2009), learning approaches to developing curiosity include: 1) connecting learning to the student's world; 2) active searching for knowledge and understanding; and 3) encouraging students to be industrious, creative thinkers.

Kuhlthau, Maniotes and Caspari (2007) have suggested that students will learn most effectively at school when there is a balance between students' own knowledge from outside the school and expected curriculum outcomes. Incorporating personal experiences and knowledge increases student's curiosity because learning is more meaningful when it connects to the student's world. Research findings from Kuhlthau, Maniotes and Caspari (2007) are elaborated further under the subheading "Guided Inquiry". Students are more likely to make meaningful connections to curriculum when association to previous experiences or knowledge exists.

Zion and Sadeh (2007) note the natural world is filled with wonder and "fascinating natural phenomena that provoke thought and stimulate curiosity" (p.162). As students observe, reflect and search for meaning, questions will develop. The search for knowledge and understanding is an ongoing learning process. Zion and Sadeh's research of high

school biology students in Israel involved in a Biomind open inquiry learning curriculum is discussed under the subheading “Open Inquiry Learning”. The ongoing search for knowledge, leads to reflective thinking, then construction of new knowledge.

Industrious, creative thinking can produce individuals with flexible critical and creative thinking. Knodt (2009) argues that our work force requires “innovative spirits, who seek and take on new challenges, develop rich thinking process, and visualize unique possibilities” (p.15). Knodt suggests natural inquisitiveness of children can be encouraged and developed. When students are offered opportunities to practice formulating and solving personal questions, they can become adept at solving challenges and demonstrating innovative, creative thinking during inquiry learning.

The value of encouraging students to ask quality questions is well supported by academic research and professional literature (Barell, 2003; Diggs, 2009: Fontichiaro, 2009; Harada & Kim, 2003; Knodt, 2009; Koechlin & Kwaan, 2007; Kuhlthau et al., 2007). Barell (2003) proposes that a question can be understood as “genuine desire to find out [answers], a deep feeling for wanting to know more than we already do” (p. 61). A number of authors suggest that teachers can promote effective questions by presenting real life dilemmas or issues, or unusual elements in the environment (Harada & Kim, 2003; Zion & Sadeh, 2007; Zmuda & Harada, 2008). Harada and Kim (2003) found that questions develop from issues and real problems surrounding students, such as investigating foods in a lunch program to dangerous bugs on campus. In a culture of inquiry, where students understand what inquiry is and learning is encouraged, a safe place is established where students can gain confidence to ask questions.

A number of researchers have provided models for strategies which promote students using effective questioning. (Alberta Learning, 2004; Barell, 2003; Barell, 2007; Koechlin & Zwaan, 2007; Kuhlthau et al., 2007). Barell (2003) presents the "General Questioning Frame" modeled after research on creativity from David Perkins, and created to promote creativity and problem solving. The purpose of the General Questioning Frame is to assist students presented with a scenario, problem or story, to generate effective questions. Perkins, a Harvard University professor, has conducted long term research and written many books on the topics of teaching and learning for understanding, creativity, problem-solving and reasoning in the arts, sciences, and everyday life.

Figure 2.
General Questioning Frame

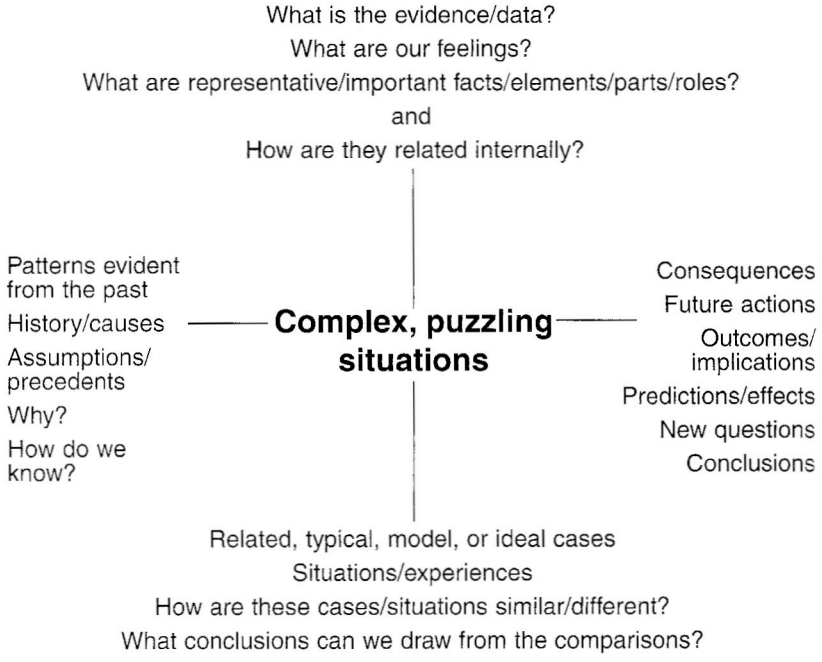

Figure 2. This open-ended General Questioning frame is from Barell, 2003, *Developing More Curious Minds*, 6, p. 110. Copyright 2009 by Association for Supervision and Curriculum Development.

This questioning frame illustrates one way students' questions can be directed or expanded using a model. Students' inquisitiveness can be affected by the use of teaching strategies such as modeling, use of genuine, real life questions, and using a questioning frame. Students feeling valued and respected in a place of shared community where their opinions and questions matter, are encouraged to explore and make sense of their world.

Different types of inquiry

Connecting to the students' world and making learning meaningful are consistent themes in inquiry learning (Alberta Learning, 2004; Barell, 2003; Barell, 2007; Fontichiaro, 2009; Kuhlthau et. al, 2007; Zion & Sadeh; Zmuda & Harada, 2008). There are three main levels of inquiry as determined by the amount of student involvement at the planning stage. According to the National Research Council these levels are: Structured Inquiry (teacher sets up the problems and processes); Guided Inquiry (teacher poses the problems and students determine process and solutions); and Open Inquiry (teacher provides context and students lead) (as cited in Zion & Sadeh, 2007). Utilizing these three inquiry levels as the context for inquiry, the following section will define and describe similarities and differences in inquiry methodology for student learning.

Structured Inquiry

Inquiry-based learning is initiated by teachers and classified as a type of structured inquiry. The Alberta Learning document, *Focus on Inquiry: A Teacher's Guide to Implementing Inquiry-based Learning* (2004), offers an extensive teachers' guide on implementing inquiry-based learning. Inquiry-based learning is "a process where students are involved in their learning, formulate questions, investigate widely and then build new understandings, meanings and knowledge" (p.1). The *Focus on Inquiry* model is

well organized and includes sections designed to assist the teacher to independently work through the inquiry process including: phases of inquiry (planning, retrieving, processing, creating, sharing, evaluating, and reflecting). The intention of this inquiry approach is to establish a "culture of inquiry" and collaboration amongst teacher-librarians, teachers, and possibly support staff.

International research studies concluded there are academic and motivational benefits to collaborative inquiry-based learning for students (Chu, Tang, Chow & Tse, 2007; School Libraries Work, 2008; Zion & Sadeh, 2007). Chu, Tang, Chow and Tse (2007) conducted a case study following the progress of 141 primary students in Hong Kong. These schools were experimenting with collaboration using inquiry-based learning as a new teaching methodology. In their conclusion, the researchers stated librarian-teacher partnership was an effective way to promote learning, students enjoyed the project, improvement in academic goals was noted, and parents were positive about the new inquiry method of learning. Beyond improvement in reading, writing, communication, and extended knowledge of the research topic, additional qualities such as independence, responsibility, tolerance, and active participation were noted (Chu, et al., 2007) Inquiry-based learning makes tasks worthwhile, motivating students to learn (Koechlin & Zwaan, 2007).

Guided inquiry

Guided inquiry, Object-based inquiry, and Problem-based inquiry blend teacher and student decision making during the inquiry process. Guided inquiry is similar to inquiry-based learning in terms of the initial structure, but it allows more student decision making and extends beyond the school. Kuhlthau, Maniotes and Caspari (2007)

suggest the collaborative planning team can consist of a teacher-librarian, teacher, and often one other specialist. “Guided inquiry is based on current research, yet it is also grounded in the ideas of John Dewey. . . [which states that] learning should be at the heart of school” (p. 29). Dewey’s educational philosophy held that schools should be modeled on interaction in communities. Collaboration, and social interaction allow opportunities for students to share and reflect with other students (Kuhlthau et al., 2007). Once a *community of learners* is established, curriculum goals are merged with student personal interests and knowledge. A community of learners is defined as students engaged through social interaction in inquiry (Kuhlthau et al.). The researchers suggest the following guidelines for educators wishing to establish a community of learners:

Establishing a Community of Learners

- Model personal connections;
- Create a safe atmosphere;
- Encourage students to speak freely;
- Except varying points of view;
- Listen to ideas; and
- Consider students’ ideas carefully (p. 36).

The goal of guided inquiry according to Kuhlthau, Maniotes and Caspari (2007) is to merge Personal (student centered) background experiences and interests with Curricular (teacher centered ideas and objectives) into a learning centered *Third Space.* The first space is the personal and cultural out-of-school knowledge and ways of knowing. The second space is the official curricular knowledge and school ways of knowing. The third space is where the two overlap and merge to create a new, hybrid form.” (p. 32).

Within the third space, students construct meaning and new worldviews.

Object-based inquiry can be used as a catalyst for Guided inquiry, or used alone to initiate curiosity and exploration. Kuhlthau, Maniotes and Caspari (2007) note that object-based inquiry is often used by museum educators. In object-based inquiry one uses an unfamiliar or intriguing object which makes an abstract idea concrete, and incorporates a tactile element which can ignite curiosity as students are involved in sensory exploration (Kuhlthau et al., 2007). Objects often have interesting stories and can be effectively used in multiple educational disciplines. They can also be used to hook students into the inquiry, increasing the potential for student motivation. Kuhlthau notes that "objects can create a valuable link to the world outside the school" and serve as an effective approach for making inquiry come alive in classrooms or libraries (p. 70). Objects or situations that ignite concern, questions related to real problems, skepticism or uncertainty can initiate another type of inquiry—Problem-based inquiry.

Problem-based learning (PBL) can be defined as "an inquiry process that resolves questions, curiosities, doubts, and uncertainties about complex phenomena in life" (Barell, 2007, p. 3). Harada and Kim (2003) base this type of inquiry on real life problems and questions. Harada and Kim suggest students are motivated because their questions are rooted in issues and problems surrounding them, their community, or their world. Barell (2007) believes that students learn that life is full of fascinating problematic situations worth thinking about, investigating, and resolving. When students experience relevance and personal connection during problem-based inquiry their abilities and interests change. Barell notes that students with learning difficulties or previous low achievement might suddenly become very involved choosing to make decisions, share

opinions and take ownership of their learning; while previous high achievers might be frustrated because routines and expectations are unfamiliar, and involvement is based on complex thought rather than memorization.

Barell (2007) identifies strategies which can support educators' understanding and implementation of problem-based inquiry in schools. Barell suggests there are three levels of problem-based inquiry: Teacher-directed inquiry, Teacher-student shared inquiry, and Student-directed. Visual representation of the three levels of problem-based inquiry *Figure 3.* illustrates possible variances of teacher and student decision making during inquiry. The KWHLAQ and O-T-O problem solving strategies may be introduced at any of the three levels of inquiry.

Figure 3.
Problem-based learning Spectrum of Strategies

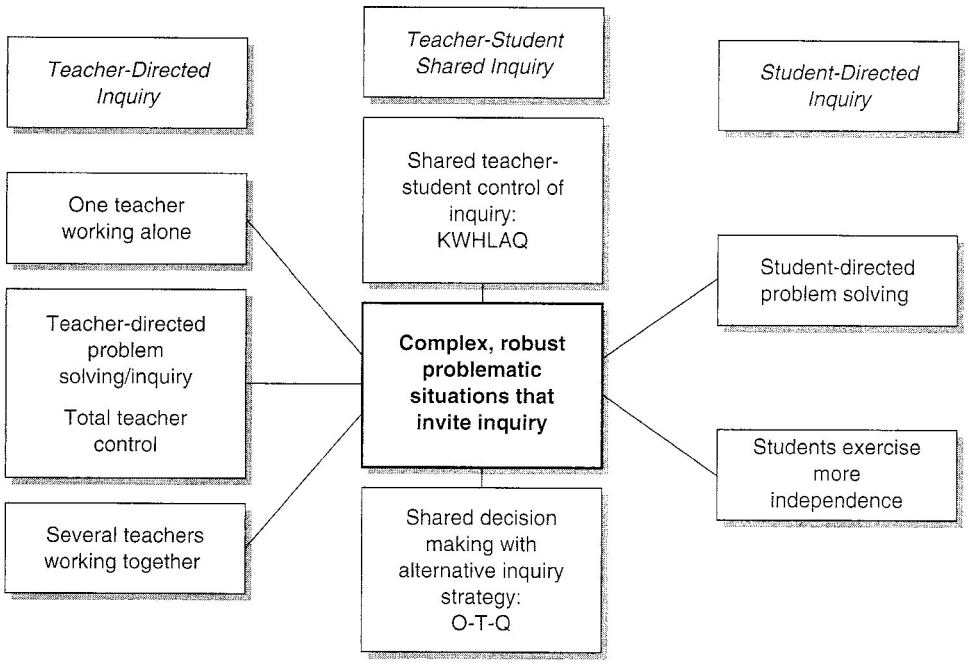

Figure 3. This visual representation of Problem-based learning spectrum of strategies is from Barell, 2007, *Problem-Based Learning. An Inquiry Approach,* p. 7. Copyright 2007 by Corwin Press.

Barell suggests two strategies which can foster problem solving and inquiry for students. The KWHLAQ strategy can be understood as follows:

K What do we think we already **Know** about the subject?

W What do we **Want/Need** to find out about it?

H **How** and where will we search for answers?

L What do we expect to **Learn?**

A How will we **Apply** what we have learned to other subjects/lives/projects?

Q What new **Questions** do we have following our inquiry? (p.6).

The second strategy recommended by Barell is the O-T-Q strategy:

O **Observe** objectively

T **Think** reflectively

Q **Question** frequently (p.7).

Although problem-based inquiry is included under the guided inquiry level, it can evolve into open-learning inquiry if the problems and questions are student-directed.

Open-inquiry learning

In contrast to the structure found in inquiry-based learning, open-inquiry evolved because "evidence indicates that structured inquiry, systematically guiding the student to solve one predetermined question, is not sufficient in developing critical and scientific thinking" (Zion & Sadeh, 2007, p.162). Knodt (2009) investigates the concept of open-inquiry "learning labs*"* being established in learning commons (usually libraries) where students explore their creativity working to answer their own questions and solve challenges and problems. The goal of the open-inquiry lab is "to engage innovative thinking in students by opening up, extending, and guiding the inquisitive energy that

children naturally bring to the learning table" (Knodt, p.16). Student creativity, curiosity and divergent thinking can be products of this approach.

This learning commons approach establishes a community of curious minds as students gather to discuss findings or challenges and a focus theme, progressing to work independently or in small groups on student-directed projects (Knodt, 2009). After a working/exploration period of about 45-60 minutes students re-group with a lead instructor and discuss inquires and strategies (Anonymous, 2009; Knodt, 2009). Knodt (2009) suggests skills students develop through open-inquiry can include: flexibility, collaboration, risk taking, innovative thinking, and confidence to seek and take on challenges. Involving students in open-inquiry learning enables students to explore their creative thinking skills.

Open-inquiry learning can extend beyond a learning lab and can also exist in outdoor settings. In Israel, Zion and Sadeh (2007) described open-inquiry learning occurring while students explored the community searching for answers to their environmental questions as part of a high school biology program, entitled Biomind curriculum. The study by Zion and Sadeh concluded that all students exhibited curiosity using this type of inquiry, but that the less curious students preferred to have fewer variables affecting their inquiry, while the more curious students selected inquiry models which were open and expanded their thinking as the inquiry unfolded. The educational aim of the Biomind curriculum was "to develop in students a lifelong thirst for inquiry and independence in learning" (p. 167). As students explore and seek answers to their questions using open-inquiry learning, they become more successful at independently

locating information and extending beyond the learning lab or school in their quest to obtain knowledge.

Supporting curiosity and inquiry through local and global communities

Connecting information spaces

Learners in the 21st century have unique opportunities to access resources, experts and research through online collaborative learning environments that support students in inquiry learning. Connecting information spaces within the school and beyond into the local and global communities, helps to equip students in developing skills and strategies needed as independent users of inquiry.

Inquiry does not cease when students leave school and is not confined to one location. According to Kuhlthau, Maniotes and Caspari (2007) student learning is more relevant and enriched when connections exist between school, community and world. Professional library associations have established standards for learning which extend inquiry beyond school library walls. Expectations or statements defining equitable access, use of technology, global literacy, and support of inquiry in school libraries, have been established in documents such as the American Association of School Libraries Standards (AASL) for the 21st Century Learner (2007) which include using skills, resources and tools to:

- Inquire, think critically, and gain knowledge;
- Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge;
- Share knowledge and participate ethically and productively as members of our democratic society; and

- Pursue personal and aesthetic growth (p.3).

AASL extends student learning to incorporate "connecting learning to community issues" and "creating products that apply to authentic, real-world contexts" (p. 6).

"Community education" happens when places of learning collaborate sharing resources and complementary goals (de Groot & Branch, 2009; Lyle & Dean, 2004; Ritzo et al., 2009). Libraries can provide equity of access and opportunities for student success. Resource pooling between schools and community libraries, as well as offering electronic resources through virtual libraries, can connect local schools and communities with counterparts from other regions of Canada or the world. (de Groot & Branch, 2009; Ritzo et al., 2009).

Ritzo, Nam and Bruce (2009) present research related to *inter-institutional collaboration* which investigates the connections between schools and community organizations. Inter-institutional collaboration is defined as community and educational institutions (school libraries, public libraries, universities, and community organizations) that build and maintain collaborative partnerships, leveraging resources and offering supportive programs for the benefit of community empowerment (Ritzo et al., 2009). Ritzo cites John Dewey's vision of a school as a community center which forms a basis for community school models. This features schools that are "integrated with the entire community in order to build . . . and pass on knowledge" (as cited in Ritzo et al., p. 84). Longo (as cited in Ritzo et al., 2009) identified the key features of community centered education as "collaboration across [sic] places of learning, connections between school, families, libraries, community-based organizations, religious groups, and other cultural and business groups" (p. 84).

Kuhlthau, Maniotes and Caspari (2007) investigate community education where students are connected with experts and museums housing artifacts, stories, and connections to the past. Connecting learning to real life and establishing partnerships between schools and community organizations, allows integration of resources, recognition of interrelated goals, and extension of learning opportunities. Accessing community resources and environmental programs can effectively extend student learning possibilities and opportunities.

Engaging students through environmental based studies

Environmental education initiatives can offer students opportunities to extend learning beyond school walls**.** Environmental education's goals (EE) include: "developing citizens who are aware of and concerned about the environment and its associated problems and providing opportunities for them to acquire knowledge, values, attitude, and commitment to protect and improve the environment" (Disinger & Howe, as cited in Bodzin, 2008, p.47). Environmental education can offer students opportunities to make real connections to their world through inquiry that focuses on environmental issues.

Research from Geographical and Environmental Education regarding environmental initiatives indicate many possible environmental education models can be utilized to promote inquiry learning (Bodzin, 2008; Dyment, 2005; Volk & Cheak, 2003). Three research studies will be reviewed which investigate environmental education and inquiry learning. In the first study, Dyment (2005) examines the barriers and opportunities inherent in using "Green Schools" as sites for outdoor learning. In the second, Bodzin (2008) conducted a design-based evaluation study to determine student attitude and behavior effects of an after-school science club investigating a local watershed. In the third

study, Volk and Cheak (2003) conducted qualitative and quantitative research to examine the impact of an environmental education program on the students, parents, and community of Molokai, Hawaii.

Dyment's (2005) research examined the use of *green* schools as outdoor learning locations. Green schools are defined as schools having grounds which can be used to promote an environmental education focus. Dyment's premise was that outdoor learning has broad reaching benefits for students, teachers, and community, and if outdoor facilities are difficult to access, then school grounds can offer a natural location for environmental exploration and discovery. The target population in Dyment's research included 100 schools with environmentally conscious school programs, in urban school districts of southern Ontario. She compared barriers to using outdoor learning locations with those established in another study by Rickinson, Dillon, Teamey, Morris, Choi, Sanders, et al., (2004). Dyment's study also describes specific barriers, such as fear and concern about student health and safety; teacher's confidence and expertise in teaching and learning outdoors; requirements of school curricula; shortages of time, resources and support; and wider changes within the education sector and beyond (Dyment, 2005, p. 29). Conclusions from Dyment's research indicated that green school grounds were not utilized effectively by most teachers. Fear and concern about student health and safety, and shortages of time/resources/support were not a concern in a green school setting, but the other three barriers—teacher's confidence and expertise in teaching and learning outdoors, requirements of school curricula, and wider changes within the education sector and beyond—were concerns in the studies by both Dyment and Rickinson et al.

Bodzin (2008) studied an environmental inquiry-based science club for urban fourth grade students. Bodzin, a university science professor, collaborated with a Grade 4 teacher to create an after school science club which studied the ecosystem of a nearby pond and local watershed. Twenty-four sessions occurred nearly weekly between October and June (pp. 51-52). Both quantitative and qualitative data was collected from the science club participants and other Grade 4 students. Bodzin described the field research students conducted on pond ecosystems during three seasons and noted that as questions and concerns arose, further investigation of tributaries and collection of data related to pollution concerns occurred in both pond and watershed areas. Possible options to solving problems in their community were explored. Technology tools—GIS (Geographic Information Systems) and Google Earth were introduced to enhance scientific understanding (Bodzin, 2008). In the research conclusion, Bodzin suggested "Data from field observations, student and teacher interviews, and an analysis of the student artifacts revealed that participation in the long-term pond investigation promoted a sense of environmental stewardship and fostered responsible environmental behavior" (p. 52).

Problem-based learning can encourage children to investigate environmental concerns that are important to them. Volk and Cheak (2003) studied the impact of a unique environmental education program implemented in Molokai, Hawaii. Investigating and Evaluating Environmental Issues and Actions (IEEIA), an inquiry-based program is an environmental education curriculum which encompasses all school subject areas. Volk and Cheak evaluated the impact of this environmental education program on the students and island community of Molokai, Hawaii. Convenience sampling included a comparison

group of 50 Grade 5/6 students in traditional classrooms with 51 students in the open style, team-taught class structure used for IEEIA curriculum (p.13).

The research data and findings by Volk and Cheak (2003) identified nine themes in this study: participatory environmental citizenship in the community; improved reading and writing; text difficulty; writing behaviors; improved oral communication; effective use of technology; student characteristics (maturity, self-esteem, poise and autonomy); teacher-related items; and Molokai community viewpoints, program characteristics, and program importance. The authors concluded that the students in the IEEIA program excelled over the students in traditional classrooms. Community involvement, access of information, and use of technology became intertwined in learning of all subject areas. Environmental citizenship combined with community issues and viewpoints can equip students with the skills needed to solve problems in their local community.

Community issues provide an impetus for real life research and social action (Ritzo et al., 2009; Volk & Cheak, 2003). In their discussion, Volk and Cheak describe the value of community interaction "[IEEIA inquiry-based instructional program] has opened our eyes to effects that extend beyond the classroom door. The importance of socio-cultural implications on student learning is striking" (p. 24). Volk and Cheak suggest environmental problems and issues in the community personally affect students who seem highly motivated to seek information and create possible solutions because of the authentic context of inquiry.

Expected benefits from environmental initiatives

The preceding research relating to environmental initiatives seems to indicate that learning can become more authentic and relevant when community resources and expertise

are utilized**.** In turn, students can become more motivated to learn when topics are interesting and applicable to their lives. Environmental inquiry which extends to nearby or global locations motivates and inspires students who do not learn best in traditional classroom environments (Bodzin, 2008; Dyment, 2005). According to Bodzin (2008), "the real-life experience of exploring the biological, chemical, and physical characteristics of the pond in an authentic investigation provided students with reasons to learn more about their watershed" (p. 55). As issues or problems in the community become exposed, students can access technology and resources to assist their search for answers to their questions and concerns. Problem-based inquiry focuses on real-life problems stimulating students to utilize resources and technology as they create plausible options or solutions to a problem (Barell, 2007; Harada & Kim, 2003; Volk & Cheak, 2003).

Issues and concerns initially investigated by students at the local or community level may be relevant beyond their community, bringing new found interest to global concerns. Research and professional literature suggests that students are motivated to seek global awareness using Web 2.0 technology tools such as SMART boards, Google Earth and social networks (Abel, 2009; Prensky, 2008; Volk & Cheak, 2003). Volk and Cheak (2003) propose that students on a mission to find solutions to questions are purposeful and motivated to locate information relevant to solving their problem. Students involved in environmental inquiry, were motivated to find solutions to community problems. Volk and Cheak propose that these students can "become risk-takers and wade into difficult material in their search for information" (p.18). They suggest successful accumulation of knowledge and improved ability to locate information also correlates with improved self esteem (Volk & Cheak, 2003).

Environmental initiatives can be supported by teachers who engage students in environmental inquiry, connect to other community resources, and supply resources and technology to extend questioning and learning. In addition to providing equal opportunity access to quality resources at school, by working together with regional libraries, environmental organizations, and global agencies teacher-librarians can assist students in tying learning to real life and instilling skills which could enable them to become life-long learners. Connecting information spaces can show students that "knowledge" is multi-faceted and multi-place.

REFLECTIONS AND IMPLICATIONS

This literature review has revealed that the school library setting can reflect the unique characteristics and traits that allow curiosity and inquiry to be nurtured. The library can also serve as a springboard to connecting all students, no matter what their background or background knowledge of experience, to equal access to a variety of stimulating resources within and beyond the school walls.

Library as a place

Initially, when I reflected about the school library as a *place,* I considered only the physical setting and the available resources. After exploring the literature, my new understanding reveals the school library as a place is complex in nature. Research from Ellis (2003, 2005) and Larkin-Leiffers (2007) introduced me to the complexities and importance of the multiple underlying and interacting factors of the concept of place. The school library as a place within the school is an evolving existence, a dynamic entity. Its physical location is enhanced by a socially developing sense of belonging and community

amongst the students and people who inhabit the space. This topic is so complex, that analysis of all the necessary components that define a place would be difficult to describe.

I have learned that many factors can contribute to the essence of a place such as familiarity, rules and routines, history, and traditions, as well as daily relationship interactions and creative explorations. Establishing consistent and familiar routines as a structure to support the activities and lessons in the school library is certainly part of my repertoire, but I did not understand the important role of these actions and how they contributed to developing an atmosphere conducive for promoting inquiry activities.

Osterman (2000) summarized the connection between a sense of community and a feeling of belongingness. In a school library, students have freedom to practice autonomy, interact and exchange ideas assisting in development of meta-cognition or new personal meaning, and establish a sense of belonging and community. I have observed that the students in our school library are willing to ask questions, take chances, and engage in inquiry activities suggesting they feel a sense of belonging and know that I will not judge them. The students are motivated to take risks, and to explore their creativity and self-expression. However, before I explored the research on the topic of place I did not fully understand its contribution to establishing an environment of inquiry. This knowledge will guide my future decision making in the school library, especially in light of recent District budget-driven decision-making that will lead to the amalgamation of schools and the arrival of new students. I now recognize that I will need to consider ways to develop and encourage a welcoming atmosphere for these new arrivals.

Bush (2007) presented the library as a safe haven where students can experience not only a sense of belonging but feel safe and accepted. The library can become a place

where tolerance is exemplified and equal opportunity exists—a place where social isolates have a chance to experience a sense of belonging. Bush also refers to the "unwritten role" of a teacher-librarian to establish these essential connections with students. In the library students can anonymously, and without judgment, access resources important in their lives, and develop a long-term relationship with the teacher-librarian. In large schools or classrooms that have teachers interacting with many students, daily personal connection is sometimes limited due to hectic schedules and large class size. However, in the school library setting students have numerous opportunities to individually connect with the teacher-librarian, especially as they move through the grades within their school lives. Before school the library is packed with students sharing information, playing games, reading, catching up on homework, researching, interacting with one another, and telling me stories about events in their lives. After school seems to be the favorite time for students to approach me to share about their day at school, or confide their problems. I can appreciate how the emotional consistency provided by the teacher-librarian can positively contribute to establishing the tone and atmosphere of place and how important in influence this is to promoting student learning.

The literature clearly shows that libraries have the potential to be a place of safety, inquiry, and self-discovery, when the facility is pleasing and conducive to student interaction. A positive learning environment encourages inquiry, access to exploration, and a sense of belonging, but the physical facilities also play an important role. Swedish research by Limberg and Alexandersson (2003) acknowledged the importance of the physical layout of the facilities and effect of the library staff on students' sense of belonging and learning. The researchers concluded that facilities should encourage sharing

and collective work areas because students need to interact and reflect to enhance their thinking. A physical setting with abundant and engaging resources, combined with a positive environment, which the teacher-librarian has fostered and developed by establishing routines, sets the stage for inquiry. Students feel safe to inquire, explore resources and explore a developing sense of belonging as they become a member of an accepting member of an accepting, caring community.

Supporting student curiosity and inquiry

The literature reinforces the importance of constructivist learning in encouraging student curiosity and inquiry within the school setting. Dewey's (1938) learning theory of constructivism was the grounding basis for many studies about curiosity and models of inquiry. Dewey's interpretation welcomes questioning and reflection as essential components of creating new knowledge. In order to produce creative thinkers, students are encouraged to become more socially engaged and to openly share and discuss their observations. With discovery at its core, the constructivist learning approach also tends to be more active and noisy, as students become invested in their investigations.

A number of authors suggest that current school learning environments are not designed to meet the inquiry needs of today's students. Koechlin and Zwaan (2002) argued that the 'natural inquiry' of young children seems to disappear during elementary school years. Concerns about school programs that do not meet the needs or interests of our 21st century students, were also reflected in the findings of Barell (2003), Coatney (2008), and Prensky (2008). Koechlin, Maniotes and Caspari (2009) suggest obtaining marks and restrictive teacher-defined projects based upon predetermined curriculum outcomes have become the focus at schools rather than encouraging students in the development and

exploration of their own personal inquiry questions. As a teacher-librarian, I also have also observed apathy and lack of interest in learning from students in some grades when completing such restricted research topics. Fortunately, a growing body of research indicates curiosity and inquiry can be cultivated in our schools. Perhaps application of the following methodologies may influence teaching practice so students' learning experiences become more meaningful.

Student curiosity can be fostered by introducing resources, genuine artifacts, or stimuli that are novel, unfamiliar or perplexing and by framing these inquiry experiences. Barell's (2003) book, *Developing More Curious Minds* contains suggestions and activities to stimulate curiosity and questioning. Other authors also advocate the importance of modeling curiosity. Teacher-librarians can rely on such professional materials to help them explore opportunities to use unusual items to ignite excitement even if this constructivist approach to learning is unfamiliar to their teaching style. In the school library, teacher-librarians can introduce items such as, creatures discovered around the school (salamanders, snowy owls); artifacts from the past (pioneer cooking or logging implements used in your community); unusual phenomenon (dead Humboldt squid washed up on nearby beaches); and items or stories from different countries. Teacher-librarians have the opportunity to create a porthole to the world where students are able to have vicarious experiences. With guidance students can celebrate the unique physical and cultural settings found in their community. They can also be encouraged to reflect and extend this learning about life experiences to other localities around the world. This is a particularly important consideration to students living in an isolated community.

In addition to promoting general curiosity, extensive research suggests teacher-librarians have a leadership role in developing inquiry within their schools. Kuhlthau (2003, 2007) advocates that students learn most effectively when their own knowledge is balanced with curriculum outcomes and learning connects to the student's world. These authentic learning connections and personal experiences to real world issues are consistent themes in inquiry-based learning. Teacher-librarians have an important responsibility in openly encouraging the three main categories of inquiry which research has identified, namely *structured*, *guided*, and *open inquiry*.

Inquiry-based learning models such as *Focus on Inquiry (*Alberta Learning, 2004), and *Guided Inquiry* (Kuhlthau et al., 2007) are designed to be collaborative ventures between teacher-librarians and one or more additional staff members. However, fiscal realities may severely limit flexible time in the library schedule restricting the opportunity for collaborative inquiry-based learning. Other models of inquiry (problem-based, object-based, and some types of open inquiry) may be fostered either in a classroom supporting a culture of inquiry, in a school library setting, or in a school-wide connection with a community or environmental organization. Discussion and questioning about a unique object related to a curriculum topic can commence object-based inquiry in a classroom or in a library. Awareness and concern about an environmental issue in a community can initiate problem-based inquiry in a classroom or even extend to school wide inquiry in the library.

Knodt (2009) proposed a type of open-inquiry learning lab program which was based in a "learning commons"—typically a school library. I am keenly interested in exploring whether this type of inquiry might work effectively in my rural, isolated school.

In my role as the teacher-librarian am currently exploring this open-inquiry learning lab approach at our school to see if this can help introduce school wide collaborative inquiry. Themes for the initial experience (owls or space) were mutually agreed upon by Grade 3 students and the teacher-librarian. Development of questions, required resources, modes of presentation, and creative thinking is individualistic. During reflection times students share concerns, discoveries and questions. A sense of community is being established and students collaborate enthusiastically. Individual teachers can create a culture of inquiry in their classrooms, but the library is the only place in the school where students from all grades have equal access opportunities, and school wide inquiry can potentially be developed within the framework of a constructivist learning commons' model.

Extending beyond the school walls

Kuhlthau, Maniotes and Caspari (2007) suggest learning is more relevant and enriched when connections are established between the school, community and the world. This would seem of particular importance when residing in a rural, isolated community. The lives of people living in more remote areas may be affected by road closures, power outages, swings in community economy, and school closures. Residents come to know one another well, and are strongly impacted by a crisis in the community. Being involved in community organizations and working for the benefit of the entire community are goals that are important to many citizens. Extending learning beyond the schools walls allows students to connect curriculum introduced at school with the personal, familiar experiences and settings of their community.

Hay (as cited in Ellis, 2003), a cultural researcher, noted the importance of bonds to "place" in terms of developing meaningful relationships and concluded that "being an

insider in a community, gives a person a strong centre from which to face the unknowns of the larger world" (p. 119). According to Ellis (2003) reiterating cultural geography literature, "good places are seen to also include *space* for growth and creative self-development" (p. 119). From the safety of the school library, students can have opportunities to expand their inquiry and actions into the community and world. The tragic sinking of the B.C. Ferry, *Queen of the North,* incited school wide problem-based inquiry which evolved from a library setting to community inquiry, then further expanded to access provincial, national and international sources.

When the physical geography around a community abounds with environmental opportunities, an effective educator can utilize the resources to illustrate the important connections between the classroom and that of the world outside the school. Environmental education research by Bodzin (2008), Dyment (2005), and Volk and Cheak (2003) offers plausible learning extensions for students in any school, although I consider their suggestions particularly appropriate for isolated, rural schools. For example, representatives from Ministries of Fisheries and Oceans, Forestry, and other resource-based ministries are often willing to share their expertise in schools or on outdoors environmental trips. Taking students outdoors to care for community gardens, or exploring neighboring natural habitats and ecosystems can inspire those students who are restless sitting in desks and are innately curious, and promotes a greater understanding and respect for one's community. When science centers, aquariums, planetariums and other facilities are not available in a community, exploring the environment may be a natural choice. Our elementary school in Port Hardy has developed a community garden and compost, and is involved in river cleans, salmonid enhancement, and community groundwater projects.

Sadly, when Dyment (2005) investigated the use of grounds around the school for outdoor learning opportunities in recognized “green” schools in southern Ontario, she concluded that most teachers did not effectively use the outdoor learning opportunities that were available. Some teachers may choose not to be involved, but if a school District supports environmental initiatives then hopefully staff involvement will increase as a result of this support. Bodzin (2008) describes the opportunity to work collaboratively with an elementary school teacher offering an inquiry-based after school environmental club in Pennsylvania. This after school club combined field studies in a local watershed with access to resources in the school. Teacher-librarians willing to work collaboratively with an expert or another teacher after school might consider Bodzin’s approach a viable way to extend inquiry learning from the library beyond the school walls. Dedicated teacher-librarians wishing to extend learning outside their physical school library have an opportunity to play a key role in promoting this future collaborative inquiry-based learning by helping to connect teachers with experts and other available community resources.

The Volk and Cheak (2003) study of Grade 5 and 6 students in Molokai, Hawaii involved in a special inquiry-based environmental education curriculum, is a truly inspiring example in terms of the development of life-long learners. Environmental problems that directly affected this remote island community were questioned and investigated. Evidence was gathered from multiple sources and students utilized 2.0 Web tools during their investigation, often reading and contemplating text and ideas much beyond their age level. Their exploration was purposeful and meaningful as students published articles on local environmental topics, attended community meetings, and made presentations at local and regional locations. Community members were both supportive

and impressed by the students' engagement in learning and their insightful ideas. The students gained confidence and self-esteem as they saw themselves not only as learners, but as contributing members of their community who could make a positive different in their world. Such examples of problem-based inquiry are particularly relevant to teacher-librarians wishing to extend student learning beyond their isolated communities. The inquiry questions explored on this remote island created relevance, importance, and personal meaning for the students involved.

CONCLUSION

Research promoting the importance of inquiry cited John Dewey's (1938) theories of constructivist learning as fundamental to establishing a positive, supportive environment where students can question, reflect, and attach new meaning to their personal life experiences. John Dewey's vision of a school is that of a community center. In small, remote communities the school is paramount, because without an available school, families with young children often chose to move. Within the school, the library is like Switzerland—a neutral zone and safe haven—where students have equal access to resources and the opportunity to inquire and find answers, forge relationships, develop a sense of belonging, be part of a community, and develop understanding of their place in the world.

There are many elements to learning beyond the learning outcomes prescribed in classroom curriculum— such as tolerance, acceptance, collaboration, inquiry, and development of community and environmental stewardship. Declining enrolment and severe budget cuts threaten school library programs and staffing. It is possible stakeholders

do not fully realize the value and importance libraries and teacher-librarians have on children's lives and in teaching these elements through quality library programs. Administrators, senior management, school board trustees, and parents' advisory councils may not understand the importance of libraries as a place and the teacher-librarian's value in fostering inquiry and curiosity for student learning. Perhaps greater advocacy for library programs can be developed through sharing examples of natural inquiry with these decision-makers.

A library is not only a literacy center filled with resources, it is an evolving place where a qualified teacher-librarian can foster curiosity and inquiry. Teaching specialist positions are not usually easy to acquire in remote Districts. When qualified, dedicated teacher-librarians are available in a school district, students and staff can benefit from their expertise.

After exploring substantial research literature, books, studies, and journal articles related to my question of how teacher-librarians can play a role in creating a place where inquiry and curiosity can be fostered in isolated, rural schools, I now feel even more passionate about the necessity and importance of my own role as a teacher-librarian in the remote community of Port Hardy. I am determined to continue to advocate the benefits of teacher-librarians and school libraries, model my curiosity towards life, and nurture curiosity and inquiry for students in our school. I strongly believe that students who become life-long learners are more likely to explore ideas, analyze and investigate beyond our community. Inquiry, along with the safety of the strong sense of place found in the school library, has the possibility of assisting students to develop the capacity and ability to

dream, to continue to learn autonomously, and to consider new opportunities for their own futures.

Having resided on remote northern Vancouver Island for nearly 45 years, I know it is possible to become a life-long learner who can appreciate the strengths and challenges of living in a small, isolated community; yet be cognizant of our evolving world and my place within it. It is my hope and challenge as a teacher-librarian to continue nurturing curiosity and inquiry in future students so these students are given the resources and opportunities to inquire, reflect, and embrace change for future generations of life-long learners. If school wide collaborative inquiry-based learning is to become a focus in our District, then the teacher-librarian working with the support of the administration will play a key role in its successful implementation.

REFERENCES

Abel, D. (2009). *Welcome to the library. Say goodbye to the books.* The Boston Globe. September 4, 2009. Retrieved from http://www.boston.com/news/local/massachusetts/articles/2009/09/04/a_library_without_the_books/

Alberta Learning. (2004). *Focus on inquiry: A teacher's guide to implementing inquiry-based learning.* Edmonton, AB: Alberta Learning.

American Association of School Librarians. (2007). *Standards for the 21st century Learner.* Retrieved from http://www.ala.org/ala/mgrps/divs/aasl/aaslproftools/learningstandards/AASL_LearningStandards.pdf

Anaka, G. (2005). *Your magical brain. How it learns best.* Vancouver, BC: Portal Press.

Anaka, G. (2009). *Brain wellness. The secrets for longevity.* Vancouver, BC: Portal Press.

Anonymous. (2009). Innovation through open-inquiry learning in the learning commons. *Teacher Librarian*, 37(*1*), 44-45. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1884233311&sid=1&Fmt=2&clientId=12301&RQT=309&VName=PQD

Barell, J. (2003). *Developing more curious minds.* Alexandria, VA: Association for Supervision and Curriculum Development (ASCD).

Barell, J. (2007). *Problem-based learning. An inquiry approach.* Thousand Oaks,

CA: Corwin Press.

Bodzin, A. (2008). Integrating instructional technologies in a local watershed investigation with urban elementary learners. *Journal of Environmental Education,*39(*2*), 47-58. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=32517659&loginpage=Login.asp&site=ehost-live&scope=site

Bush, G. (2007). Safe haven: Libraries as safe havens for teens. In E. Rosenfeld & D. V. Loertscher (Eds.), *Toward a 21st century school library media program* (pp. 416-419). Toronto, ON: Scarecrow Press.

Chu, W., Tang, Q., Chow, K., & Tse, S. (2007). *A study on inquiry-based learning in a primary school through librarian-teacher partnerships.* International Association of School Librarianship. Selected Papers from the . . . Annual Conference, 1-21. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1563504141&sid=1&Fmt=6&clientId=12301&RQT=309&VName=PQD

Coatney, S. (2008). Why? *Teacher Librarian*, 35(*5*), 66. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1502965491&sid=1&Fmt=2&clientId=12301&RQT=309&VName=PQD

de Groot, J., & Branch, J. (2009). Solid foundations: A primer on the crucial, critical, and key roles of school and public libraries in children's development.

Library Trends, 58(*1*), 51-62. doi: 10.1353/lib.0.0066

Diggs, V. (2009). Ask-think-create: The process of inquiry. *Knowledge Quest,* 37(*5*), 30-33. Retrieved http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1755222091&sid=2&Fmt=2&clientId=12301&RQT=309&VName=PQD

Dyment, J. (2005). Green school grounds as sites for outdoor learning: Barriers and opportunities. *International Research in Geographical & Environmental Education*, 14(*1*), 28-45. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=19047792&loginpage=Login.asp&site=ehost-live&scope=site

Ellis, J. (2003). Researching children's place and space. *The Journal of Curriculum Theorizing*, 19(*4*), 118-133.

Ellis, J. (2005). Place and identity for children in classrooms and schools. *Journal of Canadian Association of Curriculum Studies*, 3(*2*), 55-73. Retrieved from http://www.csse.ca/CACS/JCACS/V3N2/jcacs_V3N2.html

Evarts, L. (2007). The school library as sanctuary. In E. Rosenfeld & D. V. Loertscher (Eds.), *Toward a 21st century school library media program* (pp. 412-415). Toronto, ON: Scarecrow Press.

Folkerts, A. (2010). *How can involving students in their learning assessments be embedded into the inquiry process?* Unpublished manuscript. Edmonton, Canada: University of Alberta.

Fontichiaro, K. (2009). Nudging toward inquiry: Re-envisioning existing research projects. *School Library Monthly,* 26(*1*), 17-19. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1843494071&sid=1&Fmt=2&clientId=12301&RQT=309&VName=PQD

Galileo Educational Network Association. (2009). *What is inquiry?* Retrieved from http://www.galileo.org/inquiry-what.html

Harada, V., & Kim, L. (2003). Problem-based instruction makes learning real. *Knowledge Quest*, 32(*1*), 33-34. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=426159711&sid=4&Fmt=1&clientId=12301&RQT=309&VName=PQD

Herring, J. (2007). The end of the teacher-librarian. In E. Rosenfeld & D. V. Loertscher (Eds.), *Toward a 21st century school library media program* (pp. 123-128). Toronto, ON: Scarecrow Press.

Knodt, J. (2009). Cultivating curious minds: Teaching for innovation through open-inquiry learning. *Teacher Librarian*, 37(*1*), 15-22. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=188423319&sid=3&Fmt=2&clientId=12301&RQT=309&VName=PQD

Koechlin, C., & Zwaan, S. (2002). Focus on understanding. *Teacher Librarian*, 30(*1*), 8-14. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ez

proxy.library.ualberta.ca/pqdweb?did=219631041&sid=2&Fmt=2&clientId=12301&RQT=309&VName=PQD

Koechlin, C., & Zwaan, S. (2007). Assignments worth the effort: Questions are key. In E. Rosenfeld & D. V. Loertscher (Eds.), *Toward a 21st century school library media program* (pp. 55-63). Toronto, ON: Scarecrow Press.

Kuhlthau, C. (2003). Rethinking libraries for the information age school: Vital roles in inquiry learning. *School Libraries in Canada*, 22(*4*), 3-5. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=356953041&sid=1&Fmt=2&clientId=12301&RQT=309&VName=PQD

Kuhlthau, C., Maniotes, L., & Caspari, A. (2007). *Guided inquiry. Learning in the 21st century.* Westport, CT: Libraries Unlimited.

Larkin-Lieffers, P. (2007). *Conceptualizing place in the library.* Unpublished manuscript. Edmonton, Canada: University of Alberta..

Limberg, L., & Alexandersson, M. (2003). The school library as a space for learning. *School Libraries Worldwide,* 9(*1*), 1-15. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=523245301&sid=1&Fmt=1&clientId=12301&RQT=309&VName=PQD

Lyle, A., & Dean, B. (2004). Sharing our value: Public librarians & school librarians working together. *Canadian Library Association. Feliciter* (*4*), 96-97. Retrieved from

http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=668664781&sid=1&Fmt=1&clientId=12301&RQT=309&VName=PQD

Osterman, K. (2000). Students' need for belonging in the school community. *Review of Educational Research*, 70(*3*), 323-367. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=73737221&sid=2&Fmt=2&clientId=12301&RQT=309&VName=PQD

Prensky, M. (2008). Turning on the lights. *Educational Leadership*, 65(*6*), 40-45. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1455541231&sid=2&Fmt=2&clientId=12301&RQT=309&VName=PQD

Ritzo, C., Nam, C., & Bruce, B. (2009). Building a strong web: Connecting information spaces in schools and communities. *Library Trends,* 58(*1*), 82-94. doi: 10.1353/lib.0.0068

Scholastic. (2008). *School libraries work!* Retrieved from http://www2.scholastic.com/content/collateral_resources/pdf/s/slw3_2008.pdf

Small, R. (1998). Designing motivation into the library and information skills instruction. *School Library Media Research*, 1(*1*). Retrieved *from* http://www.ala.org/ala/mgrps/divs/aasl/aaslpubsandjournals/slmrb/slmrcontents/volume11998slmqo/small.cfm

Valenza, J., & Johnson, D. (2009). Things that keep us up at night. *School Library*

Journal, 55(*10*), 28. Retrieved http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1876033941&sid=5&Fmt=2&clientId=12301&RQT=309&VName=PQD

Volk, T. L., & Cheak, M. J. (2003). The effects of an environmental education program on students, parents, and community. *Journal of Environmental Education.* 34 (*4*), 12-25. http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=11850862&loginpage=Login.asp&site=ehost-live&scope=site

Zion, M., & Sadeh, I. (2007). Curiosity and open inquiry learning. *Journal of Biological Education*, 41(*4*), 162-168. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=27185359&loginpage=Login.asp&site=ehost-live&scope=site

Zmuda, A., & Harada, V. (2008). Librarians as learning specialists: Moving from the margins to the mainstream of school leadership. *Teacher Librarian*, 36(*1*), 15-21. Retrieved from http://login.ezproxy.library.ualberta.ca/login?url=http://proquest.umi.com.login.ezproxy.library.ualberta.ca/pqdweb?did=1597327351&sid=3&Fmt=2&clientId=12301&RQT=309&VName=PQD