

# **University of Alberta**

Motivation and the Information Behaviours of Online Learning  
Students: The Case of a Professionally-Oriented, Graduate Program

by

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## **Abstract**

Online learning is a wonderful opportunity for students who cannot attend classes at conventional times and places to further their education. However, to some extent, accessing and sharing information is often quite different and potentially more difficult for this particular group (e.g., they may lack access to the campus library). For this reason, it is important to appreciate both how the students are seeking and sharing information in this environment, as well as what drives these information behaviours. Understanding these processes will better enable instructors, librarians, and other relevant parties to facilitate information access to this population (e.g., through in-depth database training and/or better technology tools).

With that in mind, this research asked:

- 1) In what types of information seeking and sharing behaviours do online learning students engage?
- 2) What motivates online learning students to both seek and share information?
- 3) Can a theoretical model of students' motivational orientations as they apply to their information behaviours be developed?

To answer these questions, the Teacher-Librarianship by Distance Learning Program was examined as an in-depth case study. A grounded theory approach was employed to enable the development of the motivational theory. Data were collected exclusively through in-depth,

semi-structured interviews, though with two distinct groups of people: 15 students and 3 key informants. The students were asked to reflect on their experiences accessing and sharing information in the online setting as well as what they thought drove their information behaviours, while the key informants provided context around the program itself and offered their insights into how they believe the students interact with information.

Overall, this study revealed that both electronic and local resources are key to these students' information seeking successes. Furthermore, the results suggest that personally or professionally relevant assignments provide students with the greatest motivation to seek information for their coursework. Students in this online learning environment were inclined to share professional, academic, and personal information with others because they believed that this online learning environment fostered a culture of sharing.

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## CHAPTER 1 - INTRODUCTION

### 1.1 General Overview of Research

A growing body of literature in library and information studies (LIS) examines the means by which people seek and share information in online or virtual communities (e.g., Erdelez & Rioux, 2000; Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000; Kazmer & Xie, 2008; Rioux, Hersberger, & Cruitt, 2005). Despite this recent proliferation, LIS researchers have paid little attention, overall, to understanding the motivations that drive these online information behaviours.

A virtual learning environment is one example of an online community. Increasingly, the importance and prevalence of virtual learning environments are becoming salient, particularly as the internet reduces the academic boundaries previously imposed by time and geography (Lee, 2000). This is consistent with a recent publication by Statistics Canada, which revealed that distance learning is the second most common reason that individuals go online for educational pursuits. Moreover, individuals in the rural setting are turning to distance education in greater numbers than their urban counterparts, suggesting that the internet may help overcome geographical barriers to education previously felt by rural inhabitants (McKeown & Underhill, 2008, Summary section, para. 3). For this reason, a better understanding of the information behaviours of students in virtual classrooms is important as these individuals *may* not have access to the same range of information sources

as those who attend classes on campus (e.g., if students are remote, geographically, from the institution they will not have quick and easy access to the print materials that are available at the physical library). Identifying the information behaviours that students exhibit in the virtual or online learning environment and then learning what motivates these behaviours will help instructors design strategies for enhancing the process of seeking and sharing information online (e.g., providing bonus marks or accolades to students who share their ideas with others). It may also help librarians develop strategies to facilitate these processes (e.g., increasing the numbers of digital books and journals made available to students).

The University of Alberta (i.e., home to the library supporting the students involved in this study) is one institution that has made strong efforts to accommodate distance students through its libraries, as illustrated by their website (<http://guides.library.ualberta.ca/content.php?pid=55111>). The libraries promote their extensive digital collection and provide access to the print collection through mail and collaborative agreements with other academic institutions (University of Alberta Libraries, 2010). Within the context of these efforts, this study was designed to examine how a subset of University of Alberta distance learning students viewed their information access at this particular institution (i.e., do they feel that their information needs were adequately supported?) and how this perception of access

influenced their motivation to seek, share, and even avoid information. In turn, it was important to understand how motivation influences students' abilities to access relevant information, given that scholastic achievement has been linked to information access (Bitso, 2000; de Jagr, 2002; Tella, Tella, Ayeni, & Omoba, 2007; Wells, 1995).

Traditionally, LIS has examined motivational theories primarily with respect to motivating library staff (e.g., Likar, 2000; Millard, 2003; Ngaiyambe, 1989; Olorunsola, 1992; Rowley, 1996). I have expanded this theoretical focus by investigating the role that motivation plays in influencing the information behaviours of individuals in one particular type of online community: an online classroom for training teacher-librarians. I have used a qualitative approach to further expand our theoretical understanding of students' perceptions of their information behaviours, along with their underlying motivations.

This Chapter provides definitions of the three core concepts (i.e., information behaviours, motivation, and virtual learning environments). The definitions are required to facilitate understanding of the concepts described in the research questions. Along with this thorough examination of the concepts, the key research questions are outlined, leading in to the literature review provided in Chapter 2. The studies that have explored the three core concepts are discussed and evaluated in further detail in the literature review (see Chapter 2).

## 1.2 Defining Information Behaviours

Information behaviours include a number of different components.

While the concept of active or deliberate information seeking is certainly one important part of information behaviour, other behaviours are also significant, including how individuals engage in information sharing (Hersberger, Murray, & Rioux, 2007; Rioux, 2005). Encountering information through serendipity (Erdelez, 1999, 2005) and avoiding information due to mental discomfort (Case, Andrews, Johnson, & Allard, 2005) are also considered important information behaviours.

Furthermore, information behaviours must be considered in the context of both the cognitions and emotions that drive these behaviours.

Historically, information behaviours have been defined as “those activities a person may engage in when identifying his or her own needs for information, searching for such information in any way, and using or transferring that information” (Wilson & Walsh, 1996, Chapter 5, para. 2). This definition is appealing because of the broad scope it uses to define information behaviour. That is, its span is not limited to information seeking; instead, it allows for a consideration of those information behaviours that take place after information has been located, such as the using, sharing, and/or disseminating of this information. While information seeking refers to the process by which individuals look for resources, information “using” and “sharing” refer to processes that take place after the information has been located.

Information use occurs when someone applies the information that they have located (e.g., they may use the information to help them complete a school assignment). It is important to point out that although one might not use the information, personally, an individual may instead engage in information sharing. Intuitively, information sharing occurs 1) when individuals provide information to one another about relevant and non-relevant documents that they have found; 2) when they share the information found in relevant documents; 3) when they share the relevant documents themselves; or 4) when they provide suggestions that will help others locate relevant documents (Talja, 2002, p. 145).

Wilson and Walsh's (1996, Chapter 5, para. 2) definition also encompasses both active and passive information seeking/attention. Active information seeking refers to the active tracking of a particular type of information. In contrast, passive information seeking occurs when an individual stumbles upon relevant information while in the process of searching for something else or, even when not actively engaged in information seeking, at all. This means that individuals do not necessarily have to actively pursue information in order to find it useful or relevant; for example, they might gain a useful nugget of academic information from the radio while hoping to hear the weather forecast. Similar to passive information seeking, passive attention refers to a situation where one is not really looking for information (e.g., they are watching television), but comes across relevant information nonetheless (Wilson & Walsh, 1996,

Chapter 5, para. 2). Wilson and Walsh's (1996) conceptions of passive seeking and attention suggest a very "accidental" quality, which is consistent with serendipitous information "seeking" or information encountering (see Erdelez, 1999, 2005; Foster & Ford, 2003; Heinstrom, 2005; Mc Birnie, 2008; Williamson, 1998). Erdelez (1999, 2005; see also Mc Birnie, 2008) reinforces and has pursued in great depth the notion that information is not always actively sought; instead, it is sometimes discovered accidentally (e.g., while surfing the web).

Missing from Wilson and Walsh's (1996) definition is what Case et al. (2005, p. 354) describe as information avoidance. They describe information avoidance as a conscious or unconscious decision to stay away from particular types of information. These researchers suggest that information avoidance must be accounted for when defining information behaviour because people may choose to ignore information if it causes them mental discomfort. They are still responding to information in some way, but instead of actively or even serendipitously encountering and using that information, they pretend that it is not there (Case et al., 2005). This concept of information avoidance can also be seen in discussions of monitoring and blunting. More specifically, blunting refers to a situation where individuals choose not to consider disturbing information (e.g., about their health). Instead, they find a way to push it out of their mind. Monitoring, on the other hand, refers to individuals who choose not to avoid information and instead choose to monitor their surroundings for

possible sources of disturbing information (Case et al., 2005, p. 355; Case, 2006, p. 297; Rees & Bath, 2001, p. 900).

Also not explicit in Wilson and Walsh's (1996) definition is the notion that both cognitive and affective factors are important for defining information behaviours. Kuhlthau's (1991; 2004) model has been particularly influential in highlighting the importance of affect or emotion in information behaviours (see Julien, McKechnie, & Harta, 2005).

Explorations of emotion and information behaviours appear to be growing in number, with a 2007 book by Nahl and Bilal published on the topic. In this book, researchers, such as Parker and Berryman (2007) explore how emotion drives people's decisions regarding the amount of information that they need, while Given (2007) examines the role emotion plays in student information behaviours. Consistent with Kuhlthau's (2004) model (to be discussed in detail in Chapter 2) and the evolving body of literature on this topic, a full definition of information behaviour must consider the emotional reactions that drive people's information seeking and sharing behaviours.

Taken as a whole, these concepts provide an inclusive definition of information behaviour. These concepts illustrate that individuals do not simply gather information while actively pursuing it, but that they can also stumble upon it. Furthermore, these concepts also highlight the notion that avoiding information is legitimate information behaviour, and that information behaviours are driven by more than cognitions, but also by

emotions. To fully understand how people interact with information, active information seeking, information encountering, and information avoidance must all be considered in the context of the related cognitions and emotions.

### 1.3 Defining Motivation and Social Motivation

Motivation is one component of behaviour thought to play a vital role in influencing people's actions. Indeed, Dunsmore and Goodson (2006, p. 170) point out that it is considered "one of the most powerful elements in mobilizing individuals to action". It would seem then that an effort to understand the role of motivation within LIS may provide insight into why people help others find information and why individuals seek information in the first place. In the context of this study, insight into motivational factors has helped me explain what pushes or pulls online learners to both seek and share information.

Consistent with the description provided above, I was interested in examining social motivations, which are distinct from biological motivations, such as hunger and thirst. With social motivation, the drive to behave in a particular manner is driven by interactions that have a psychological or social basis. When motivated by psychological needs, an individual chooses to engage in situations where their innate desire for psychological wellness is met (e.g., situations that allow them greater autonomy). When an individual is motivated by their social needs, they are engaging in particular behaviours because they have learned to prefer

situations that they enjoy (e.g., they engage in a particular behaviour because it enables them to feel close to people that they like) (Reeve, 2005, pp. 166-167).

Social motivation can be understood more fully by examining different theories of social motivation. Provided are some broad descriptions of core social motivation theories, including self-determination theory, self-efficacy, flow theory, the hierarchy of needs, and goal theory. Each of these theories seeks to explain the forces that push or pull an individual in one direction or another.

Self-Determination Theory (SDT). Subsumed within the larger concept of motivation is the idea of self-determined motivation. The essential idea of self-determination is that individuals who believe that they have more control over their actions in a particular activity will be more motivated to continue engaging in that activity (Deci & Ryan, 2000, p. 238). Deci and Ryan (2000, p. 246) posit that self-determined motivation can range from highly externally-regulated motivational orientations (i.e., external and introjected regulation) to more internally-regulated orientations (i.e., identified regulation, integrated regulation, intrinsic motivation) (Saumure & Noels, 2004). Because increased self-determination to engage in an activity is thought to result in more sustained motivation towards participation in that activity, it is considered important to encourage more internally-regulated motivational orientations (Deci & Ryan, 2000, p. 238). Another aspect of SDT relates to basic

psychological needs. According to Deci and Ryan (2000, p. 262), more self-determined motivational orientations can be encouraged if the basic psychological needs for autonomy, relatedness, and competence are met. Autonomy refers to the idea that an individual's behaviour is not being controlled by anyone or anything (Deci & Ryan, 2000, p. 254). Relatedness refers to the human desire to feel a sense of connection with others (Deci & Ryan, 2000, p. 253). Finally, competence refers to the idea that one feels capable of performing a particular activity; it can be fostered through informative feedback (Deci & Ryan, 2000, p. 235). If these psychological needs are met, individuals are more likely to possess self-determined motivations towards the activity and as a result, more sustained motivation to engage in the activity (Ryan & Deci, 2000).

Self- Efficacy. Related to the earlier-described idea that competency may enhance an individual's self-determined motivation is Bandura's notion of self-efficacy (see Bandura, 2001). Within Bandura's broader social learning theory, self-efficacy refers to the idea that if individuals believe in their ability to perform a certain task, they are more likely to engage in that task (Bandura & Cervone, 1983). For example, many students are familiar with using Google to find information and have been successful using Google as a search tool in the past (according to their definition of success). They may therefore be more likely to keep using this resource as they feel efficacious using Google as opposed to navigating the uncharted waters of research databases (e.g., Medline,

PsycInfo). This observation is consistent with earlier findings in the LIS literature, where Ren (1999) determined that individuals used government resources with which they were the most comfortable.

Flow Theory. Flow theory also points to the importance of competence or efficacy in predicting motivation to engage in a behaviour. Essentially, Csikszentmihalyi (1990) suggests that motivation will be at its highest if there is a balance between an activity's difficulty level and the person's general ability to complete that activity. In essence, an individual will not be highly motivated if the activity is not challenging enough to ensure engagement. However, it is also the case that if the task is too difficult, an individual may become frustrated and want to quit.

Goal Theory. Goal theory is yet another interesting theory of social motivation. In this instance, Dweck and Leggett (1988) posit a difference between performance, learning, and social goals. When one's goal is performance-based, the individual is motivated to engage in an activity, so as to display their competency to others (Dweck & Leggett, 1988, p. 256). However, when one's goal is learning-based, the individual's goal is to essentially learn more about an activity and thereby improve their competency (Dweck & Leggett, 1988, p. 256). In this theory, those who are more focused on performance may lose their motivation to perform an activity if they find themselves doing poorly. That is, why would they continue to do a task poorly if their underlying goal is to display their abilities to others? On the reverse side, individuals who are focused on

learning, view failures or poor performance as opportunities for further learning to enhance future performance at a given task (Dweck & Leggett, 1988). With a social goal, individuals behave in a certain way because they seek the approval of others. In essence, they are behaving in a way that is consistent with their perception of social norms (Maehr & McInerney, 2004, p. 72-73).

Hierarchy of Needs. A less recent, but still frequently cited social motivational theory is Maslow's hierarchy of needs. Here, Maslow posits that basic biological needs must be met before security, social, and esteem needs may be met. Maslow (1987) represents his theory as a pyramid, where biological needs are at the base, while self-actualization needs are at the apex. The need for self-actualization (i.e., reaching one's full potential) can only be met after the biological (e.g., thirst), security (e.g., shelter from pain), social (e.g., friendship), and esteem (e.g., self-esteem) needs are met. In LIS research, it has been suggested that individuals prefer personally relevant material when searching the internet because it helps them achieve self-actualization (Weiler, 2005, p. 50).

Collectively, these theories provide a picture of how researchers have attempted to explain social motivations. They offer insight into the preferences of individuals to engage in certain activities and provide the groundwork for examining motivation theory in the context of students' informational activities, the focus of this study.

#### 1.4 Defining Virtual Learning Environments

An understanding of the characteristics of a virtual community underlies the understanding of virtual learning environments (VLEs). According to Terry Daugherty and his colleagues (2005, Introduction section, para. 1), as well as Dennis, Pootheri, and Natarajan (1998, p. 66), a virtual community can be described quite generally as a digital locale where a group of individuals share common concerns, ideas, or interests. This locale could include a virtual classroom, an online support group for problem gamblers, a social networking site (e.g., Facebook) or an online network of teleworkers. The concept of virtual environment can also refer to a simulated environment, such as Second Life, where individuals engage in activities that resemble their actions in real life (e.g., grocery shopping, taking courses, visiting the library, etc.) (Grassian & Trueman, 2007; Hurst-Wahl, 2007). In essence, all of these individuals interact in an online world (i.e., they communicate via an internet connection) (ClassZone, 2008). Interestingly, members of virtual communities need not be active participants; their membership might be solely confined to lurking in the background and gleaning relevant information (Burnett, 2000, Non-Interactive Behaviours section, para. 2; Daugherty et al., 2005, Literature Review section, para. 2; Dholakia, Bagozzi, & Pearo, 2004, p. 250).

In the context of this study, it is important to note that the internet refers to a network that connects computers world wide and as such can

include the World Wide Web, listservs, RSS feeds<sup>1</sup>, email, newsgroups, and more (ClassZone, 2008, Internet section, para. 1). Daugherty et al. (2005, Online Panels are Virtual Communities section, para. 2) point out that in a virtual community, people can interact without any concerns for their physical locations. However, while the primary interactions occur within the online learning environment and thus are not contingent on geographical location, the student's personal, physical environment does play a role. As discussed by Kazmer, dedicated time in the online learning environment can be sidelined by home demands (e.g., crying baby, computer usage) or a demanding employer (Kazmer, 2005a, Where are the Students section).

At its most basic level, a VLE is considered to be a classroom environment where students and instructors are able to interact over the internet (Cyber Media Creations, 2006, Elearning section, para. 1). The tools for facilitating this interaction typically include: video-conferencing; online whiteboards; email; and online chat rooms. Communication in an online classroom may be synchronous or asynchronous and typically occurs between students and instructors across a range of physical spaces (Utah Education Network, 2004, Asynchronous Communication section, para. 1). Virtual learning environments (or classrooms)

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<sup>1</sup> "A technology that allows web users to receive (ongoing, constantly updated) information collected from many sources through a simple reader" (Cornell University Integrated Web Services, 2008, n.p.).

encompass the broader characteristics noted when describing virtual communities.

All of the characteristics described above have the potential to influence and motivate the information behaviours of students in online classrooms. For example, students who can engage in synchronous communication *may* be more likely to share substantive information with other students (see Haythornthwaite et al., 2000, Coming Together section, para. 2). That being said, Daugherty et al. (2005, Literature Review section, para. 2) suggest that some individuals actively engage in the virtual community, while others simply passively absorb the information that they need (without ever making comments themselves). These researchers note that creating a more balanced information sharing community has the potential to benefit the community at large, allowing multiple points of view to be expressed and ensuring that everyone has the opportunity to access pertinent information (Daugherty et al., 2005, Online Panels are Virtual Communities section, para. 2). That being said, there is certainly still the possibility that some participant's contributions will be less helpful than others (e.g., some students may provide misinformation to secure a better grade for themselves). A classroom moderator may be useful in limiting this type of behavior (Robins, 2004). Ideally, gaining a comprehensive understanding of information behaviours in these classrooms will facilitate the development of strategies for developing a balanced and well moderated environment.

### 1.5 Research Questions

With the above definitions providing a clearer sense of the core concepts to be used in this study, it is now appropriate to describe where these concepts are situated within the goals of this dissertation. Over the past ten years, LIS researchers have evaluated and described the information behaviours of students (e.g., Given, 2002; Rowley & Urquhart, 2007; Urquhart & Rowley, 2007; Whitmire, 2002, 2004) and individuals in online environments (e.g., Hektor, 2003; Urquhart, Thomas, Spink, Fenton, Yeoman, Lonsdale, et al., 2005). The next step is to theoretically examine what drives individuals to engage in such behaviours (i.e., their motivation). My work follows the direction taken by Heinstrom (2003, 2005, 2006a, 2006-2007), who looked at how personality traits (e.g., introversion) shape information behaviours; it also builds on Heinstrom's inquiry into motivation and information seeking with middle school and high school students (Heinstrom, 2006b). Both this current study and Heinstrom's research have been inspired by the notion that psychological characteristics can influence one's patterns of information seeking and sharing (Wilson, 1999). My research examines the role that motivation plays in influencing the information behaviours of teacher-librarians taking online courses. In defining social motivation, previously, I described a range of social motivational theories. However, in this study, I bracketed myself (see Gearing, 2008, pp. 63-65) from these theories to develop a grounded theory of motivation that is unique to information seeking in

online learning environments. This was important because I was not convinced that concepts, such as relatedness, would have the same motivational impact in the online setting as in the face-to-face context.

To develop a further understanding of motivation and information behaviours in online classrooms, I used in-depth qualitative interviews to examine information seeking and sharing patterns in the online classroom and to explore the role of motivation in facilitating or impeding these behaviours. The following research questions were posed in this study:

- 1a. In what types of information seeking behaviours do students engage in online learning environments?
- 1b. What motivates students to engage (or not engage) in information seeking behaviours in web-based classrooms?
- 2a. In what types of information sharing behaviours do students engage in online learning environments?
- 2b. What motivates students to engage (or not engage) in information sharing behaviours in web-based classrooms?
3. Can a theoretical model of students' motivational orientations as they apply to their information behaviours be developed?

To answer my research questions, I interviewed students in a graduate level online learning program in the Faculty of Education.

Started in 1996, the Teacher-Librarianship by Distance Learning Program (TL-DL) is offered to individuals who have completed their Bachelor of Education and also hold a teaching certificate (Teacher-Librarianship by

Distance Learning, 2009d, para. 1). Typically, these students are practicing teachers and often are also librarians. In the year that this study was completed, there were 69 enrolled students. The population of the entire TL-DL program was predominantly female, with males comprising less than ten percent of the program's population (Branch, personal communication, March 2, 2010). Of the 69 students, 54 were enrolled in the Master's program, while 15 were enrolled in the Diploma program (Jennifer Branch, personal communication, March 3, 2010). The Master's "program...provides advanced study in teacher-librarianship from kindergarten to grade twelve. It prepares teachers for work at the school or district level and is designed for individuals who intend to provide leadership in their school and within school systems" (Teacher-Librarianship by Distance Learning, 2009c, para. 1). Students in this program are required to complete ten courses, including a mandatory capping exercise (Branch, personal communication, April 7, 2010). In contrast, the Diploma "program...provides basic education in school librarianship from kindergarten to grade twelve. This program may be best for those teachers who are early in their careers." (Teacher-Librarianship by Distance Learning, 2009b, para. 1). In this program, students are required to take eight courses (Branch, personal communication, April 7, 2010). Throughout the students' courses, the focus of the program is on inquiry-based learning; information technologies (e.g., web 2.0 technologies); information literacy; as well as

library resources (e.g., children's literature) (Teacher-Librarianship by Distance Learning, 2009a, para. 2).

Looking forward, the Chapter to follow will review the literature that is pertinent to this research study, followed by an in-depth discussion of the methods in Chapter 3. Finally, Chapters 4 and 5 will review the results and provide key conclusions based on the data analysis.

## CHAPTER 2 - A REVIEW OF THE LITERATURE

### 2.1 Introduction

While the research methods proposed for this dissertation project are reviewed in Chapter 3, this Chapter provides an overview of the literature relevant to information behaviours; information technologies and virtual environments; as well as a discussion of pertinent motivational concepts and how these are applied to the current project.

### 2.2 Information Behaviour Research

#### *2.2.1 Historical Context*

As noted in Chapter 1, information behaviours include a number of different components. While the concept of active or deliberate information seeking is certainly one important part of information behaviour, other areas are also significant. Encountering information through serendipity (Erdelez, 1999); avoiding information due to mental discomfort (Case et al. 2005); and engaging in information sharing (Rioux, 2005) are also considered important information behaviours. Furthermore, information behaviours must be considered in the context of both the cognitions and emotions that drive these behaviours.

The origins of information behaviour research can be traced to a 1948 conference for the Royal Society of Scientific Information (Wilson, 1999, p. 250). According to Wilson (1999, p. 250), a number of the papers presented at this conference described how scientists sought and used information (i.e., their information behaviours). Case (2006, p. 6) points

out that, during the 1960's, these types of studies began to be featured regularly in journals. That being said, Case also points out that these early studies have little in common with modern-day studies of information behaviour. Unlike the studies of today, the early studies focused on the types of information sources being used (e.g., journal articles, monographs, etc.) and little attention was paid to the user's experience of the information seeking process. The latter focus only came to the fore during the 1970's (Case, 2006, p. 6).

Over the course of the past 30 years, as interest in the user's perception of the information seeking process became more prevalent, a number of models have been developed to explain the processes by which people seek or acquire information. Some of these have been quite general, trying to provide insight into the information behaviours of the general population (e.g., Wilson & Walsh, 1996). For example, Wilson's model has been quite influential in the field (developed in 1981 and revised in 1996). His model suggests that primary affective, psychological, or cognitive needs are what stimulate people's secondary information needs. His model is also influential in its discussion of passive searching, as well as incorporating a feedback loop that points to the perpetual nature of searching (Wilson, 1999). Dervin's (1983) use of sense-making theory has also proved important for explaining information behaviours across multiple contexts. In Dervin's model, she notes that people cross from a state of information uncertainty to information

certainty (Dervin, 1983; Wilson, 1999). The success of sense-making theory in library and information studies research is evident in its widespread use, helping to explain information behaviours in areas that range from neonatal units to graduate studies (see Chang & Lee, 2000; Helliwell, 2003).

Unlike the theories described previously, which attempt to explain information behaviours across multiple circumstances (i.e., they are widely generalizable or transferable), others have provided a more contextual approach to explaining information behaviours. In this domain, one particularly well regarded model is a 1996 review of professional information practices. Leckie, Pettigrew, and Sylvain (1996) suggest that information needs must be seen in terms of work role/tasks and that this will improve success in information seeking. Another influential and context-based model was proposed by Ellis (1989, 2005). Developed with academic researchers in mind, it has been applied to studies of English literature researchers and physicists (Ellis, 2005). Ellis' model, (Wilson, 1999; see also Ellis, 1989; Ellis, Cox, & Hall, 1993; Ellis & Haugan, 1997) describes the information seeking process of academics in eight distinct stages, with considerable detail used to describe the process of information seeking (Fulton, 2000). It is this level of detail that gives Ellis' (1989) model its strength; his model provides an in-depth understanding of the information seeking process from start to finish. Other contextually-driven models related to both students (e.g., Kuhlthau, 1991) and

information technology (e.g., Hektor, 2003) will be discussed later, during an in-depth review of research into student information behaviours, as well as information behaviours and information technology.

Increasingly, the influence of context on information behaviours has come to the fore of information behaviour research. A 2007 ARIST (Annual Review of Information Science and Technology) paper by Courtright describes, and is an example of this increasing trend, where researchers are attending to the issue of context in information behaviour research (see also Palmer, Teffeu, & Pirmann, 2009). Courtright's paper notes that "over the past 20 years, [information behaviour research has come to be viewed] as a process that takes place within specified situations and contexts" (Courtright, 2007, 273). The assertion that information behaviour research is moving in this direction is further supported by the presence of a biennial conference entitled Information Seeking in Context that was established in 1996 (ISIC, 2008). This consideration of context in the study of human information behaviours drove this current study, where a theoretical exploration of information behaviours and motivation in online learning environments has been undertaken.

#### *2.2.2 Components of Information Behaviour*

In considering the relevance of information behaviours to students in the virtual classroom, it is important to isolate the different definitional components that were described in the introduction: active information

seeking; serendipitous encountering or passive information “seeking”; information sharing; information avoidance; as well as the cognitive and affective components that influence these information behaviours. Each of these elements will be described in view of their relevance to the virtual setting.

Active Information Seeking. As described in the introduction, active or practical information seeking can be defined as information seeking that occurs deliberately (Wilson & Walsh, 1996, Chapter 5, para. 2). Here, people seek a certain type of information because they are trying to fulfill a particular information need (Burnett, 2000). This type of information seeking is obviously quite relevant to the student context. In many cases, students in virtual classrooms will have been assigned a term paper that requires them to attain specific information sources in order to finish the project. For example, a student doing a term paper on Fetal Alcohol Syndrome may go to the OPAC (Online Public Access Catalogue) and search using the phrase “Fetal Alcohol Syndrome”. This would be considered active information seeking, which is certainly a part of most students’ information behaviour, online or not (Head, 2008; Holliday & Li, 2004; Whitmire, 2002). “Horizontal information seeking” or “power browsing” are interesting sub-types of active information seeking that have emerged recently in the literature. Here, individuals skim along the surface of multiple resources until they find the answer to their specific question. The actual format (e.g., journal article, book) of this information

has become less relevant (University College London, 2008, p. 8; see also Nicholas, Huntington, Jamali, Rowlands, & Fieldhouse, 2009). Because people are seeking information in this way, it makes sense for virtual course designers to create easy access points to multiple types of information (e.g., electronic journals, electronic books, blogs, etc.).

Passive Information Seeking/Information Encountering. Many terms have been developed to reflect the notion that not all information is attained in the active fashion described previously. That is, as noted in Chapter 1, some information is attained in a more accidental or happenstance manner. Wilson (Wilson & Walsh, 1996, Chapter 5, para. 2) calls this passive information seeking and passive attention. In both of these contexts, an individual comes across information that is useful to them, but that they were not actively seeking. Erdelez (1999, 2004, 2005; see also Foster & Ford, 2003; Heinstrom, 2006a) has also done considerable work in this area. She uses the terms information encountering and serendipity to reflect the idea of information that is obtained relatively accidentally. Through her research, Erdelez (1999, 2005) has developed a conceptual framework around which she frames her notion of information encountering. Erdelez (1999, Examples of Actual Information Encountering section) suggests that information encountering manifests itself in two key ways. First, an individual may find a piece of relevant information while they were seeking another type of information. Other times, an individual might run across some relevant

information in the course of other, everyday activities. These two concepts bear a marked resemblance to the notions of passive information seeking and passive attention denoted by Wilson (Wilson & Walsh, 1996, Chapter 5, para. 2); however, Erdelez's (1999) conceptions do not impose the notion of seeking on these encounters. The word seeking denotes a more active process, which is simply not evident here. As Erdelez (1999, para. 2) points out, her notion of information encountering shares more commonalities with "gathering" than "hunting".

Erdelez (1999, Who Encounters Information section) considers information encountering in four key ways. First, she discusses it in terms of the person who accidentally encounters the information. She suggests that there is a continuum of information encounterers, from those who encounter no information to those who see the information encounter as an important means of attaining information and consistently keep their eyes and ears open for it (i.e., the super-encounterers). Not only do these super-encounterers find information for themselves, but also for others.

The second way in which Erdelez (1999, Where is Information Encountered section) discusses information encountering is with respect to where people encounter information. While many environments (e.g., grocery stores; bus stops) provide outlets for information encounters, Erdelez (1999, Where is Information Encountered section) points out that libraries, bookstores, and the internet may be the most common locales in which people bump into information. Work by Erdelez and Rioux (2000)

suggests that email is a common means of sharing information that is encountered online. As the internet is likely one of the core information sources for students in online learning environments, understanding how information encountering works (or does not work) in these environments provides an opportunity to learn how to enhance student's online information encounters. In the context of virtual learning environments, this might be done by providing an easy option for forwarding potentially relevant information to their classmates. For example, within Google Reader, the option to email an article of interest to someone is available on every record, which can foster information sharing.

Erdelez's (1999, What Information is Encountered section) third way of describing information encounters relates to content. She states that there are typically two different types of information that are found via information encounters. The first type relates to solving a specific problem. This type of information has relevance for the user in terms of solving an information problem, though it was not the focus of the search being conducted when this information was encountered. Nonetheless, the user can put this information to almost immediate use. In contrast, the other type of encountered information is more generally related to users' interests. Erdelez (1999, What Information is Encountered section) notes that this information is potentially useful to the information encounterer, but that there are no immediate and specific applications. When thinking about information in this manner, Erdelez (1999) notes that information

encountering does not occur in the linear fashion expressed in most information seeking models, where there is one information problem to be dealt with at any one time. Here, the information “seeker” is dealing with multiple information problems or needs simultaneously.

Finally, Erdelez (1999, Information Encountering and Other Types of Information Acquisition section) discusses information encounters or serendipity in the context of information seeking and browsing. She notes that information seeking, browsing, and encountering are all forms of information acquisition. The difference between encountering and the other two forms of acquisition is that encountering is related to a single event, while seeking and browsing are processes. Erdelez (1999, Information Encountering and Other Types of Information Acquisition section) suggests that when positive information encounters occur, people may maintain the browsing or seeking patterns that they were using when they encountered a relevant piece of information. If information encounters could somehow be facilitated in virtual learning environments (e.g., through the use of Real Simple Syndication or RSS feeds), positive attitudes towards information acquisition in general may develop. It would seem that if one is more positive and open towards multiple types of information acquisition that the potential to find more and varied information is enhanced. This could be a huge advantage to students in virtual classrooms, who are not necessarily able to use the print materials available through the campus library and hence could find great value in

the myriad of online resources that are now commonly available (e.g., e-journals, RSS feeds, social bookmarking tools), as well as people in their larger community (e.g., colleagues, friends, children).

Information Sharing. Information sharing is another information behaviour that should be encouraged and developed in the virtual classroom. Rioux (2005) points out that sharing information found on the web actually occurs quite frequently, and is also deemed to be a reasonably communicative and social activity. As a result, it would stand to reason that instructors and/or course developers should develop strategies for creating a more social classroom as this would lead to more information exchanges (e.g., through the use of chat rooms, videoconferencing, etc.). The potential for information sharing highlights why course developers should provide alternate outlets for communication (e.g., chat programs, email, etc.) in the online classroom as it would help increase the amount of information available to these students.

Importantly, others have noted that using technology to facilitate information sharing will only work well if they are developed with the community's norms and practices in mind (Van House, Butler, & Schiff, 1998). Moreover, the sharing tools must be easy and convenient for the user (Erdelez & Rioux, 2000), such as the email function in Google Reader that was described above. These two observations should be taken into consideration when online courses are designed. However, there remains the possibility that students may share poor quality

information. For this reason, a classroom moderator plays an important role as they can monitor the type of information being shared and potentially help direct it the conversations in one way or another (Robins, 2004).

Rioux has also worked with Hersberger and Cruitt on the topic of information sharing (Hersberger, Rioux, & Cruitt, 2005; see also Hersberger, Murray, & Rioux, 2007). Together, these researchers built a framework for defining information sharing processes in online relationships. Overall, they suggest that the framework upon which online relationships or networks are built is not that different from that which you would see in more traditional communities. They suggest that while in traditional communities people would exchange things (e.g., a cup of sugar) to facilitate the formation of community, in online environments, it is information exchange (e.g., an interesting article or email joke) that leads to the development of community. If a community forms, information sharing tends to be even more widespread because, as Hersberger et al. (2005) point out, people enjoy sharing information with people that they like (i.e., fellow community members). This suggests that the virtual classroom must be built in such a way as to facilitate “liking” or at least respect between its members. One way to facilitate “liking” or respect amongst community members may be through moderated, synchronous communication (see Robins, 2004).

On a related but somewhat different note, Chatman (1992) suggests that people who are information poor may deliberately not share information because they doubt that others are either interested in helping them or able to help them. Although Chatman would argue that this type of behaviour is generally related to people who are economically marginalized, it is possible that this might extend to other groups as well (Chatman, 1992). For example, in the context of virtual learning environments, students may choose not to share information with others because they do not want to be viewed as inept or incapable. This is related to the notion that people tend not to share information when they have low self-esteem (Hersberger et al., 2005). Furthermore, online students may also doubt the ability or willingness of other members of the e-learning community to help them, perhaps thinking that the other students are only looking out for their own good grade. Indeed, this suspicion may be well founded and is consistent with what Chatman (1992) found in her study of older women in a retirement home. Here, the woman withheld information because it was one of the few areas in their life in which they could still exert control as they no longer, for example, controlled their own finances. In the case of students, they may withhold information from other students because it may be a way of controlling the grade that they receive in the course. It would seem that in these types of situations, the instructor must strive to create a classroom setting built on

trust, so that sharing activities may be maximized (see Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000).

Information Avoidance. As noted earlier, information avoidance occurs when individuals decide (either deliberately or non-deliberately) to not seek information, likely because it causes them mental discomfort (Case et al., 2005, p. 354). Case and his colleagues (2005) suggest that the ideas behind information avoidance have their roots in psychology, citing Festinger's notion of cognitive dissonance. Festinger (1957) noted that people will avoid information that conflicts either with their actions or what they already know in order to reduce the amount of dissonance or discomfort they feel as a result of such inconsistencies. Despite the notion that seeking knowledge reduces uncertainty, Case et al. (2005) point out that there are some instances where the knowledge will create more anxiety than does the uncertainty. For example, he points to McKenzie's (2003) research, which suggests that women do not want to know if their child has a disease before the birth of the baby. In this instance, knowledge of the disease would be more anxiety-provoking than the uncertainty. Information avoidance may have a role to play in virtual classrooms as well. In the online learning setting, if a student has an idea in mind of how much work a particular assignment will or should be, they may avoid entering the chat room because they do not want to learn from other members of the community that they may not be exerting enough effort on the assignment. The problem with this decision is that they may

also miss other potentially relevant information that is mentioned in the class discussions. Case and his colleagues (2005) suggest that in understanding information avoidance behaviours, the potential exists to develop interventions which will encourage information seeking, even in the wake of mental discomfort.

Cognition and Emotion. The cognitive aspects of information seeking have typically been the key focus when describing information behaviours. Theorists have created models that highlight how individuals invoke various information seeking strategies that help them bridge the gap between information and a lack of information. For example, Ellis describes a process called verifying, where individuals check the accuracy of their information (Ellis & Haugan, 1997, p. 396; see also Ellis, 1989; Ellis, Cox, & Hall, 1993). This is quite clearly a more cognitive-centered approach.

Less common in the information behaviour literature has been attention to emotion; however, a recent collection of papers shows a growing interest in research in this area (see Nahl & Bilal, 2007). This text looks at the influence of emotion across a range of information contexts, including studies of children, nurses, post-secondary students, and visually impaired individuals. Using a theoretical standpoint, Dervin and co-author Reinhard (2007) use sense-making theory to describe the role that emotion plays in users' judgments of information sources. Within the Nahl and Bilal (2007) text, these authors try to make clear how sense-

making theory has always included the emotional element. They point out that emotions are present at the gap between information certainty and uncertainty (Dervin & Reinhard, 2007).

Although recent years have seen more attention paid to this line of study, Kuhlthau's (1991, 1993, 2004, 2009) work was some of the earliest to reflect the notion that people's information behaviours will be guided, in part, by their emotions, though she also notes the influence of cognitive factors. Kuhlthau's (1991, 1993, 2009) research suggests that at each stage of the information seeking process, people's strategies will be guided in part by their feelings. For example, when one initiates the search for information, they tend to feel quite uncertain about their needs and as a result may feel a certain level of anxiety or frustration at this stage (Kuhlthau, 1991, p. 364).

Though other studies of specific emotions were until recently quite scant, anxiety is one emotion that has received a fair amount of attention in the information behaviour literature. In particular, Mellon (1986, 1988; see also Bailey, 2008) has offered some valuable insights into the role of anxiety in student information behaviours, highlighting the intimidation that undergraduates feel in the academic library. More recently, Jiao and Onwuegbuzie (2001a, 2001b, 2002, 2004; see also Kwon, Onwuegbuzie, & Alexander, 2007; Onwuegbuzie & Jiao, 1998a, 1998b, 1998c, 2000) have also put together an impressive body of anxiety research in the information context, noting the importance that personal characteristics

play in either increasing or decreasing library anxiety. Berryman (2006; see also Parker & Berryman, 2007) also notes the role that nerves can play in the information seeking process, pointing to the anxiety felt by policy analysts who are searching for information under increasingly tight deadlines. Interestingly, Berryman (2006) also notes the potential for this anxiety to be quelled if the individual can create a structure amidst which known pieces of information can be added. In contrast to the anxiety felt at the beginning of a search, as one finishes an information search, they tend to feel satisfied with their results; it may even be this feeling of satisfaction that leads them to terminate their search.

One particularly interesting contribution to Nahl and Bilal's (2007) text on emotion and information behaviours is by Given (2007). Given's work is compelling because it looks at a broad cross-section of emotions that influence the information behaviours of students. Beyond just the influence of anxiety (i.e., fear), Given points to the role of love, joy, surprise, anger, and sadness as important factors in the information seeking process. For example, Given considers the situation where students are pleased with the way that their search is going, but also harbour doubts that they may be overlooking something important. Given suggests a need to consider the complex nature of emotions in designing appropriate information services.

In studying the information behaviours of students in virtual communities, it was and is essential to consider both the cognitive and

affective components that drive their information activities. Understanding the strategies that were used to find information within the context of the virtual classroom could, for example, help course designers to develop tools that help students critically evaluate information. With respect to emotions, understanding the anxiety of technophobes who were trying to locate information in a virtual learning context may reflect a need for additional technology training at the onset of virtual learning courses. Similarly, acknowledging the excitement of technophiles' experiences with online resources and helping them to channel their energies towards appropriate academic activities provides a possible benefit of accounting for students' emotions in the online learning environment. In addition, although the impatience felt when retrieving information had previously been specifically attributed to the "Google Generation", this feeling is becoming increasingly common for all online information users (University College London, 2008, p. 19). As a result, this tendency should be attended to when developing information retrieval options for online courses. Facilities, such as direct links to electronic journals would certainly help meet this need for immediate gratification.

### 2.3 Student Information Behaviour

While discussing the components of information behaviours provides a general overview of the different ways in which people seek information, it is equally important to consider the specific information behaviours of relevant user groups. In this case, it is important to examine

how researchers have described the information behaviours of students as this informs the current study of students in online learning environments. The relevant literature is discussed according to the information behaviour processes of students, the rationale for particular information behaviours, as well as the types of resources that are typically used.

### *2.3.1 Information Behaviour Processes*

A common way to understand information behaviour processes is to look at them in the context of explanatory models. One of the most influential models to examine the student context was developed by Kuhlthau (1991, 1993, 2004; see also Kuhlthau, Heinstrom, & Todd, 2008). This model was developed by examining the information behaviours of secondary students. Kuhlthau considers the cognitive, physical, and affective experiences of searchers during six stages of information seeking (Hyldegard, 2006, p. 278; Kuhlthau, 1991, pp. 366-368). The first stage is labeled initiation (Kuhlthau, 1991, p. 366). Here, the student looks for background information. They tend to feel both uncertain and anxious about the task that lies ahead. This assertion is consistent with findings from a recent study that looked at demotivating factors in the information seeking of secondary students and noted that confusion was common when students began their research (Smith & Hepworth, 2007). At the next stage, selection, users decide on the general topic area for their search. The student may feel perplexed,

slightly anxious, and perhaps temporarily ebullient after they have selected the topic. The third stage has been dubbed exploration. This is the stage where individuals begin the process of looking for information on their selected topic. Confusion, doubt, and uncertainty dominate the emotional landscape at this point. At stage four, the focus of one's topic is further formulated and refined. Kuhlthau (1991, p. 367) suggests that this leads individuals to feel emotionally optimistic and confident about their ability to complete the task. Stage five is referred to as information collection. Documents relevant to the refined topic are sought here. People are still feeling confident about their ability here, but are also realistic about the amount of work required to complete the project. Stage six can be referred to as presentation or search closure. At this point, the search comes to an end. Individuals may engage in one last search to ensure that no materials have been missed and confirm citation materials. If the search process has gone well, there is a sense of relief at this stage, though disappointment can prevail if the search has not gone well (Hyldegard, 2006, p. 279; Kuhlthau, 1991, p. 367).

Kuhlthau's model has been quite important in its attention to the emotional aspects of information behaviour (Julien, McKechnie, & Harta, 2005). As mentioned previously, this model acknowledges how emotions or affect may influence a user's information search. Certainly, when Cheng (2003) examined the influence of cognitions, emotion, and action on student information behaviour, Kuhlthau's work must be considered a

core influence (especially with respect to the emotional aspect). It should also be acknowledged here that Mellon's (1986) work regarding the anxiety of undergraduate students was also an early influence in studying the emotional experience of student information behaviours. As noted earlier, this consideration of emotion may be particularly interesting in the virtual classroom, where emotions, such as technology anxiety or alienation may be common.

The importance and utility of Kuhlthau's model has not gone unnoticed by other researchers. In a recent study, Hyldegard (2009) looked at the explanatory capability of Kuhlthau's model in the context of group information seeking. Hyldegard (2009) did find some differences between Kuhlthau's model and her own observations of the group information seeking process. In particular, she noted that the groups were writing up their projects, despite the fact they had yet to clearly define their focus. This is inconsistent with what Kuhlthau would have expected to find at the final stage of the information seeking process. In another study, Todd (2006) used Kuhlthau's model as a backdrop for exploring how students in grades 6 through twelve who have been engaged in an information literacy program transform the information that they have gathered while engaged in the search process into the knowledge that will be used to write their research paper. He points to the need to pay close attention to stage four (refining the topic) of Kuhlthau's model in order to ensure that students are interacting with and synthesizing the information

they are collecting and not just putting the facts together. Kuhlthau's model has also been the focus of a recent study that examined undergraduate students who were studying in the new millennium. Holliday and Li (2004) engaged in their study in order to determine whether Kuhlthau's model was still appropriate to a newer generation of students for whom interactions with digital information was a way of life. Interestingly, Holliday and Li (2004) found that the students were actually no longer engaging in each of Kuhlthau's identified stages. In particular, stage four (topic refinement) was being glossed over as students were not bothering to refine their initial searches and topics. This finding is somewhat unsettling when one considers that Todd (2006) had pointed to stage four as being so important to the creation of knowledge. These findings are important to the current study as they point to the need to consider whether students of today are interacting with information differently than students of previous generations.

Another reasonably influential and early model developed to help explain the information behaviour of students was that of Krikelas, whose 1983 model came out of a university context and was driven by the notion that it is essential to know why one is seeking information (i.e., the purpose). He suggests that information behaviours can be broken down into three basic types of activities (Henefer & Fulton, 2005; Krikelas, 1983). First, Krikelas describes information seeking. In this activity, people are responding to a particular need and as a result, they go out

and look for information (Henefer & Fulton, 2005, pp. 225-229) This is consistent with Wilson and Walsh's (1996) description of active information seeking. In contrast, information gathering refers to the gathering of information for a non-immediate need. Conceptually, this component is quite similar to the ideas of passive attention/seeking (Wilson, 1999) and information encountering (Erdelez, 2005). Finally, there is information giving, where people share the information that they gathered. This is another strand of Krikelas' (1983) work that can be seen in the work of recent researchers (see Erdelez & Rioux, 2000; Rioux, 2005). Krikelas (1983) points out that both seeking and gathering arise out of uncertainty about a particular problem or issue in their lives. A particularly interesting aspect of Krikelas' model relates to the notion of preferred information sources. First, he points out that other people are considered by most to be the superior source, particularly if the seekers know from personal experience that these individuals have the requisite knowledge and can be easily contacted. It is only after people have been exhausted as a potential resource that individuals turn to "print" sources (Krikelas, 1983). Though Krikelas' study is now quite old, it still has interesting implications for the virtual classroom. That is, are "virtual humans" still a preferred source of information or have other resources (e.g., web sites, articles) become more important at this stage? Certainly, in studies as recent as 2009, people are still considered a highly valued

source of information (e.g., George et al., 2006; Head, 2008; Sadler & Given, 2007; Vezzosi, 2009).

Research by Macpherson (2003) also looked at the process by which students search, paying attention to the student's mental representations. Macpherson notes that students start by using declarative knowledge to frame their information need, while procedural knowledge enables them to actually go out and complete the search. Similarly, Cole, Lin, Leide, Large, and Beheshti (2007) examined students' mental search models in order to determine whether or not the way that the students have constructed their search topic is consistent with the structure used to design thesauri. Here, understanding how students perceive and form a search enabled the researchers to determine whether the current structure of thesauri is amenable to student search strategies or whether information literacy interventions aimed at encouraging a more hierarchically-driven mental model would facilitate the use of thesauri for search purposes.

Unlike the studies described above, many examinations of student information behaviour processes are more concerned with explaining specific elements within the search process and less with building overall models of student information behaviour. For example, Foster and Ford (2003) examined how students met some of their information needs by chance and not because they were actively seeking. Other researchers have looked at the process that guides the formation of search strategies

and found that students tend to have quite ineffective search strategies (Armstrong et al., 2001; Leckie, 1996; Nowicki, 2003; Pennanen & Vakkari, 2003; Valentine, 2001). In fact, Valentine (2001; see also Bartsch & Tydlacka, 2003), noted that students formed search strategies based on ease and sought out the most convenient and not necessarily the best resources first. Similarly, Armstrong and his colleagues (2001; see also Nowicki, 2003; Pennanen & Vakkari, 2003) also observed a lack of aptitude in student search strategy development. A meta-study by Thompson (2003) considered how students search the internet and found, like the studies noted previously, that the students' capacity to both locate and evaluate information needed enhancing (see also University College London, 2008). Finally, a study by Zhang, Anghelescu, and Xiaojun (2005) looked at the search process in the context of domain knowledge. In their study, they found that knowledge of a particular domain may increase the number of search iterations and search terms used, but it does not necessarily result in better search outcomes. This finding is also consistent with a more recent study, which compared how well neuroscientists versus life scientists could retrieve neuroscientific information from PubMed. They noted that it was the strategies, rather than the final content that was different (Vibert, Ros, Le Bigot, Ramond, Gatefin, & Rouet, 2009). This suggests that it is knowledge of how to use a database effectively, as opposed to subject knowledge that is important to the success of a search. Interestingly, an intervention study by Branch

(2003; see also Barsky & Bar-Ilan, 2005) reflects the positive outcomes (both scholarly and personally) that can result when students receive information literacy training. Other researchers have also noted that both time and experience can enhance the students' capacity to effectively track information (Chu & Law, 2008; Halattunen & Jarvelin, 2005; Vakkari, Pennanen, & Serola, 2003; Yuan, 1997)

Limberg and Sundin (2006) took a slightly different perspective when approaching the study and understanding of student information behaviours. They examined teaching processes in order to understand how students approach information. Based upon the results of their study, these researchers noted the need to frame information literacy instruction in a way that is contextually and topically relevant to the students. They argued that using this approach would enhance the students' information seeking abilities.

### *2.3.2 Explaining Information Behaviours*

Other researchers are somewhat less focused on process and instead try to understand the reasons why students engage in particular information behaviours. For example, some try to explain this phenomenon by asking the students why they are not using the library. Commonly, students claim that they are nervous about using the library and approaching librarians for help with their query (Bailey, 2008; Carlile, 2007; Cleveland, 2004; Holliday & Li, 2004; Mellon, 1986; McClure & Clink, 2009; Seamans, 2002). Seamans (2002) also found that the

students went to the internet instead of the library for their research needs because it had been recommended by their secondary school instructors. Other students have simply found it easier to track and use information that is available online (Thompson, 2003; Vezzosi, 2009). Vezzosi (2009) found in her semi-structured interviews with graduate students that the library is used when the documents are not immediately accessible online.

Other researchers look beyond the context of the library, seeking to instead understand more generally why students look for information. Whitmire's (2003, 2004) work has been influential in this regard. Whitmire suggests that the way in which students view knowledge has a profound impact on how they approach the information seeking process. Drawing on the ideas of Magolda (1992), along with King and Kitchener (1994), Whitmire (2003, p. 130; see also Holliday & Li, 2004, p. 359) describes four ways of viewing knowledge: absolute, transitional, independent, and contextual. Absolute knowledge is very black and white, with people of authority providing guidance on what is right and wrong. Transitional knowledge reflects a growing sense that knowledge is not entirely certain; here, individuals recognize that people of authority may be biased in relaying knowledge. Independent knowledge is reflective of the idea that there is no single truth and that everyone has their own ideas. Finally, contextual knowledge reflects the sense that you will decide what is true or not based upon the particular situation or context in which you find yourself (Holliday & Li, 2004, p. 359). Using these categories, Whitmire

(2004) found that those who believed in absolute knowledge sought and selected information that was consistent with what they already believed and did not have any evaluative criteria in place for selecting quality information. In addition, they tended not to trust their own judgment and sought the reassurance of an authority figure. Those who viewed knowledge as transitional were more likely to accept conflicting information and had an evaluation schema in place for selecting resources. Furthermore, those who viewed knowledge as being contextual tended to be the most adept at evaluating their sources. Whitmire's findings are interesting in the context of the current study because they suggest that personal characteristics can influence one's information behaviours. With that in mind, it seems possible that one's motivational orientation might too be an important factor in influencing one's information behaviours.

In a related vein, Heinstrom (2003, 2005) attempts to decipher what influences information behaviours. In her discussion of the five factor trait model of personality as described by Costa and McCrae (1992), Heinstrom (2003) notes its potential implications for information behaviour. Like Given (2002), she suggests that in understanding the traits of information consumers, more individualized types of service can be considered. Heinstrom (2005) points to the prominence of the five factor model in measuring personality types. The five dimensions of personality type include neuroticism, extroversion, openness to experience,

agreeableness, and conscientiousness. Individuals who are highly neurotic tend to be more nervous, while those with low levels of neuroticism tend to feel more secure. Those high on the extroversion trait, tend to be outgoing, while those low on this trait tend to be introverted or withdrawn. Those who are more open to experience are more curious, while those who are less open are considered more cautious. If one is considered to have high levels of agreeableness, they are often seen as compassionate, while those with lower levels of agreeableness are often more competitive. Finally, those who are highly conscientious tend to be well organized; those low on this trait tend to be more careless. Each of these traits is expected to in some way affect one's information behaviours. In her study of graduate students, Heinstrom (2003) noted that neurotic individuals tend to encounter more barriers in information seeking. Extroverts, on the other hand, tended to be quite confident in their information seeking habits, with a tendency to use other people as information sources. Those who were more open to experience exhibited information seeking patterns that were wider in scope. They also enjoyed finding documents that altered their previous assumptions. Those individuals who were less agreeable (i.e., more competitive) tended to see time as a critical barrier to effective information seeking, not recognizing their own lack of time management skills. Interestingly however, low levels of agreeableness were considered to be an asset in facilitating the evaluation of information. Finally and perhaps not surprisingly,

conscientious individuals tended to find more relevant documents than careless students. Heinstrom (2003) points out that individual difference must be considered when creating search systems, as well as in the provision of information services. These findings have clear implications for the virtual learning environment as well. Personality differences that result in varying communication preferences (e.g., speaking out in public versus in private settings), as well as preferred search patterns (e.g., using the library versus the internet) must be understood in order to facilitate maximal information acquisition for all.

Social positioning theory has been advocated as another social theory with important implications for student information behaviour, particularly everyday information seeking. Core to social positioning theory is the idea that individuals have a fluid and socially constructed identity (Given, 2005; Harré & van Langenhove, 1999). According to Given (2005; see also, Harré & van Langenhove, 1999), this theory offers the potential to develop more individually tailored information services. Given's (2002) research with mature students notes the impact that positioning can have on how individuals pursue information. For example, because mature students were positioned as "different" in the context of the classroom, they were often reluctant to ask questions of either professors or fellow students. In this sense, positioning theory might also be considered interesting in the context of completely virtual classrooms. Here, individuals have the opportunity to position themselves in the

manner in which they would like to be seen; no one can see that they are different. It would be interesting to note whether or not individuals are hence stereotyped less, which could potentially facilitate information sharing. It may allow individuals to create the learning reality that they desire and not one that has been foisted upon them. Also relevant to this dissertation, Valentine (2001) looked at the driving forces in information gathering, finding that students tend to be driven by good grades. These students sought to determine what the instructor expected in terms of the assignment and then looked for information that specifically filled that criterion. Weiler (2005) also looked at the motivation behind information gathering habits and noted that students tended to use the internet and television in order to gather requisite information, as opposed to gathering information by reading print materials. Indeed, findings by researchers, such as Vezzosi (2009) and Barrett (2005) also pointed to students' preference for the internet as an information source.

In a similar vein, Urquhart and Rowley (2007) examined what drives information behaviours and put forth the idea that micro (e.g., information literacy) and macro (e.g., organizational leadership) forces influence the way in which individuals engage with online information. This proposition is consistent with findings by Saumure and Given (2004), which pointed to the presence of both internal and external factors that either enhanced or impeded the information seeking of visually impaired undergraduate students.

A study by Tella et al. (2007) also sought to explain what drives student information behaviour. Their study revealed that students who feel more efficacious in their use of information tend to make better use of electronic information. They focused on the concept of self-efficacy and found that increased self-efficacy led to more efficient use of electronic information and better academic performance. Fields (2005) also noted the importance of self-efficacy for effective student information seeking. As described in Chapter 1, self-efficacy can be thought of in the following terms: if people have positive feelings or thoughts about their own specific abilities, they are more likely to engage in activities that highlight these abilities (Bandura, 2001; Miwa, 2005). The concept of self-efficacy has interesting implications for information seeking and sharing in online learning environments. It seems quite likely that those individuals who have higher self-efficacy with respect to virtual learning and digital technologies may experience greater success in locating resources. These individuals would likely be more comfortable with sustained engagement in virtual information seeking activities.

To some extent, self-determination theory (SDT) has also been used to help explain what drives student information behaviour. Within the LIS literature, SDT is viewed primarily in terms of internal and external rewards. For example, Julien and Michels (2004) found that a student information seeker tracked more sources when the source of their motivation was internal (e.g., the student held a genuine interest in

studying a topic). Within SDT, rewards coming from an internal source are generally thought to be more sustaining, because the source of the reward does not usually disappear once the task is complete. An example helps illustrate this point. In this instance, students may work extremely hard to get a good grade in their information literacy course; however, once they have received that grade, their motivation to keep learning these skills is gone. In contrast, students who truly enjoy learning how to conduct literature searches are more likely to continue practicing their new information literacy skills because the source of enjoyment comes from inside them and is not a fleeting external source.

Flow theory is also relevant when considering how interest in a task may help sustain one's motivation to continue that task. According to Csikzentmihalyi (1990), for individuals to achieve an optimal experience (i.e., flow), they must find the optimum balance between their own ability and the difficulty of a task. If a task is too difficult in the context of an individual's ability, the individual may become frustrated. However, if the task is too easy for an individual to complete, they will likely become bored with the task. The theory's relevance to understanding the information behaviour of students can be noted in a study by Choi, Kim, and Kim (2007), who found that educational achievement could be enhanced if students experienced flow during their interaction with the technology. By creating a virtual learning environment that optimizes this balance between skill and task difficulty, students may experience flow in their

learning and information seeking activities. Instead of being frustrated by their ineptitude at using the learning technology, they may experience a feeling of flow while preparing and seeking content for an assignment.

Bearing this in mind, the technology used in creating the virtual classroom should be user friendly, so that the challenge comes from the content of the assignment and does not result in frustrations over technology that is difficult to use.

### *2.3.3 Preferred Sources of Information and Types of Information Found*

The content and format of information is also of relevance to understanding individual information behaviours. With the passage of time and as the internet becomes increasingly pervasive, researchers are finding that undergraduate students are increasingly using the internet as their preferred source when completing course assignments (Holliday & Li, 2004; Jones, 2002; Kumar & Kaur, 2005; McClure & Clink, 2009; OCLC, 2002). These findings are supported by Whitmire's (2001) research, which found that while more senior than junior undergraduates use the library, none of them profess to use the library very frequently. These findings also extend to graduate students (e.g., Barrett, 2005; Brown, 2005; George et al., 2006, Vezossi, 2009). For example, Brown (2005) pointed out that graduate students in Molecular Biology preferred to use PubMed and bioinformatics databases to fulfill their information needs; as a result, the physical library became less central to their studies. Vezossi (2009) also found that graduate students preferred the internet. However,

they also relied on other people to recommend quality sources and mined the citation lists of relevant articles. In their study of nurses and nursing students, Dee and Stanley (2005) came to the conclusion that these participants (especially the nursing students) were relatively well rounded in their information seeking, but they noted that training in the use of online databases had the potential to further enhance their use of this resource. In an effort to understand the resources used by distance education students, Morrison and Washburn (2004) conducted a series of interviews. They pointed to the importance of the web, as well as friends and family for helping to meet academic information needs. A study by Urquhart and her colleagues (2005) delved deeper to understand the preferred ways to access electronic information, pointing to the utility of both search engines and the websites of relevant organizations. Interestingly, Savolainen and Kari (2004) have pointed to the usefulness of the internet for making students' everyday lives easier to maneuver. However, they also observed that human and print sources are still often preferred due to their perceived higher quality, with the internet perhaps being better used to supplement these other resources.

Other information behaviour researchers have examined the types of information that students are actually finding and not just their information preferences. In his examination of the bibliographies of undergraduate students, Davis (2003) found that while the reference lists of students from the year 2000 were longer than those of students from

1996, the year 2000 cohort tended to use more non-academic sources, often from web-based searches (e.g., Google). This conflicts with more recent findings by Mill (2008; see also Junni, 2007), who found that journals and books still dominate the citation lists of undergraduates. Similarly, a study by Worel (2004) explored how students who frequent the health sciences library use information, pointing out that Medline is used almost exclusively. Finally, in the realm of distance education, Kelley and Orr (2003) found that distance education students tend to use digital, as opposed to print resources. This is perhaps not surprising given that digital resources are likely easier and quicker for distance students to access.

Cumulatively, the body of research around student information behaviours provides an excellent launching pad for the current study. While there have certainly been studies that have addressed the information behaviours of distance students (e.g., Morrison & Washburn, 2004), as well as students in the online environment (e.g., Holliday & Li, 2004), few have looked at these behaviours in the context of motivational theory. As such, it is appropriate to extend our understanding of student information behaviour by looking at in this way.

## 2.4 Information Behaviours and Information Technology

According to the Online Dictionary of Library and Information Studies, Information Technologies or IT is “a very broad term encompassing all aspects of the management and processing of

information by computer, including the hardware and software required to access it" (Reitz, 2007). Increasingly, information technologies (IT) are playing a significant role in our daily lives. From surfing the web to texting to social networking, it seems impossible to escape the influence of information technologies. In one sense, these technologies make our lives easier, while in another sense they can inundate us with too much information. Because of this increasing pervasiveness, it is not surprising that investigations of the information behaviours that occur when using IT are also increasing. Moreover, explanatory models, designed to enhance our understanding of our interactions with these technologies are also becoming increasingly prevalent. This section of the literature review will explore the role of information technology within individual information behaviours, paying particular attention to studies of the internet. The discussion of information technologies will be broadly classified into three subject areas: the process of using information technology; the factors that drive how the technology is being used; and what information is being located and shared using these technologies. Within this rubric, the various studies being described may consider more everyday information contexts (e.g., searching the web during one's leisure time) or professional/academic contexts (e.g., using the Online Public Access Catalog (OPAC) to track information for a class assignment).

#### *2.4.1 The Process of Using Information Technologies*

A plethora of studies have dedicated themselves to better understanding the information behaviour processes that occur when people are interacting with information technology. For example, Hektor (2003) developed a model that helps explain the process that people go through when interacting with information technologies; in this case, the web. Hektor (2003) suggests that information activities result from project-based activities where people encounter a gap in information that must be filled. He suggests that within everyday life, there are eight types of information behaviours or activities. The first type is labeled search and retrieve; this is akin to active information seeking (Hektor, 2003, p. 128). A recent study found that gathering information (i.e., active information seeking) is the most challenging task (as compared with browsing or completing online transactions); gathering information tended to take longer and was more comprehensive (Kellar, Watters, & Shepherd, 2007). Browsing is the second type of information activity and it involves looking for information in a place where you are more likely to encounter a specific and relevant resource (e.g., scanning relevant categories for information in Yahoo). Monitoring, the third type, can be thought of as looking for information in a relevant source that is regularly updated (e.g., an RSS feed and accompanying reader). Unfolding refers to information that is retrieved when something you were watching or reading catches your attention (Hektor, 2003, p. 128). Exchange of information, the fifth type of

information behaviour, involves the reciprocal sharing of information.

Dressing refers to an information activity where a product results (e.g., an academic paper). Next, an “instruct activity” refers to unidirectional giving of information, generally to an anonymous or general source (e.g., an online store). Finally, publishing refers to a situation where someone displays information for others to see (Hektor, 2003, p. 129). Hektor’s model is interesting in that it is quite explicit in the level of detail afforded to describing types of information activities. In the context of the web, Hektor (2003) suggests that people use the internet to acquire everyday information when it is perceived to be the most convenient way to attain the requisite information. When considering virtual classrooms, it may well be that the internet is always the most convenient choice and hence students consistently go there to meet their academic information needs. This possibility suggests that students in virtual classrooms need to get quality training in the critical evaluation of internet materials as they need to be motivated to find the best possible information available (e.g., looking for information that contradicts what they already know). Certainly, this need for training is consistent with earlier described research, which noted the ineffective search strategies of students at all levels of study (Armstrong et al., 2001; Leckie, 1996; Nowicki, 2003; Pennanen & Vakkari, 2003; Valentine, 2001). Importantly, training or information support must be considered in the context of what Kuhlthau (2009, p. 71) terms the “zone of intervention”. Kuhlthau has suggested

that interventions should only be undertaken when they offer something new and useful to the trainee; otherwise, the trainee may become frustrated or confused.

A recent intervention study looked at the actual processes that occur when people are viewing websites (Huang, Shen, Chiang, & Lin, 2007). Here, the researchers looked at the websites that were visited and noted how many website categories were reviewed, the number of sites visited within each category, as well as the number of pages downloaded on each site. They found that these three elements were positively correlated with one another; moreover, these elements also correlated positively with the speed at which one searches the web (Huang et al., 2007). These findings are significant in that they offer insight into how users approach web-based searching. Another recent study by Kraaijenbrink (2007) offers a different type of insight into web-based information behaviours, noting where gaps occur in the online information behaviours of engineers and how these gaps might be filled. Kraaijenbrink observed that engineers experience gaps when using, acquiring, and identifying information. He pointed out that more attention is paid to the aesthetics of websites, as opposed to how well a website actually works. In a related vein, Blake and Pratt (2006a; see also Blake & Pratt, 2006b) examined how academic researchers synthesize information with the end goal of understanding how the information technologies used in this process could be enhanced. Similarly, in a 2009

OCLC report, Palmer, Teffreau, and Pirmann described how academic researchers use information in the online world. A 2005 study offers insight into a different component within information behaviour; these researchers defined the process and criteria by which a user assesses the quality of a website, which also has implications for how to better design web sites (e.g., provision of visual and textual information in advance of users opening a website) (Tombros, Ruthven, & Jose, 2005). Understanding the process of using information technologies in order to enhance the accompanying information behaviours is a common approach and is an important component of this dissertation (for other examples of this approach, see also Gremett, 2006; Large & Beheshti, 2005; Rose, 2006). The results of the current study will aid our understanding of how students are seeking, sharing, and evaluating information in online learning environments, so that these processes can be enhanced.

Turning to the actual process by which searches are formed, a recent study examined how both health professionals and patients searched health databases (Meats, Brassey, Heneghan, & Glasziou, 2007). Overall, the results suggested a lack of sophistication amongst the searchers, who tended to use single terms, as opposed to Boolean searches (Meats et al., 2007; see also Mat-Hassan & Levene, 2005 for a discussion of users' unrefined search processes). That being said, the researchers also determined that users wanted to be able to search more

effectively. Hence, researchers were amenable to upskilling if training was provided (Meats et al., 2007; see also Byrnes, Kulick, & Schwartz, 2004).

A study by Barsky and Bar-Ilan (2005) revealed that the instructions given for finding web-based information also has a role to play in whether or not a search is successful. Aula and Nordhausen's (2006) study employed a comparative strategy that is common when studying search processes.

These researchers compared the processes by which expert and non-expert researchers looked for information and found that non-expert researchers tended to use less precise search terms (Aula & Nordhausen, 2006; see also Tabatabai & Shore, 2005; and see Yi, Beheshti, Cole, Leide, & Large, 2006 for a comparison of history and psychology students' search strategies). It was also noted that the process of searching was more successful for users who were more confident in the search process; therefore, providing sufficient training opportunities would again seem to be of value (as described in the discussion of student information behaviours). This finding is also consistent with Valenza's (2006; see also Madden, Ford, Miller, & Levy, 2006) study of younger peoples' search behaviour, which again noted the effectiveness of training or interventions on search processes. Finally, a study by Urquhart et al. (2005) observed the importance of training to enhancing search success, but also noted that personal experimentation with the search process was also important. These findings are significant for the online learning environment in that they suggest the need for high quality training opportunities, which can be

more challenging to provide in the online context, particularly in ways that allow for interaction between trainer and trainee.

#### *2.4.2 Factors Driving the Use of Information Technologies*

Extending beyond studies that examine information behaviour processes and their relationship to information technologies are those studies that seek to understand why these processes transpire as they do. These may take a more theoretical approach (e.g., Choi, Kim, and Kim (2007) used flow theory to explain students' interactions with information technology) or they may examine particular situations to understand the relation between information behaviours and information technology (e.g., Junni (2007) examined how Master's students are using the library's electronic resources).

Beginning with a discussion of the more theoretically-oriented studies, Urquhart and Rowley (2007) point out that there are a range of both micro and macro variables that influence a students' online information behaviour, with the macro variables having the capacity to influence the micro variables. The researchers go on to outline the various types of factors that exist within both the macro and micro context. Within the micro context, they first report "information literacy" as an influential variable. Here, they suggest that the student's capacity to locate information will influence the student's information behaviour in that they may track poor quality information if they do not have the required search skills and information literacy (Urquhart & Rowley, 2007, p. 1191).

They also include “search strategies” as a variable within the micro context (Urquhart & Rowley, 2007, p. 1192). Here, some students may, for example, choose to search Google because it is easier to use and more familiar, while others might prefer to do a Medline search because the results are of a consistently higher quality. Related to search strategies, Hupfer and Delter (2006) found that individuals who were oriented strongly towards both themselves and others tended to form the most complex searches and engage in more frequent searches; conversely, those who were low in their orientations towards others engaged in searching the least frequently. At the micro level, students are also influenced by their professor’s expectations (implicit or explicit) (Urquhart & Rowley, 2007, p. 1192). For example, if the professor expects to see journal articles, the student may be more likely to search Medline. Furthermore, disciplinary differences also impact information behaviours at the micro level (Urquhart & Rowley, 2007, p. 1192). For example, students with a clinical background were more likely to use e-journals. They also suggest that style of pedagogy may also play a role in the students’ information behaviours. For example, the teachers could require that students use journal articles when completing their research assignments and hence the students must learn how to access this type of material (Urquhart & Rowley, 2007, p. 1195). Finally, the researchers also point to support and training as a micro-level influence on information behaviour. In this case, when academics and library staff worked together

to support and train students, the researchers found that e-journal use and awareness was increased (Urquhart & Rowley, 2007, p. 1193). This is not surprising given the results described in the previous section, which highlighted the need for and importance of adequate training to improve search prowess (e.g., Branch, 2003; Barsky & Bar-Ilan, 2005)

Macro-level influences on information behaviour have also been identified by Urquhart and Rowley (2007), including the design of information technology, infrastructure, access to resources, the culture and leadership of the organization, along with funding and policies. When describing information resource design, Urquhart and Rowley (2007, p. 1193) refer to the availability of “specialized resources” to meet specific needs. With respect to infrastructure, they refer to the availability of information resources within virtual learning environments (Urquhart & Rowley, 2007, p. 1194). Access in this case was particularly related to the functionality inherent in off-site access offered by the institution. It helped students who had conflicting demands in their life (e.g., work and family demands). The culture and leadership of an organization is an influential macro factor in that, for example, research-focused institutions may explicitly or implicitly encourage greater degrees of information seeking (Urquhart & Rowley, 2007, p. 1194). Funding, along with policies also influence student information behaviour at a macro level. For example, consortia arrangements between libraries may increase the number of databases and electronic journals that students are able to access

(Urquhart and Rowley, 2007, pp. 1194-1195). Urquhart and Rowley's (2007) discussion of both micro and macro factors provides insight into how students' information behaviours may be altered, enhanced, or diminished. In particular, understanding the macro influences may offer insight into why students with the desire and capacity to effectively seek information resources are not doing so.

Consistent with Kuhlthau's (1999) notion that context cannot be ignored when attempting to understand information seeking behaviour, Kari and Savolainen (2003; see also Kari & Savolainen, 2007) have developed a contextual model of information seeking on the web. They suggest that it has traditionally been more common to focus on immediate interactions when attempting to understand information behaviour on the internet. These researchers point out however, that the broader context of an individual's life may provide a fuller understanding of why people search the way that they do. For example, they suggest that socio-economic status or career type could also impact an individuals' information behaviour, rather than just their immediate information need (e.g., Thivant, 2005). Of note, a 2005 study by Enochsson points to another interesting factor of contextual relevance: gender. Enochsson (2005) found that boys tend to view the results of their internet searches as more reliable than girls do. Brynin (2006) also noted the influence of gender on online information behaviours. He observed that women tend to embrace the social aspect of the internet, while men use it more as an

information medium (Brynin, 2006). Kari and Savolainen's work (2003, 2007) is particularly important, given the increasingly important position given to context in information behaviour research, which has recently culminated with a paper in the *Annual Review of Information Science and Technology* (see Courtright, 2007).

Kari and Savolainen's hierarchical and nested model is comprised of a number of contextual levels, each of which influences the others. The broadest level found in this model is an individual's life world. According to Kari and Savolainen (2003, p. 159), the concept of life worlds refers to the person's everyday reality and includes personality, demographics, and values. It is worth pointing out that a 2005 study by Heinstrom provides support for the notion that personality has a role to play in the online information seeking of students. For example, Heinstrom (2005) found that analytical students were the most likely to delve deeply into a website when searching for information. Kari and Savolainen (2003, pp. 159-160) next speak to a concept they refer to as domains. These are subsets of the individual's life world. Specifically, they refer to work and non-work related domains. Situations are encompassed within domains and are more specific than domains; that is, situations are where actions take place (Kari & Savolainen, 2003, pp. 160-161). Actions are the means by which people deal with specific situations, whereas information actions refer to the use of information to deal with these situations (Kari & Savolainen, 2003, p. 161). Next in the model is information seeking,

where individuals seek out appropriate sources of information to help deal with their problems. Here, it is worth noting that Goldner (2006) found that individuals who actually have a health-related problem are more likely to seek out health related information than those who perceive themselves as healthy. This suggests that information seeking is more common when a particular problem has been identified, implying that active information seeking is a more common approach in this situation. Information sources are the next element in the Kari and Savolainen (2003, pp. 162-165) model and it is here where individuals find information to resolve their problems. The internet, as an information source, is a dynamic and virtual space; it includes newsgroups, video-conferencing and the web. At the core of this nested model is the web itself, which enables relations (via hyperlinks) both within and across web sites. Kari and Savolainen (2003, pp. 166-167) suggest that it is in considering the full aspect of an individual's life that one can understand why they search for particular information and how that information influences the person's life.

While this model is interesting in that it considers the importance of context in guiding information behaviours, it is not problem-free. In particular, the researchers fail to make a clear delineation between information actions and information seeking. Despite this issue, this model is still important in that it acknowledges the importance of considering all aspects of an individual's life when understanding their patterns of information behaviour (Kari & Savolainen, 2003). This is an

important consideration in virtual classrooms, where participants are often learning in their homes and not a traditional, educational context. Here, two domains have merged and both are likely to influence one's information behaviour.

While Kari and Savolainen (2003), as well as Urquhart and Rowley (2007) provide a broader understanding of the factors underlying the use of information technologies (and in particular, the internet), others have looked at specific factors or situations. Kim (2008; 2009) considered task an important element in understanding information behaviours, noting that the presence of a task is often what initiates an information search. Kim (2008; 2009) observed that behaviour differs if the individual is engaged in a factual versus exploratory search. Demographic characteristics (i.e., age and discipline), along with the difficulty of the task were also found to influence the information behaviour. A study by Gray, Klein, Noyce, Sesselberg , and Cantrill (2005) also helps illustrate the importance of context. They looked at where adolescents are turning to for health information and suggest that in situations where privacy is needed, students may turn to the internet instead of their parents or doctor. Here, the type of health condition itself may drive the information behaviour. Slone (2007) published a study that examined one particular factor that may influence online information behaviours: time. Slone found that tasks, which included job hunting or browsing for information tended to be the most time-intensive; hence, users engaged in these types of activities may

spend more time online. Related to the concept of time is information overload; Allen and Shoard (2005) found that mobile information technologies, such as a personal digital assistant, could actually remove the effects of information overload by distributing incoming information more evenly throughout the course of a work day. Interestingly, an earlier study by Nicholas, Williams, Martin, and Cole (1997) also reported back on the concept of information overload, finding that users were not necessarily worried that the web would result in information overload.

Meanwhile, Junni (2007) looked at how the research of Master's students had been influenced by the availability of electronic journals. Her findings revealed that Master's students in 2003 are using more journal articles than their counterparts in 1985 and 1993. This finding has repercussions for the current study as it suggests that students are using electronic information quite readily and that as a result, students in online learning situations are perhaps not at the same disadvantage in terms of information access as they may have been just a few years ago. However, this again points to the importance of providing students with the requisite training needed to use this information.

Another recent study reviewed why individuals select resources. These researchers found that quality is an important consideration for people engaged in online information seeking tasks, and that they will not always choose the path of least resistance in tracking information (Xu, Tan, & Yang, 2006). This would again speak to the importance of

electronic journal access for students engaged in online learning, as many of the resources available through Google, for example, may not be adequate.

On the whole, these studies suggested that there is room in the literature for the current research as few have reflected upon the specific influence of motivation on information behaviours in the online classroom. This body of research however has been insightful in drawing attention to the various influences that information technologies have had on individual information behaviours.

#### *2.4.3 Materials/Information Being Sought or Shared Using Information Technologies*

While some studies have reflected upon the process of “seeking” information when using information technology or delineated the factors that influence information behaviours, others have examined what types of information technologies/online resources are being used (see Buente & Robbin, 2008 for an overview). For example, a recent study of general practitioners in France observed that the doctors were reluctant to use web resources because of perceived unreliability (Boissin, 2006). Conversely, Landry (2006) discerned that dentists view the internet as an easy mode of information access, but that this has not supplanted their use of print resources. Landry’s findings are unlike the findings from Barnett-Ellis and Restauri’s (2006; see also Kumar & Kaur, 2005; Shenton, 2005) study of nursing students, who noted a strong preference

for electronic resources over and above print materials. One wonders whether the age difference of the dentists versus the nursing students played a role in their preferences. In the academic library context, the Online Public Access Catalogue (OPAC) is considered an important tool for students and academics alike. A recent Spanish study found that the OPAC is used to both help users find print information, but also as a tool for gaining electronic access to journals and other resources (Ortiz-Repiso, Bazan, Ponsati, & Cottreau, 2006).

Curzon, Wilson, and Whitney (2005) moved outside of the academic context and explored the web-based resources being used by older individuals on the web, noting the trend to use both government and travel resources. Ambra and Wilson (2004) also pointed to the importance of the web for travel research. Interestingly, in another study of web use trends, Jansen and Resnick (2006) examined users' preference for particular types of links and found that users prefer links that do not have a sponsor associated with them. Jansen co-authored another study that examined users' online information seeking patterns, finding that by 2003, online purchases had supplanted entertainment as peoples' number one online query (Spink & Jansen, 2004). Of key importance to the current study is research done by Kelley and Orr (2003), who noted that distance students now prefer electronic materials, both freely available and through subscription databases. This is significant because it suggests that these

students have been able to reduce their information marginalization through the use of electronic materials.

Looking at the context of information sharing, Ellis and Oldman (2005) recently examined the attitudes of researchers in the field of English literature towards sharing their results electronically and found that the researchers preferred to publish in the traditional print medium. Also related to information sharing, Erdelez and Rioux (2000) found that email was the preferred medium for sharing information.

Despite a proliferation of research into online information behaviours, there is still room to explore the motivations that drive information behaviours in the online learning context. For example, the formation of a virtual learning community may motivate individuals to share information with their classmates. Related to this idea, the following two sections will explore how LIS researchers have looked at virtual communities, and more specifically online learning communities.

## 2.5 Information Behaviours and Virtual Environments

While early researchers (e.g., Lea, 1992; Parks & Floyd, 1996) were concerned that communication and by extension information exchanges would be of poor quality, more recent research suggests that this is no longer the case (e.g., Haythornthwaite, 2007; Rheingold, 2000). To help understand and deconstruct these information processes, a number of research projects have considered the kinds of information behaviours that occur in the virtual environment, as well as what

influences these behaviours. For example, Burnett (2000; Burnett & Buerkle, 2004) provides a typology of the information activities that take place in virtual communities. His analysis provides excellent insight into how information seeking and sharing occurs in these environments. Consistent with the definition provided in Chapter 1, Burnett (2000; see also Haythornthwaite, 2005; Ostrander, 2008) points out that virtual communities tend to take the form of geographically disparate groups who share a common interest. He notes that there has been some debate as to whether virtual communities are actually quality information spaces. Some researchers (e.g., Marchionini, 1995; Wellman & Gulia, 1999) suggest that these communities take on more of a social role, rather than an informational role (Burnett, 2000; Burnett & Buerkle, 2004). It might be argued however, that it is this social engagement that facilitates the sharing of information in these environments (Haythornthwaite et al., 2000). In his analysis, Burnett (2000) seeks to determine whether information seeking and social activities complement one another in virtual environments, pointing out that Williamson (1998; see also Haythornthwaite & Wellman, 1998; Williamson & Manaszewicz, 2002) noted the frequent use of social encounters for information gathering purposes. Burnett (2000) goes further and attempts to categorize these encounters in the context of virtual communities. According to Burnett (2000, Information Exchange in Virtual Communities section, para. 3),

there are generally two behaviour-types found in virtual communities: non-interactive and interactive.

When discussing non-interactive behaviours, Burnett (2000, Non-Interactive Behaviours section, para. 2) notes that these activities or behaviours are typically quite passive and non-responsive. That is, people read or view the information provided within the community, but they do not give any information back. They never, for example, respond to a question that was posed within the virtual community. These individuals are typically referred to as lurkers<sup>2</sup>. Their information behaviour relates to information acquisition and not information sharing. Interestingly, Leimeister and his colleagues (2008) found that lurkers are less likely to form online relationships and that this may negatively affect the amount of social support they feel within the online community. It should be pointed out that lurkers may share the information they have gathered with others outside of this online community, but they are not sharing that information with members within this online community.

Burnett's (2000; Interactive Behaviours section, para. 2) discussion of interactive behaviours is much more extensive. He begins by noting that interactive behaviours might be seen in one of two ways: hostile or positive. Burnett (2000, Interactive Behaviours section, paras. 4-9) notes that hostile activities generally take one of four forms: flaming, trolling,

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<sup>2</sup> Lurkers are defined as “people [who] observe what transpires within the online community, but never actually contribute to the community by posting a message that may be consumed by others” (Firth, 2006, p. 2).

spamming, and cyber-rape. Flaming refers to insulting communication that takes place within the community, while trolling refers to a situation where a message is posted in the hopes that an inflammatory response will result. Spamming, which has become increasingly common, refers to unsolicited information that receivers generally do not consider to be of value. The most serious hostile behaviour is defined as cyber-rape and it refers to a violent textual act against members of the virtual community. It has been speculated that hostile activities may be more common in online environments due to the lack of non-verbal cues. Thus, people act as though they are not engaged in a truly social activity and exhibit anti-social behaviours such as the ones described above (Burnett, 2000). Within the virtual classroom, this suggests the need for a classroom moderator (see Robins, 2004).

While hostile behaviours are a part of virtual communities, so too are positive actions. As with hostile behaviours, Burnett (2000, Interactive Behaviours section, paras. 15-29) again breaks positive behaviours down into various categories. At the broadest level, he points to a difference between those behaviours which are not specifically directed at gaining or sharing information and those activities which are specifically geared towards sharing and seeking information. He labels the former type of behaviour as non-informationally-oriented behaviour. Within this category exists three sub-categories: small talk, humour, and empathy. Within the sub-category that has been dubbed small talk, people may chat about

either themselves or others. While still informational in nature, the motivation driving the exchange is not gaining or providing information. Humour may be exemplified by emoticons<sup>3</sup>; in this way, people can let other community members know that they are joking. Humour may serve as a means of improving relations amongst the community, thus facilitating later information sharing (see Haythornthwaite et al., 2000; Ostrander, 2008). Finally, empathy refers to the idea of support, particularly emotional. Burnett (2000) suggests that parents of special needs children may use online communities for this type of support. Interestingly, through this emotional support, they may also gain useful information. Information-oriented behaviour is the other type of pro-social internet activity mentioned by Burnett (2000) and it encompasses three sub-categories: announcements, queries, and group projects. Here, people are motivated by a desire to either share or seek a specific type of information. The first type of information-oriented behaviour, announcements, refers to sharing potentially useful information with other members of the online community. Burnett (2000) points out however that in posting these announcements, there is also an expectation that they will receive useful information in exchange. The next type of information-oriented activity is referred to as queries. Burnett (2000) notes that queries can support accidental information gathering or information encountering (see Erdelez, 1999, 2004). In the context of hearing the

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<sup>3</sup> “An emoticon is a short sequence of keyboard letters and symbols, usually emulating a facial expression, that complements a text message” (MobileComputing.com, 2008, n.p.).

answer to someone else's question, a community member may find out something that is of potential value to them. Queries also encompass situations where a community member steps outside the virtual community to find the answer to someone's query. Finally, queries may be more direct in nature, such that someone asks a question directly. The last type of information-oriented behaviour is referred to as a group project. In this context, information exchange may result in the creation of a group that will help further a community's information access, highlight information about the community to the outside world, make relatively inaccessible materials more accessible, or seek political gains. Furthermore, group projects can also result in the creation of FAQ (Frequently Asked Question) sheets about the community's interests and codes of conduct. In reviewing Burnett's (2000) points, it would seem that virtual communities are at once both social and informational; that is, social exchanges enable information seeking and sharing. This typology offers a succinct way of understanding the role of the virtual community as an information environment. Moreover, it also provides insights into the types of behaviours one might expect to see in the virtual classroom.

While Burnett (2000; Burnett & Buerkle, 2004; see also Mittendorff, Geijssel, Hoeve, de Laat, & Nieuwenhuis, 2006) describes the types of information behaviours that occur in virtual communities generally, other researchers have looked at how information behaviours are influenced by particular virtual or quasi-virtual environments. For example, Fulton's

(2000) study of teleworkers provides some particularly interesting insights into how geographical distance can influence information behaviours on a number of levels. Fulton observed that teleworkers often have less access to information as compared with their onsite counterparts. This may impact their ability to adequately perform their jobs. Teleworkers noted that their work activities were often interrupted if they did not have a particular piece of information. Moreover, teleworkers were often confronted with the reality that they could not resolve their information access problem. They often structured their work activities in such a way that they only performed the tasks at home for which they had ready access to information—this could lead to important projects being waylaid. Fulton also found that teleworkers interacted less frequently with colleagues than did those individuals who worked onsite. Fulton's results have interesting implications for online students because the results suggest that these students could lack ready access to information and have more difficulties filling their information gaps when geographically separated from other students and the campus at large. First, they may interact less frequently with other students. This is problematic in that Krikelas (1983; see also Fidel & Green, 2004; Patitungkho & Deshpande, 2005) has argued that other humans are often a preferred information source. Moreover, students may experience greater difficulty both completing their assignments, as well as completing them to the same level of quality as students in traditional classroom settings. Furthermore,

this potential dearth of information could also lead to procrastination as students may delay researching a topic until they can access all of the resources they need (e.g., they may wait for an inter-library loan to arrive at their local library before starting a project). These points must however be considered in the context of the fact that Fulton's study was completed in 2000. Certainly, access to web-based resources (e.g., e-journals, e-books, etc.) has grown rapidly since this time (Urquhart & Rowley, 2007); as a result, the informational difficulties facing those working from a distance have likely diminished. Nonetheless, difficulties related to reduced face-to-face access with their human peers do prevail. Although, "virtual" humans provide distance education students with much of the information and social support needed to succeed academically. Indeed, a recent article by Haythornthwaite (2005) suggested that friends in the online context are not substantively different than those in the face-to-face context.

A 2007 paper by Hepworth reflects the idea that the human element of online activity is now an important research focus. He argued that an understanding of information behaviours is key to creating "people-centered", online resources (Hepworth, 2007, p. 33). Related to this idea, Williamson and Manaszewicz (2002) suggested another interesting characteristic of virtual environments. They pointed out that by creating a portal for a community of breast cancer patients, these women had the option of controlling how much information they were receiving. They

could choose to look for as much or as little information as they wanted. This finding resonates with the findings by Case et al. (2005), which suggested that certain individuals may prefer to avoid information about their condition. This also has interesting connotations for students in a virtual learning environment. Unlike a traditional lecture format, students have the option of ingesting information at the pace that best fits them (particularly in the asynchronous context). This may help reduce feelings of information overload, though it could also mean that the students are not getting all of the information out of a course that they should.

For some, online worlds (e.g., Second Life) have become an important means for tracking information. In a recent study, Ostrander (2008, p. 516) examined how individuals seek information in the Second Life universe. Her findings revealed five key characteristics. First, information seeking in Second Life was a highly social endeavor. It was common to attain information from others. Second, people attained information of a much more visual nature. Third, a great deal of information was found through serendipity; this speaks to the fourth characteristic, which suggested that it can be quite frustrating to formally search for information in the Second Life environment. Finally, the author noted the use of humour when involved in information interactions. As mentioned earlier, humour-based interactions can help form community (Haythornthwaite et al., 2000).

A substantial portion of LIS research pertaining to virtual communities has examined specific communities and their individual information behaviours. For example, Bliuc, Douglas, Lala, and McGarty (2005) looked at how White Supremacist groups used the internet to promote their ideas. Meanwhile, Barzilai and Barzilai-Nahon (2005) examined how the internet has been used as an information tool by religious fundamentalists. More recently, Leimeister and his colleagues (2008) examined information behaviours within an online cancer support group. These researchers found that individuals who participated actively in the online community were more likely to form online relationships with other members of the group. As a result, they felt more supported by the information exchanges occurring within this environment (Leimeister, Shcwizer, Leimeister, & Krcmar. 2008).

Other LIS researchers have examined the mobilizing role of online communities. Information is shared in these communities to the end of facilitating social change. Here, one could look at work by Frost (2006), who observed that the internet is not currently an effective tool for organizing political solidarity. Meanwhile, Weber, Loumakis, and Bergman (2003) found a positive correlation between political engagement and level of political activity on the internet. While these examples are not directly relevant to virtual learning environments, this research speaks to some mechanisms by which students might be motivated to be more active participants in the online classroom.

### *2.5.1 Information Behaviours and Virtual Classrooms*

Research into the information behaviours that drive students in virtual classrooms is still emerging, with a more traditional focus on distance learning already peppering the research landscape (e.g., Thórsteinsdóttir, 2001). That being said, Haythornthwaite has put together a research program that does explore this issue in some depth (e.g., Haythornthwaite et al., 2000; Haythornthwaite, 2002; Kazmer & Haythornthwaite, 2004). Her experience with a distance library education program (entitled LEEP—Library Education Experimental Program) has afforded her the opportunity to make some unique insights into the nature of online learning. Other researchers working on the LEEP project have also explored this issue (e.g., Haythornthwaite & Bregman, 2004; Kazmer & Haythornthwaite, 2004; Kazmer & Xie, 2008). Building on their experience, Haythornthwaite and her colleagues (2007) recently published a paper which puts forward theoretical explanations for virtual learning as it relates to information and communication technologies. Furthermore, in discussing information ecologies, Nardi and O'Day (1999) have also enhanced our understanding of information activities in virtual learning environments. In addition, the communities of practice<sup>4</sup> literature also provides some insight into information behaviours that occur in online learning environments (e.g., Green, 2006; Stewart, Uth, & Wastawy,

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<sup>4</sup> Communities of practice are defined as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise by interacting on an ongoing basis” (McDermott, Snyder, & Wenger, 2002, p. 4).

2004). Generally, the literature discussing information behaviour in online learning environments falls into one of two areas. First, a substantive portion of the literature discusses how fostering a sense of community within these learning environments can enhance the degree of information that is exchanged throughout the community (Haythornthwaite et al., 2000). Second, the types of technology and resources used by students in virtual classrooms are also discussed (e.g., Robins, 2004).

In a 2000 article, Haythornthwaite, Kazmer, Robins, and Shoemaker reflected on how fostering the role of community has helped enhance the learning process and information acquisition for LEEP students. Haythornthwaite et al. (2000) noted that the correspondence model of distance education, where the learner is truly isolated from their peers, must be discarded. Instead, efforts should be made to encourage relationship building in these environments; that is, the development of communities. By strengthening interpersonal bonds, researchers have found that members of the classroom are more likely to exchange information with one another (Haythornthwaite, 2002). This assertion is consistent with the findings of a study that examined group learning. Essentially, these researchers found that successful group or communal learning helped in the formation of a community of practice (Mittendorf et al., 2006). This was also the approach used by a librarian who helped develop a course that taught doctoral students how to effectively search for and evaluate information, believing that there is a lot that these

students could learn from one another (Green, 2006). A 2004 study also pointed out that students can learn a great deal from one another within communities of practice (Stewart, Uth, & Wastaway, 2004). Moreover, stronger interpersonal bonds help students learn to trust one another, which also increases the amount of information that they are willing to contribute to the learning environment (Haines, Hurlbert, & Beggs, 1996). In the LEEP community, Haythornthwaite et al. (2000) maintained that a sense of trust enabled people to ask questions of one another. Interestingly, there appeared to be a reciprocal relation between trust and the opportunity to ask questions in that the more one trusts other members of the community, the more they will ask questions; and the more questions that are answered, the greater the level of trust in the community (Haythornthwaite et al., 2000; Haythornthwaite & Bregman, 2004). Indeed, it is this sense of being safe in one's community that is essential to fostering collaborative learning (Bruffee, 1993). In addition, Haythornthwaite et al. (2000; see also Pan & Leidner, 2003) pointed out that providing multiple means of communication (e.g., email, chat programs, etc.) also facilitates the development of community because it enables people to communicate in ways that mirror a traditional community, where if they wish, they only have to communicate with the community members that they choose. This is consistent with Heinstrom's (2003) recommendation that information-related

accommodations must be made for the individual differences that exist between people.

In a recent compilation, Haythornthwaite, Bruce, Andrews, Kazmer, Montague, and Preston (2007) add to our understanding of how information and communication technologies influence the online learning context. In this piece, they have argued that while non-verbal cues can be missing from the online learning experience that other components make the information experience in an online classroom all the richer. They pointed out that because the online world has a sense of anonymity, introverted students may feel more comfortable sharing their thoughts and ideas. Moreover, the thoughts and ideas that are shared in the online classroom do not disappear once they are spoken. Because these thoughts are typically text-oriented, they remain in an archive within the virtual classroom. As a result, people can go back and reflect upon what others have said at earlier dates; hence, insightful ideas are not as easily lost. This also extends to class materials themselves. As Saumure and Shiri (2006, pp. 484-485) have pointed out, it is useful for virtual learning environments to incorporate repositories of learning resources that students can easily access. This could include examples of students' assignments, among a myriad of other things. Similar to archives of thoughts and ideas, these repositories of information are useful for ensuring that course information/learning resources are re-purposed and not lost.

In the online learning environment, there is also the sense that technology itself will influence the degree of interaction and that this could be harnessed to enhance the “ties” between members of the online learning community (Haythornthwaite et al., 2007, Technology and Tie Formation section, para. 1). Furthermore, it is not just the type of technology but the number of technologies used that will determine the level of connection between the learners. That is, students who only use the web board may feel less connected than students who also email or phone one another. Here, the instructor is considered important to encouraging the use of technology(ies) as a means of information sharing.

These researchers also reflect upon the idea that online students often contextualize their learning experience to their local world (Haythornthwaite et al., 2007; see also de Jong & Branch, 2006; Kazmer, 2005a, 2005b). For this reason, other students are able to draw upon these professional or personal experiences. This can be quite important if the classroom is comprised of professionals (e.g., teachers) who could draw significant benefit from understanding how others might incorporate what they have learned/are learning into their teaching world (Haythornthwaite et al., 2007). This is called the theory of community-embedded learning. This type of learning may occur because, when one is learning outside of a traditional classroom, it is possible to occupy two (or more) roles at once. That is, the learner has on their student hat, but may also be wearing a mother or teacher hat (Haythornthwaite et al.,

2007; see also Kazmer, 2005a, 2005b). This simultaneous occupation of roles is thought to create opportunities to share information in a multitude of ways. One may take information from the online learning environment and share it with their friends or family, or to their professional colleagues. Equally, it is also possible that information from their personal and professional experiences is pulled into the online learning environment. These researchers also point out that distance learning creates the opportunity for broader sharing of information between the learner's associated institutions (Haythornthwaite et al., 2007; see also Kazmer, 2005a, 2005b).

The importance of community is also evident in Nardi and O'Day's (1999) discussion of Pueblo, a project developed in Arizona to help disadvantaged students feel more connected to the learning experience (Nardi & O'Day, 1999). It was built upon the notion of a lateral hierarchy, where anyone was welcome to share information with anyone else. Four characteristics were considered key to shaping this virtual world: geography, identity, communication, and community. In describing geography, Nardi and O'Day (1999, p. 112) noted that participants needed to be involved in building new places in the virtual space. Second, participants needed the freedom to form any identity they pleased; this aligns with Given's (2005) discussion of social positioning. In Pueblo, participants positioned themselves in any manner they liked (Nardi & O'Day, 1999, p. 112). Consistent with this recommendation, creativity has

been identified as an important factor in forming a successful online community of practice, where information is shared regularly (Ensor, Cottam, & Bland, 2001). Third, in the Pueblo community, multiple outlets for communication were a necessity, so as to accommodate individual differences. This observation is consistent with Heinstrom's (2003) recommendation that individual differences be considered when planning support mechanisms for the seeking and sharing of information. Finally, participants needed to believe that they belonged to a community; they required a sense of connectedness. The importance of connectedness is also found in some of the emerging literature relating to web 2.0 technologies and online communities of practice. For example, social networking can be used to create environments where individuals from the community of practice can connect with one another and share their ideas (Kamel Boulos & Wheelert, 2007). Furthermore, social bookmarking tools (where people can share websites that they perceive to be useful or interesting) might also help to foster a sense of connectedness as people are sharing with others (Kamel Boulos & Wheelert, 2007; see also Baldwin, 2007). Additionally, community is established through common rules and norms. People know what is expected of them in this environment and generally act accordingly. The advantage seen in the Pueblo community was that it was built upon the students' current classroom reality, instead of supplanting this reality (Nardi & O'Day, 1999). This is perhaps why Fusco and Schlager (2003) have pointed out that

professional, online communities of practice should be built upon their real world counterparts and not in isolation. Furthermore, Clarke (2002) described an online community of practice that was a resounding success with student teachers in Ireland, but this may have been facilitated by their previous face-to-face engagements. Nardi and O'Day (1999) found that students from the Pueblo community still interacted regularly in both environments (within the classroom and online). Often, because the students and instructors already knew one another from their classroom experiences, it was easier to comfortably interact.

In the Pueblo Community, there was a sense of both autonomy and relatedness. According to Ryan and Deci (2000), both autonomy and relatedness are important motivators; perhaps this is why information exchange in this community was so successful. Pueblo is an example of an extraordinarily successful virtual learning environment. However, the Pueblo Community does not necessarily reflect virtual learning at the university level. Virtual courses at the university are often just that, virtual; and this was certainly true of the TL-DL "classroom". Students may never actually meet in person and this too may undermine the formation of relationships and hence the sharing of information. Thus, while Pueblo was an extremely successful endeavor, some reworking of the university course structure would be necessary in order to follow this model.

Bruce (2004; see also Kazmer & Haythornthwaite, 2004, Kazmer, 2005a) has pointed to another interesting aspect related to community

development and information exchange in virtual communities. He states that virtual learners may be besieged by the demands of their other communities (e.g., work, family) while they are trying to seek, exchange, and absorb information online. Thus, while virtual learning can provide flexibility of time and space, it can not eliminate the distractors that may get in the way of learning in non-traditional environments. These distractors resemble what Wilson (1999, p. 257) terms intervening variables (i.e., things that get in the way of information acquisition). Other intervening variables are mentioned in a 2006 examination of an online community of practice for teachers. These researchers observed that an online community of practice may fail if it does not have a uniform objective and the participants are unfamiliar with communication technologies (Carr & Chambers, 2006). On the other hand, a connection with one's real world experience can also help to facilitate the success of an online community of practice (Fusco & Schlager, 2003; see also Kazmer, 2005a, 2005b), as well as the sense that they are doing something that is for the benefit of the larger society (Wasko & Faraj, 2000).

The availability of technology has enabled the development of learning communities where information can be sought and shared quite easily. It is technology that has helped reduce reliance on the correspondence model of distance learning and facilitated engagement in particular types of information behaviours. Haythornthwaite (2002; see

also Kazmer, 2007) observed that synchronous and asynchronous communication, virtual classrooms, and more private online workspaces (e.g., separate chat rooms) are essential to enabling information acquisition and exchange. Incorporating asynchronous communication opportunities is considered important to ensuring the flexibility that online learners frequently require is present in the online classroom (Kazmer, 2007). That being said, Haythornthwaite (2002; see also Chen & Williams, 2009) points out that synchronous communication tools are particularly important for diminishing feelings of isolation and facilitating the intellectual exchange of information. This consideration seems important given findings by researchers, such as de Jong and Branch (2006) who noted that online learners frequently do feel a sense of isolation. Other tools (e.g., private chat rooms), allow information behaviours to flourish within smaller groups and may also help reduce these feelings of isolation. A whispering Internet Relay Chat (IRC) feature, akin to whispering in class, has also been created. This allows individuals to “talk” quietly about what is going on in a virtual lecture, without others hearing (Robins, 2002, Ethnographic Study section, para. 3). This is an important tool because it helps people to confirm their understanding of what is going on in the lecture without disturbing the entire class. Web boards have also been cited as tools which encourage information sharing (Robins, 2004), while Corbus (2009) considered the utility of web 2.0 tools, such as wikis and blogs to encourage student

collaboration in the distance learning environment. Important to information seeking, Kelley and Orr (2003, p. 189) observed that having access to online databases is also important for the online learner, given that they may not have access to materials from the physical library. Saumure and Shiri (2006) have pointed out that direct access to library resources through the online classroom (as opposed to a link to the library's web page) would certainly enhance the students' capacity to access materials from the library. Still, despite the potential for enhanced information access through the use of technology, a cautionary word has been offered by Bruce (2004). He suggests that collaborative technologies will only promote positive learning and information access experiences if they are used appropriately. Thus, the technology must be regularly evaluated to assess how well the technology is meeting the information needs of students. This is consistent with the findings of a study that examined the learning habits of public defenders in an online community of practice. In this study, the researcher found that the best type of information to share was technical information, as opposed to explorations of more general issues, such as professional identity (Hara, 2007). Essentially, the technology and content must be a good fit. Looking beyond the technology itself, Tanni and Sormunen (2008; see also Shepley, 2009) have suggested that information literacy is also critical to the online learning experience. Students must learn to critically evaluate information, instead of just scanning the web for correct

responses. Researchers have pointed out that both teachers and librarians have a role to play in facilitating this training (Shepley, 2009; Tanni & Sormunen, 2008). That being said, a group of researchers at the University of Calgary found that distance learning, graduate students did have the skills necessary to find relevant evidence to support their research and as a result, support by librarians may not be pivotal (Pival, Lock, & Hunter, 2007). This finding contradicts Mitchell and Watstein (2007), who argued that librarians are important for enhancing information literacy in virtual learning environments. Similarly, earlier research has also found that graduate students were poorly equipped to locate relevant information and did need additional support (e.g., Donaldson, 2004; Zhang, 1998). Brumfield (2008) points out that online tutorials may be one way of helping online students who are uncertain about how to use information resources, as well as which information resources to use.

On the whole, this body of research suggests that it is both access to information and people (i.e., a community) that will facilitate information seeking and sharing activities in a virtual classroom.

#### *2.5.1.1 Virtual Classrooms, Information Behaviours, Motivation, and the Education Literature*

While information researchers have certainly added to our understanding of the virtual classroom, it would be remiss not to mention the findings of education researchers, both as they apply to information behaviours and to motivation in online classrooms.

Understanding how students interact with information in the online environment is important to education researchers, given that information (e.g., course materials) is seen as a critical factor in the success of a particular course (Benigno & Trentin, 2000; Papp, 2000; Selim, 2007). Instructors are conduits for the information that students receive in a course and they have been written about frequently in the e-learning literature (e.g., Faux & Black-Hughes, 2000; Selim, 2007; Volery & Lord, 2000; Webster & Hackley, 1997; Willis, 1994). In this realm, researchers have observed that students in the online setting desire more interaction with their instructors, particularly in the way of feedback (Faux & Black-Hughes, 2000). Volery and Lord (2000; see also Marks, Sibley, & Arbaugh, 2005) mentioned ways in which instructors can facilitate their students' online information interactions. That is, they suggest that the teacher must interact with students, but that they must also encourage interactions amongst the students. Selim (2007; see also Mazzolini & Madison, 2007) confirmed through his structural equation model that class discussions are critical to creating a successful e-learning environment. One way to facilitate this interaction is to create small groups within the large e-classroom in order to stimulate discussion amongst the students (Jonassen, et al., 1995). Others have suggested that pairings of students can help them get to know one another better and that this too may facilitate class discussions (Bowman, 2001). In fact, this interactive exchange of information amongst classroom participants has been linked

to better academic outcomes, as well as overall satisfaction with the course itself (Sun, Cheng, Lin, & Wang, 2008; Gear et al., 2003; Vrasidas & McIsaac, 1999). Furthermore, student-based discussions that are led by the students themselves have been found to result in deeper levels of thought about a topic (Heflich & Putney, 2001; Peterson-Lewinson, 2002; Spatariu, Quinn, & Hartley, 2007). This deeper engagement may be particularly important given that some researchers have found that online learners typically do not integrate the information that they have learned (Kanuka & Anderson, 1998; Thomas, 2002). Hence, instead of developing critical thinking skills, students are simply memorizing the topic at hand. Problematically, Sun et al. (2008) also point out that group cohesion can be quite rare in e-learning environments. Given that relatedness has been cited as important for increasing highly self-determined motivational orientations (see Deci & Ryan, 1985), this is concerning.

Other researchers have observed the value of web-based information resources, noting how these resources can and perhaps should be applied in online learning settings. When students are able to access online study tools 24-hours a day, 7-days a week, this often leads to greater academic successes (Bartini, 2008; Grimstad & Grabe, 2004; Bee & Usip, 1998). A 1999 study confirmed that course satisfaction can also be enhanced through the availability of online course materials, such as announcements, notes, and study materials (Cooper, 1999).

While access to information about course content in the virtual learning environment is most assuredly important, it is also important for classroom participants to have access to technical information that will enable them to troubleshoot technological problems (Alexander, McKenzie, & Geissinger, 1998; Lee, 2008; Selim, 2007; Soong et al, 2001). Furthermore, a recent study also noted that technology can negatively affect a student's perception of a course, independent of course content (Benoit et al., 2006). Additionally, Selim (2007) pointed out that support from the library will also enhance the students' success in the online learning environment, along with the availability of technology through accessible campus computer labs. To that end, this dissertation work also considered how students' information behaviours have been affected by the availability or lack of technical support, library support, and technology access.

While research from the education literature has not frequently attended to information behaviours and motivation in online learning (but see the earlier communities of practice discussion in section 2.5.1), given the important role that information plays in the virtual classroom, a discussion of this literature is warranted. Furthermore, it will also be important to briefly describe the studies that have examined motivation and online learning more generally, as the findings can potentially be extended to information behaviours in the online learning environment.

A 2007 study examined the factors that motivate (but also demotivate) teachers who are sharing information online. In semi-structured interviews, the researchers asked teachers (recruited from an education listserv) to reflect upon the factors that enhance and detract from their sharing of information. The key motivators were identified as being an environment in which the teachers could trust one another (i.e., they would not be made to feel stupid for comments they made) and a desire on the part of other teachers to learn from the sharing individual. People felt less compelled to share when they were short on time or felt that they did not know enough about the topic area to adequately share information (Hew & Hara, 2007).

Not surprisingly, many of the motivationally-oriented papers that relate to the online learning environment examine how motivation influences academic performance in an online class (e.g., Hoskins & van Hooff, 2005; Lim & Kim, 2002-2003; Waschull, 2005). More specifically, Waschull (2005, pp. 191-192) examined the relationship between motivation (among other variables) and academic success in an online, introductory psychology class. Interestingly, motivation was the only variable (of seven) that was found to correlate significantly with academic performance. This finding should be seen as quite noteworthy in that it points to the important role that motivation plays in the online classroom and as such, is a variable that deserves more attention in the online learning literature.

Other studies have taken a different approach and have instead looked at the most important motivators in the context of online learning. For example, in one study, the researchers found that students were most motivated if the course was relevant to their learning goals, the class activated a sense of interest in the students, the instructor regularly provided feedback, and that the instructor highlighted the fact that learning the course material was significant (Laszlo & Kupritz, 2003). Another study that examined motivating factors in the online learning environment found that being competitive and setting challenging goals for oneself helped to motivate the students (Shih & Gamon, 2001).

Other researchers have used motivational theories to build an understanding of online learning. For example, Karsenti (1999) was one of the earliest researchers to examine SDT (self-determination theory) in the context of online learning. His findings revealed two interesting points. First, if an online course is designed and efficiently moderated by the instructor, the degree of relatedness may actually be higher than in lecture-based classrooms. As a result, there is the potential for higher levels of self-determined motivation to be achieved. Karsenti's (1999) argument is consistent with the earlier discussion (see Robins, 2004), which pointed to a superior exchange of information when the classroom discussions were well moderated by the instructor. Karsenti (1999) also pointed out, however, that there may be too much autonomy and too little support in the online classroom (Karsenti, 1999; see also Moshinskie,

2001). Hence, students do not have high levels of motivation because no one is helping to guide them towards their goal. Instead, they may flounder. Karsenti's discussion is limited by the fact that he does not consider the various sub-types of self-determined motivation, which would have further delineated the relationship between basic psychological needs and varying levels of self-determined motivation. His discussion of SDT is instead limited to how competence, relatedness, and autonomy may help to motivate students in the online learning environment. A study by Martens, Gulikers, and Bastiaens (2004) suffers from similar limitations in that it only looks at intrinsic motivation and how that influences learning outcomes in the online classroom, without considering the various sub-types of extrinsic motivation. Nonetheless, their findings are somewhat compelling in that they found no difference in performance based on a student's level of intrinsic motivation. Interestingly, they did find that intrinsically motivated students were more exploratory than their less intrinsically motivated counterparts. This may have interesting ramifications for information behaviours in that intrinsically motivated student may find more unique information. Miltiadou and Savenye (2003) took a conceptual approach and considered how self-determination theory (among other motivational theories) might be applied to motivation in the online learning environment. Their discussion, however, is not grounded in their own research. They do note that further research is needed in order to delineate which motivational factors are most closely aligned with

success in the online classroom. More recently, Chen (2007) put out a call to arms for other researchers to consider how well SDT may work in the context of online learning context. It is hoped that this current research will add to the general body of research around motivation and online learning, by considering it in the context of online information behaviours.

## 2.6 Motivation

As noted in the introduction, motivation is considered “one of the most powerful elements in mobilizing individuals to action” (Dunsmore and Goodson, 2006, p. 170). Through my dissertation work, I wanted to understand how social and psychological needs influenced an individual’s motivation to engage (or not) in a particular activity. A number of different social and psychological needs have been posited by psychologists over the years. To help inform the discussion of how motivation has been explored in the context of information behaviours, these various social and psychological needs will be reviewed first. This will be followed by a discussion of motivation in LIS, where particular attention will be paid to the academic context (though other types of studies will be noted and discussed as deemed appropriate).

Psychological Needs. Psychological needs are considered to be innate and thus they do not vary between individuals (Reeve, 2005, pp. 102-103). Psychological needs are thought to include 1) autonomy, 2)

competence, and 3) relatedness. As with social needs, they enable personal growth.

Autonomy is based upon the idea that we are free to choose the behaviours in which we engage. Consistent with the tenets of self-determination theory, our behaviour is not determined by an external source. “Three experiential qualities work together to define the subjective experience of autonomy: perceived locus of causality, perceived choice, and volition” (Reeve, 2005, p. 106). This means that individuals want to feel that the reason they have chosen to engage in activity is internal (Ryan & Grolnick, 1986). In addition, individuals want to feel that they have made the choice over what they decide to do, as opposed to having it imposed upon them (Cordova & Lepper, 1996). For this reason, motivation tends to thrive in environments where autonomy can flourish. For example, Norton (2003) found that children who read comic books felt a sense of ownership towards these texts. They were engaging with something that was “their own” and not something that had been imposed upon them. As a result, they were motivated to engage actively and critically with these texts and not simply behave as they thought they should (as with school-assigned texts). It is important to point out that autonomous environments are not environments where individuals are ignored; instead, autonomous environments contain champions who encourage people (directly or indirectly) to follow their own path (Ryan, 1993). Individuals who have their autonomy supported are thought to be

more intrinsically motivated and are more likely to persist at an activity (Deci & Ryan, 1985). Because of these positive outcomes, researchers have also sought to determine how to foster autonomy. This may be done by determining individuals' interests and goals and then creating an environment that allows them to engage in activities that are both interesting to them personally and allows them to meet their goals (Reeve, 2005, pp. 108-109). Instructors may also work towards adding relevance or value towards activities that are typically seen as boring. Equally, instructors may also attend to people's negative reactions to an activity and find ways to overcome these negative reactions (Reeve, Jange, Hardre, & Omura, 2002, p. 201). When autonomy is supported in the ways described above, it enables enhanced motivation and achievement (Deci & Ryan, 1985; Reeve, 2005).

Competence is also seen to be a core psychological need (Deci & Ryan, 1985). "Competence is the need to be effective in interactions with the environment, and it reflects the desire to exercise one's capacities and skills, and in doing so, to seek out and master optimal challenges" (Reeve, 2005, p. 115). To enable competence, individuals need to experience a favorable level of challenge, as well as the necessary structure to feel competent. The idea behind creating an optimal level of challenge can be largely attributed to the work of Csikszentmihalyi (1990), who is well known for developing flow theory. Challenge is optimized at a point where the activity is not too difficult and the individual becomes anxious or too

easy and the individual becomes bored. It is at this point that the individual would feel most competent (Clifford, 1990). Of note, in order to feel challenged, it is necessary to receive feedback about one's performance and it is indeed this feedback which helps foster feelings of competence (Reeve & Deci, 1996). This idea of feedback is relevant to the idea of structure. Feedback should be provided in a structured format, such that individuals receive a framework for and support in reaching their goals (Connell & Wellborn, 1991).

Finally, relatedness is also considered to be a core psychological need. Much like its name implies, relatedness refers to the human need to create close and emotionally significant ties with others. Importantly, these relationships should be bi-directional, such that the other person returns our affections (Baumeister & Leary, 1995). We are driven and motivated to form high quality bonds, where we perceive that the other person cares for us and enjoys our company (Baumeister & Leary, 1995).

Social Needs. Social needs refer to needs that are not innate, but are learned. Individuals are driven to meet these needs because they enable personal growth. Social needs are situationally activated in that individuals encounter certain circumstances that will motivate them to meet this need. Quasi-needs resemble social needs in some ways but they are fleeting. That is, this quasi-need disappears once it is fulfilled (unlike physiological, psychological, or social needs). For example, taking an aspirin to relieve a headache would be viewed as fulfilling a quasi-

need. The more lasting social needs are typically thought of in terms of 1) achievement; 2) affiliation/intimacy; and 3) power needs (Reeve, 2005, p. 167).

Achievement needs are based upon people's need to do well when compared with a particular benchmark. This benchmark may be self- or other-imposed. It is worth noting that people are not necessarily motivated to achieve; some may actually find that achievement demotivates them. For example, it is possible that the idea of trying to seek a high level of achievement may be anxiety provoking. Two theoretical models are considered key to conceptualizing and comprehending achievement motivation (Reeve, 2005, pp. 167-179).

An early and influential theory of achievement motivation was proposed by Atkinson (Reeve, 2005, p. 170). Atkinson's model is interesting because Atkinson (1957, 1964) proposes that people will not be motivated solely by the idea that they need to achieve success at a particular task. Instead, there are two other elements that play a role: 1) people will be motivated to achieve based upon the likelihood that they will be successful and 2) tasks are differentially significant to an individual and as such, people will be more motivated to pursue achievement in an activity which they find particularly important. Importantly, Atkinson (1957, 1964) also points out that achievement benchmarks to do not just drive a desire to succeed, but that some individuals will also use these same benchmarks to reduce their chances of failure. Interestingly, Atkinson

(1957, 1964) calculated the probability that individuals would seek success and avoid failure using mathematical formulae. Thus an individual's tendency towards success-approach or failure-avoidance was based upon his calculation of the combined influence of desire for achievement, likelihood of success, and the importance of a particular task (Atkinson, 1957, 1964). It is worth pointing out here that Atkinson's early work has been criticized because of its distinctly western definition of performance. That is, it focused quite exclusively on individual performance. Current research now considers cultural context when assessing someone's achievement motivation (Maehr & McInerney, 2004). This is consistent with the earlier discussion in Section 2.2.1, which pointed to the importance of context in understanding information behaviours (see Courtright, 2007).

While Atkinson (1957, 1964) focused on assessing the likelihood that people would pursue or avoid a particular task, more recent efforts have sought to explain why some people are motivated to achieve (Reeve, 2005, p. 176). To that end, three types of goals have been posited as particularly important to help facilitate this understanding: performance, mastery, and social goals (Maehr & McInerney, 2004, pp. 72-73). With a performance goal, people are motivated by ensuring that their performance at a particular task is superior to the performance of others. Conversely, mastery goals are based upon a desire to improve one's abilities at a particular task (Maehr & McInerney, 2004, pp. 72-73;

see also Dweck, 1986, 1990). On the whole, people who focus on mastery goals tend to exert more sustained efforts at a particular task and actually enjoy greater challenges. In addition, individuals who are more motivated by performance goals tend to believe that their abilities are innate and can not necessarily be further developed. As a result, they tend to seek out activities that help them meet performance goals. On the other hand, people who are motivated by mastery goals believe that their abilities can be honed over time and thus persevere at activities at which they may not have initially excelled (Maehr & McInerney, 2004, pp. 72-73; see also Dweck & Leggett, 1988). With social goals, people are motivated to engage in particular behaviours because these behaviours are in line with social norms and therefore will result in the approval of others. Moreover, people will refrain from engaging in behaviours that may result in the disapproval of others. As a conceptual whole, this theory is considered adaptive to multiple sociocultural contexts (Maehr & McInerney, 2004, pp. 72-73).

Affiliation and intimacy are considered to be related social needs. Here, the need for affiliation is thought to have more negative connotations, while intimacy is viewed in a more positive light (Reeve, 2005, pp. 184-185). Individuals who have a high need for affiliation are thought to feel anxious about being rejected socially and as a result are often seen to be overly dependent on the opinions and acceptance of others (Heckhausen, 1980). Intimacy, on the other hand is considered to

be more positive. Here, people are looking for high quality interpersonal relationships and they are not focused on being rejected (McAdams, 1980; McAdams, 1982; McAdams & Constantian, 1983; McAdams, Healy, & Kraus, 1984). People who feel a high need for affiliation are doing so because they perceive that they are lacking interpersonal contact; conversely, those with a high need for intimacy are engaging in interpersonal relationships to facilitate their personal growth (Reeve, 2005, p. 188).

Finally, power is considered to be a social need which drives many individuals (Reeve, 2005, p. 188). An individual who has a strong need for power wants to control others, and in so doing shape the world in such a way that it matches their vision of the way things should be (Winter, 1973). People who are high in the need for power want to 1) lead (McAdams, Healy, & Krause, 1984; Winter, 1973); 2) exert aggression over others (Winter, 1973); 3) hold jobs where they can exert influence over others (Winter, 1973); and 4) amass objects that confirm their status (McLelland, 1975; Winter, 1973).

#### *2.6.1 Motivation and Information Behaviours*

The discussion of psychological and social needs above will help support and inform the upcoming discussion of motivation in library and information studies. At the core of library and information services (LIS) are people: the service providers and the information consumers (i.e., information seekers and users). It would therefore stand to reason that

understanding the behaviours of these individuals would enhance our comprehension of many key issues found in information service and retrieval, such as improving the customer service of librarians, enhancing the seeker's ability and will to locate the most appropriate information, as well as enhancing an individual's desire to share pertinent information with others. Motivation is one component of behaviour thought to play a particularly important role in influencing people's actions (Ferguson, 2000). Thus, it would seem that understanding motivation within LIS would provide insight into why people help others find information and why individuals seek information in the first place. As discussed in Chapter 1, understanding motivation may help us define what encourages or discourages service providers to help others find information, as well as what encourages or discourages individuals to seek information. Because this dissertation examined people's motivation for seeking and sharing information, as opposed to the librarian's role in helping others find information, the papers reviewed subsequently will examine what motivates information consumers to seek, share, and ultimately use different types and sources of information.

For clarity, information consumers are considered to be individuals who actively seek and/or serendipitously encounter information (e.g., finding a book needed in the library or surfing the web) or who use information resources or technology (e.g., reading a book or messaging their friends). The literature pertaining to the motivation of information

consumers can be divided into two categories: 1) factors that motivate information consumers and 2) how to motivate information consumers.

#### *2.6.1.1 Factors that Motivate*

Self-Determination Theory: Autonomy, Competence, and Relatedness. As mentioned earlier, self-determination theory has also been applied to LIS research. However, it is currently viewed very simplistically in the LIS literature, primarily in terms of intrinsic (seen as motivated by internal rewards) and extrinsic motivation (seen as motivated by external rewards). Unlike the full theory however, no sub-types<sup>5</sup> of extrinsic motivation (i.e., external, introjected, identified, and integrated regulation) have been considered. Internal rewards are seen as being internally created by the individual. For example, an internal reward might include interest in a topic. In contrast, external rewards are externally created and may take the form of praise or monetary prizes. (Weiler, 2005). Rewards coming from an internal source are generally thought to be more sustaining, because the source of the reward does not usually disappear after a period of time. For example, students may work extremely hard to develop the skills necessary to find relevant information and get a good grade in their online class; however, once they have

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<sup>5</sup> There are four sub-types of extrinsic motivation that fall upon a continuum of self-determination (described here from least to most self-determined). Externally-regulated motivation is associated with a desire to seek concrete awards and avoid punishment. With introjected regulation, one is motivated by self-imposed contingencies, such as pride. Individuals who are regulated by an identified orientation engage in an activity because they recognize the value in it for meeting their goals. Finally, with integrated motivation, the action is motivating because it has been integrated with the individual's core self (Ryan & Deci, 2000, p. 61).

received that grade, their motivation to maintain and even upgrade their search skills is gone. In contrast, students who genuinely enjoy learning how to conduct literature searches are more likely to continue practicing their new information literacy skills because the source of enjoyment comes from inside them and is not a fleeting external source. Highly self-determined (or intrinsic) motivational orientations can be fostered by fulfilling three basic psychological needs: autonomy, competence, and relatedness (Ryan & Deci, 2000, p. 57).

While Deci and Ryan's motivational theory is mentioned frequently in many LIS literature reviews (e.g., Weiler, 2005), their framework guides only a handful of actual studies. Julien and Michels' (2004) study provides a good example of how SDT has been applied to information behaviour research. These researchers found that information seekers tracked more sources when the source of their motivation was internal. More recently, Crow (2007) looked at how autonomy, competence, and relatedness can be used in information literacy settings to facilitate intrinsic motivation towards the learning process. In addition, Crow (2009) also examined how SDT can be applied to the information seeking outcomes of elementary school students. She noted the importance of enhancing intrinsic motivation in information seeking through the use of relationship-building activities, such as group work. Another recent study looks at the role of intrinsic motivation in understanding how individuals track information using hyperlinks. These researchers found that self-efficacy

could be enhanced most significantly in individuals who had low levels of intrinsic motivation towards the information location task. This finding is significant in that these researchers also found that higher levels of self-efficacy enhanced the students' perception that they could complete upcoming tasks (David, Song, Hayes, & Fredin, 2007). Thus, for students who are not intrinsically motivated, it would seem that fostering self-efficacy is one means of improving their ability to complete a task. It is unfortunate that these studies do not consider the differing degrees of self-determination that are represented within the extrinsic motivation subtypes (i.e., extrinsic, introjected, identified, and integrated regulation). In doing so, they neglect the fact that, like intrinsic motivation, the more self-determined types of extrinsic motivation have the potential to create sustained motivational intensity (Deci & Vansteenkiste, 2004). A more comprehensive application of self-determination theory would have added further depth to their work.

Some studies seem to have been influenced by SDT, but do not specifically refer back to this influence. For example, Heinstrom (2006b) has turned her attention to the motivation of middle school and high school students and found that extrinsically motivated students seek only enough information to complete the task at hand, while intrinsically motivated students sought more information and at a greater level of depth. While Heinstrom (2006b) uses the terms intrinsic and extrinsic, these terms have not been discussed in the context of self-determination theory (see

Deci & Ryan, 1985). That being said, her results are consistent with what one would expect to find when using the tenets of SDT, though her argument could perhaps be strengthened by exploring the sub-types of extrinsic motivation. Furthermore, though Smith and Hepworth (2007) did not tie their findings specifically to self-determination theory, their findings reveal that students who received feedback (which is thought to enhance competence) were more motivated to complete their projects.

Self-Efficacy. Related to the concept of confidence (and competence) is self-efficacy. Certainly, self-efficacy has been an integral component of many information behaviour studies (e.g., Chu, Huber, Mastel-Smith, Cesario, 2009; Endres, Endres, Chowdhury, & Alam, 2007; Hsu, Ju, Yen, & Chang, 2007; Lin, 2007; Nahl & Tenopir, 1996; Waldman, 2003). Moreover, Wilson (1999, p. 257; see also, Wilson & Walsh, 1996) uses self-efficacy to help explain how activating mechanisms work within the context of his information behaviour model. According to Wilson (1999), activating mechanisms are what encourage people to engage in the information seeking process. In this sense, feelings of efficacy can influence whether or not people decide to undertake an information quest. By enhancing people's feelings of self-efficacy, they can be directed towards a feeling of comfort and confidence in gaining the relevant information that they need, for example, to make an important decision.

Specific to the academic context, the relevance of self-efficacy to information behaviour has been further expanded by Tella et al. (2007). In

this recent study, these researchers found that students who feel greater efficacy make better use of electronic information. This finding is consistent with the works of earlier researchers, who also found that self-efficacy increased the effective use of digital materials (Nahl & Tenopir, 1996; Ren, 2000; Waldman, 2003).

Within the digital context, other researchers have examined how self-efficacy influences both information seeking and information sharing. In 2007, David and his colleagues reported that feelings of self-efficacy when using hyperlinks resulted in users pursuing progressively more complex information seeking tasks. Not surprisingly, users' self-efficacy improved as they met their information seeking goals (David et al., 2007). Wei and Zhang (2008) also looked at self-efficacy in the context of information seeking, finding that both experience with and knowledge of the internet increased the students self-efficacy, which in turn made them more likely to perceive the internet as useful and bolstered their intention to continue using the internet. Others have considered how self-efficacy influences information sharing. Based on their review of the self-efficacy literature, Endres and her colleagues (2007; see also, Lin, 2007) proposed that support from both work colleagues and supervisors would be instrumental in increasing self-efficacy for information sharing and that this self-efficacy would translate into greater sharing of information. This proposition is consistent with what other researchers have found when using the concept of self-efficacy to explain information sharing. For

example, Hsu and her colleagues (2007) found that individuals who had higher self-efficacy for information sharing were more inclined to share this information. Similarly, other researchers have noted that people will be more inclined to use digital repositories if they feel efficacious in using them (Kankanhalli, Tan, & Wei, 2005). Mirroring these results, Lin (2007) also noted that self-efficacy/confidence was important to both intention to share and attitudes toward information sharing. This is also consistent with the findings of a 2003 study, which suggested that individuals may not share information in a virtual community because they fear that they either are incorrect or may be perceived as being incorrect (Ardichvili, Page, & Wentling, 2003).

Flow Theory. As mentioned earlier, Csikzentmihalyi's flow theory seeks to explain how people achieve optimal experiences (Naumer, 2005). That is, how do they get in "the zone"? According to Csikzentmihalyi (1990), for individuals to achieve an optimal experience (i.e., flow), they must find the optimum balance between their own ability and the difficulty of a task. If a task is too difficult in the context of an individual's ability, the individual may become frustrated. However, if the task is too easy for an individual to complete, they will likely become bored with the task. The theory's relevance to information studies research can be noted in a study by Choi, Kim, and Kim (2007); these researchers found that educational achievement could be enhanced if students experienced flow during their interaction with the technology.

ARCS Motivational Model: Attention, Relevance, Confidence, and Satisfaction. The ARCS motivational model has been applied to studies of information literacy (e.g., Curtis & Carson, 1991; Jacobson & Xu, 2002). The findings from these studies suggest that students of information literacy can be motivated according to four different dimensions: attention, relevance, confidence, and satisfaction (i.e., ARCS). In this theory, teachers or instructors must strive to gain the attention of their students, provide students with relevant information, instill confidence in their students and maintain the student's satisfaction and desire to learn (Keller, 1987). Perhaps because of its strong ties to the education field, ARCS is most frequently used to investigate the motivation of information literacy students. Strategies for developing and maintaining attention, relevance, confidence, and satisfaction in an information literacy context are discussed by Jacobson and Xu (2002; see also Curtis & Carson, 1991).

Maslow's Hierarchy of Needs: Self-Actualization. Maslow conceptualized his hierarchy of needs as a pyramid, where the most basic needs (external) rest at the base, while the most abstract needs (internal) are found at the apex (Maslow, 1987; Walker, 1994). Each preceding need must be met before subsequent needs can become motivators (Maslow, 1987; Weiler, 2005). Maslow considered the most basic of needs to be biological and these are in essence external (e.g., food, shelter), with the following level conceptualized as security needs (e.g.,

protection against pain). Social needs comprise the next highest level in Maslow's pyramid, and these include such needs as friendship and communication. Esteem follows social needs and is comprised of both one's self-esteem, but also the esteem of others. Finally, at the peak of Maslow's pyramid is self-actualization, where individuals strive to maximize their potential. It is these higher level needs that are considered to be more internally focused.

Maslow's hierarchy of needs continues to exert influence in the LIS motivation literature, despite being subject to much critique in other disciplines (e.g., Trigg, 2004; Cullen, 2002). Admittedly, much of this work has been done within the workplace context (e.g., Bakewell, 1993; Gradisar & Cesnovar, 1997; Green, Chivers, & Mynott, 2000; Rowley, 1996, Walker, 1994). However, within the specific context of information consumers, Weiler (2005, p. 205) cited the importance of Maslow's theory in the context of internet users who only look for quality web resources if they find the search topic to be of personal relevance (i.e., resources that will help them self-actualize). In an earlier study, Sridhar (1981) noted the applicability of the theory to both librarians and their users.

Pleasure. Information consumers are often driven to seek and/or use information for pleasure and enjoyment. While being motivated by pleasure is conceptually quite similar to being intrinsically motivated, the authors below have used the term pleasure to describe the rationale for these behaviours and not intrinsic motivation. MacDonell (2004)

addressed the importance of cultivating pleasure as a motivation for reading in young children as this will develop sustained lifelong interest in reading. Similarly, Brewis, Gericke, and Kruger (1994) argued that pleasure is an important motivator for adult reading. Meanwhile, Teo's (2001) study of young internet users suggested that enjoyment is also a frequent motivator for downloading, browsing, and messaging activities. Another study of web users found that people enjoy being entertained when interacting with a website for informational or pleasure related needs (San Jose-Cabezudo, Guiterrez-Cillan, & Guiterrez-Arranz, 2008). In a slightly different vein, Lin (2007) observed that co-workers will often share information because of the pleasure found in being helpful.

Attitudes, Beliefs, Values, and Knowledge. The drive to seek and/or use information often results from an attempt to confirm or expand one's current horizons. For example, Toms (1999) suggested that people's rationale for selecting particular materials was tied largely to their attitudes, beliefs, values, and knowledge. That is, their selection of materials was less systematic and tied more to their own personal experiences. Toms' finding is consistent with the results of Reagan, Pinkleton, Thorsen, Miller, and Main (1998), who found that there is a relationship between an individual's interests or attitudes and their choice of an information resource. Likewise, Mulder (1976) reported that children are motivated to read because of a positive attitude towards a particular subject. In terms of expanding one's current view, a group of researchers

found that adults were motivated to read fiction because of a desire to enhance their current level of knowledge and societal consciousness (Brewis, Gericke, & Kruger, 1994). For health professionals, some researchers have also noted that the need to gather information is based on need, either for professional development or for treating patients (Thain & Wales, 2005; see also Fourie & Claassen-Veldsman, 2007). Here, increasing or confirming knowledge was key.

Escape. Related to pleasure is the idea of escape. In this case, a need to step outside their current reality was cited as another reason for seeking and/or using information. Leung (2003) found that “Net-geners” were motivated to use the internet in order to escape their current situation. Likewise, other researchers found that reading was a means by which adults were able to avoid reality. Here, individuals were foregoing something less “pleasurable” in their life and escaping into something enjoyable (Brewis, Gericke, & Kruger, 1994).

Bonding. In some circumstances, information consumers are also motivated by the need to form bonds with others. Leung (2003) reported that information consumers were drawn to the web because of the relationships it allowed them to form. These findings are consistent with Deci and Ryan’s (1985) notion of relatedness. A recent study of collaboration amongst library and information studies students also noted the importance of relationship formation. Here, students were motivated to collaborate with others because of the opportunity it provided to form

friendships (Hodgkinson, 2006). Furthermore, a desire to bond with others encouraged individuals to share information amongst themselves in the workplace (Beitler & Mitlacher, 2007; see also Lin, 2007).

Time and Ease of Access/Use. In many instances, individuals are motivated to pursue a particular resource because it is either easy to locate or easy to use. Weiler (2005) revealed that a group of generation Y students were motivated to use a particular resource for information retrieval if they could use or find it with ease. Similarly, Head and Eisenberg (2010) revealed that post-secondary students tend to use Wikipedia because of its convenience, particularly when orienting oneself to a topic. In a 2007 study, Prabha and her colleagues noted that faculty members may choose not to use a particular resource because of accessibility issues. These results are also consistent with findings by Warwick and her colleagues in 2009, who found that students chose the path of least resistance (often the internet) when it came to information seeking. They also pursued new search strategies for locating information only when absolutely necessary (Warwick, Rimmer, Blandford, Gow, & Buchanan, 2009).

Related to the idea that information should be both easy to access and use is the issue of time. People tend to view their time as very valuable and as a result, often do not want to spend any longer on an activity than is absolutely required. In her study, Weiler (2005) found that undergraduate students would select a resource, regardless of its

integrity, if it meant that less time was spent tracking and using the resource. This is consistent with the findings of Prabha and her colleagues (2007), who noted that time was often an important motivator in determining the quantity and quality of information that students retrieved. These researchers (2007) were able to extend the results of their study to faculty, noting that time often influenced the amount of information that they would use, for example, when preparing a lecture. Furthermore, Warwick and her colleagues (2009) noted that undergraduates tended not to use resources from the library because it simply took too much time. These findings were couched in the theories of rational choice and satisficing, noting that people make the best choice based on the options available and the forecasted outcome.

Goals. Social motivation researchers have found that individuals' task performance is enhanced if they are provided with specific goals beforehand (e.g., Beenan, Ling, Wang, Chang, Frankowski, Resnick, et al., 2004). This effect is also evident in the context of internet searches. Thompson, Meriac, and Cope (2002) found that students who were given specific goals (i.e., find the names of 70 psychologists) located more resources than those with more general goals (i.e., find the names of as many psychologists as you can). The results of this study suggest that the provision of specific goals may be an important way to motivate individuals to gather more information.

Perceived Usefulness. Finally, perceived usefulness was also mentioned as a need that drives one to seek and use information in a particular manner (e.g., Reagan et al. 1998; Teo, 2001; Wei & Zhang, 2008; Wu & Li, 2007). In 2001, Teo found that perceived usefulness influenced users' motivation to download, browse, message, and purchase items on the internet. Meanwhile, Reagan et al. (1998) found that perceived usefulness may motivate one to use a particular type of information in order to attain the most relevant information. This factor was also found to influence acceptance of technology in a knowledge management program. These researchers found that people were more likely to use a knowledge management program if they thought it had some utility. Interestingly, they also noted that intrinsic motivation toward knowledge management influenced how useful people perceived the program (Wu & Li, 2007). Related to the idea of perceived usefulness is personal relevance. A 2009 article by Banas pointed out that students will be more motivated to improve their information literacy skills if the instructional material has been tailored to their specific needs. Reznowski (2008) also highlighted the need for relevant information. In her paper, Reznowski (2008) noted that students were more motivated to keep learning a second language if they were provided with relevant reading materials.

### *2.6.2 How to Motivate Information Consumers*

The theoretical concepts ensconced within self-determination theory, flow theory, self-efficacy, Maslow's hierarchy of needs, and ARCS all provide some indication of how to motivate information consumers. For example, self-determination theorists would point out that the consumers' needs for autonomy, competence, and relatedness must be encouraged, while flow theorists would advise providing an optimal balance between the individual's ability and the challenge of the task. While understanding why people are motivated does provide a window into what will motivate them, the studies that follow offer more specific and tangible solutions for how to motivate information consumers.

MacDonell (2004) contributes to the literature on how to motivate information consumers by discussing how to maintain children's motivation to read. First, she suggests that children be given the autonomy needed to select their own books. Second, their motivation may also be sustained by allowing them to recommend their book choices to others, fostering a sense of relatedness with other readers of similar materials.

Adikata and Anwar (2006) looked at the concept of motivating others in a library context. They pointed out that in order to motivate both students and academic staff to use the library that the librarians must create an environment that is responsive to users' needs. Furthermore, library training should be situated within individual courses. Other

researchers have looked at the librarian's role in motivating students. Reznowski (2008) noted that the librarian should engage with second language students in order to help bolster their interest and motivation for learning a second language. This could be done through building a collection of materials relevant and interesting to the second language learner, as well as working with the instructor to find materials appropriate for the learner. A related role for librarians has also been noted by Mortimore and Wall (2009), who found that librarians who provided encouraging information literacy instruction motivated students to engage more effectively in their academic studies.

### *2.6.3 The General Role of Motivation in LIS*

While motivation is not a completely untapped area of study in the LIS literature, there is room for growth in this area. One particular area that deserves more attention is motivational theory. While there has been some interest in this area, many authors still write from an atheoretical position (e.g., Adjkata & Anwar, 2006; MacDonell, 2004; Reznowski, 2008). Beenan et al. (2004) highlight the role that social psychological theory can play in understanding information sharing in virtual communities. These researchers point to concepts, such as social loafing and goal setting, in order to explain the lack of information sharing that takes place in many online communities. The use of qualitative strategies (e.g., a grounded theory approach, such as in this study) may be another way to enhance understanding of the motivation to seek and share

information in the online learning environment. This approach will be described in detail in Chapter 3.

## CHAPTER 3 - RESEARCH METHODOLOGY

### 3.1 Introduction - Philosophical Justification

For the purpose of this particular project, I felt that it was appropriate to align myself with a post-positivist point of view. Denzin and Lincoln (2000, p. 9) point out that post-positivists are individuals who seek to *approach* reality through research, observing that this is often done through finding and verifying theories. In conducting this project, I wanted an in-depth examination of information behaviours in online classrooms to better understand the role of motivation in this context. The methodology included a grounded theory approach, combined with a case study approach. A grounded theory approach allowed me the latitude to develop a new and potentially more inclusive theory of motivation and information behaviour in online learning environments, while using a case study approach afforded me the opportunity to understand, in great depth, the information behaviours and their related motivations as they apply to one established program. Indeed, as Blatter (2008) points out, case studies offer researchers a means to explore a phenomenon in great depth, thereby gaining a rich understanding of individual views on community-specific social events, behaviours, and processes. Moreover, case studies can lead to theoretical innovations because they allow the examination of the relationship between different elements of a research problem in a contained context. The University of Alberta's Teacher-Librarianship by Distance Learning (TL-DL) program offered just such a

context (see Chapter 1 for details about the program in general). As described in the introduction, the TL-DL program has been in place since 1996, and as a result, has had the opportunity to hone their online learning environment over time. The relation between information behaviours and motivation were examined in a context where modes of facilitating information seeking and sharing had evolved and presumably improved over the years. In essence, both this approach and this context have allowed me to explore in great depth, some best practices in virtual information seeking and sharing. I used an instrumental case study approach, which enabled me to fully explore the relationship between information behaviour and motivation in the online classroom. Unlike the intrinsic case study approach, where the interest lies purely in the case, I was able to learn how the TL-DL case could enhance our understanding of the relationship between information behaviour and motivation (Stake, 2000, p. 437). By studying this one online learning environment in great depth, it enhanced my understanding of other similar cases (i.e., other virtual learning environments), as well as providing insight into factors enhancing or perhaps impeding information behaviours in this particular case. I have structured my case analysis to understand the information behaviours and the motivations of students in this virtual learning environment from differing perspectives. Through interviewing, I sought the perspectives of students who were enrolled at the beginning, at the middle, or at the end of the TL-DL program. Instructors, as well as other

coordinators of the TL-DL program, were also interviewed. In addition to gaining insight into differing perspectives, this multi-faceted approach also allowed me to gain a deeper appreciation of the TL-DL case itself, understanding its nature, history, and geography (Stake, 2000, p. 438)

The reason that I selected the grounded theory approach is that I wanted to develop a theory that could discern information seeking and sharing activities in online classrooms, and how these are influenced by the students' motivational orientations. Moreover, I wanted to be able to determine how (or if) the instructor (or other significant individuals) can influence these motivational orientations and by extension, the students' information behaviours. Given the detailed process provided by grounded theorists, such as Strauss and Corbin (1998; see also Charmaz & Bryant, 2008), grounded theory provided a systematic process for both the sampling (Strauss & Corbin, 1998) and analysis stages (Punch, 2005). During the sampling process, there are three key stages: open; relational or variational; and discriminate sampling. The sampling stages are considered to be complete when theoretical saturation is achieved (Strauss & Corbin, 1988, pp. 181-188). Section 3.4 provides a thorough discussion of these stages. Analysis is also thought to occur across three stages, which include open coding; axial coding; and selective coding (Punch, 2005, p. 205). These coding processes are discussed in detail in section 3.6. Importantly, grounded theories are developed strictly in the context of the data, avoiding the use of preconceptions to guide the theory

building. Instead, coding occurs on a “line-by-line” basis (Charmaz & Bryant, 2008, p. 375). These detailed processes enabled me to develop a motivational theory that highlights the unique characteristics of online classrooms (particularly a professionally-oriented graduate program). By interviewing a range of participants (students, instructors, and coordinators of the TL-DL program) in online classrooms, I was able to gain a rich understanding of information seeking and sharing in an online learning environment.

My dissertation work is intended to become a part of the well established body of grounded theory research in both library and information studies, as well as psychology. A search of Library and Information Studies Abstracts (LISA) located 104 studies in peer-reviewed journals that have been influenced by the grounded theory approach (since 2000 and as of March, 2010). These studies cover a broad range of topics, including the following recent examinations: female perceptions of public library services (Wilson, 2009); information and the training of ambulance drivers (Lloyd, 2009); as well as librarians’ experiences as instructors (Julien & Genuis, 2009). In the PsycInfo database (since 2000 and as of March, 2010), 730 grounded theory related articles have been indexed. Of those, 21 make some mention of motivation. For example, researchers have looked at ways to motivate patients’ self-care (Larsson, Sahlsten, Sjostrom, Lindencrona, & Plos, 2007); and offenders’ motivation to stay off of drugs (Smith & Ferguson, 2005). The methods described in

this chapter will provide some context for how this dissertation fits within grounded theory research in the fields of psychology and library and information studies.

### 3.2 Information Behaviours, Motivation, and the Virtual Classroom: A Qualitative Investigation

As noted in Chapter 1, the following questions were addressed in this research project. Collectively, the information collected from posing these questions, enhanced my understanding of information behaviours in the case of the TL-DL context, and culminated with the development of a motivational theory of information seeking and sharing in the online learning environment.

1a. In what types of information seeking behaviours do students engage in online learning environments?

1b. What motivates students to engage (or not engage) in information behaviours in web-based classrooms?

2a. In what types of information sharing behaviours do students engage in online learning environments?

2b. What motivates students to engage (or not engage) in information sharing behaviours in web-based classrooms?

3. Can a theoretical model of students' motivational orientations as they apply to their information behaviours be developed?

To effectively address these questions, the design of a robust sampling strategy was essential. A description of the ethics that drove the

sampling, data collection, and analyses precedes the outline of the sampling strategy.

### 3.3 Human Ethics Considerations

In line with the *Tri-Council Policy Statement: Ethical Conduct for Research involving Humans* (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada, 1998), preserving human dignity was an essential component of this research project, along with the provision of a basic level of respect for and even gratitude towards human research participants. Interviews with students, instructors, and coordinators were essential to understanding student information behaviour and motivation in web-based classrooms. As such, it was critically important that these participants understood how their contribution to the research process was helping to advance knowledge in this particular area of study. Moreover, participants were made fully aware of their rights as a research participant to be protected from harm and that every attempt to do so was made. The ethics application was reviewed and approved by the Faculties of Education, Extension, and Augustana Research Ethics Board at the University of Alberta.

#### 3.3.1 *Informed Consent*

Participants were made aware of their right to free and informed consent (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and

Humanities Research Council of Canada, 1998). At the recruitment stage, participants were provided reading materials on the project and their rights as participants before notifying the researcher of their decision by email. The initial recruitment was also done through an intermediary to prevent participants from feeling pressured to please the researcher by participating. If participants were uncomfortable with any of the details of the interview, upon reading the consent/project details, they were able to withdraw (see Appendices 1, 2, 3, and 4). Furthermore, these details were reiterated at the start of the interview and it was made explicitly clear that they could withdraw from the study at any point during the interview. All efforts were made to convey the voluntary nature of their participation; they did not feel coerced to participate. Also, the participants were informed that their responses would only be used for the purpose of this particular research project. Because the interview data were anonymized, the interviewees were made aware that they could not withdraw their responses once the interview was complete.

### *3.3.2 Privacy and Confidentiality*

All persons have the right to expect privacy and confidentiality (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, Social Sciences and Humanities Research Council of Canada, 1998). As such, participants were informed that various procedures were in place to ensure the confidentiality and privacy of their responses. Participants' responses

were recorded digitally and the digital audio files were downloaded to a password protected computer that only the researcher and her assistant could access. Also, transcripts of the interviews were kept in a locked file cabinet. Furthermore, only pseudonyms were used to identify participants on the transcripts and computer files. The research assistant employed to help with transcription of the interview data signed a confidentiality agreement (see Appendix 5).

### *3.3.3 Honouring Participant Contributions*

Another important consideration when working with human subjects, particularly within qualitative research, is the accurate representation of participants' responses (Chiovitti & Piran, 2003, p. 430). Doing this representation well shows respect for the ideas of the participants; in this study, this was accomplished by using direct quotations from the interviews when reporting results. Furthermore, participants were thoroughly thanked and the importance of their participation in the research process was acknowledged. This was done verbally, upon completion of the interview. The participants offered and most were interested in receiving an executive summary of the dissertation sent to them once the research was completed. This will enable the participants to see the importance of their responses in advancing knowledge in this area.

### *3.3.4 Dissemination*

Because the theory developed in this study has the potential to benefit the participants, special efforts will be made to disseminate the results of this project to this group. Contact information was collected from all participants who were interested in learning about the final results of the project. Offsetting the efforts of participation is the potential for the students, coordinators and instructors to benefit from a better understanding of how motivational orientations influence access to information in the online learning environment. Beyond sharing the results with the participants, an effort will also be made to share the information with interested communities. Both presentations and publications will be directed towards research and professional audiences in both library and information studies and psychology, maximizing the utility of these results. Professionals may be able to use these results to drive their practice, specifically in enhancing information access in online learning environments, while researchers may use the results as a catalyst for further studies in this area.

## **3.4 Sampling and Data Sources**

In line with Strauss and Corbin's (1998, p. 179; see also Dey, 1999, pp. 4-5) recommendations, the first necessary step in the sampling process is to select the group(s) to be studied to address your research questions, knowing that this sample can and likely will change as theoretical sampling proceeds.

Participants – Group 1. In this particular subset, 15 students from the Teacher-Librarianship by Distance Learning (TL-DL) program at the University of Alberta were recruited for participation in an individual interview study (see Appendix 6 for a full version of the recruitment script and Appendix 7 for student profiles). This sample size is consistent with the grounded theory sampling guidelines (see Onwuegbuzie & Collins, 2007, p. 289; see also, Creswell, 2002). To gain a broader understanding of information behaviours in these virtual classrooms, participants who were at the beginning, middle, and end of the program were selected. More specifically, of these 15 students, four were in the earlier stages of the program, six were in the middle stages, while seven were at the end or had completed the program in the last year. The participants were all female, which is consistent with librarianship as a feminized profession (Combes, 2008; Piper & Collamer, 2001). This gender breakdown reflects the fact that only seven of the 69 students in the TL-DL program were males at the time this study was conducted (Jennifer Branch, personal communication, March 3, 2010). There was significant geographic variation however. Seven of the participants were from British Columbia, three participants were from Alberta, two were from Manitoba, with one each from Ontario, Saskatchewan, and the Yukon. This geographic dispersal provided significant variation in professional experience because of differing provincial government education standards. Variation in professional experience was further ensured by recruiting teachers with

experience ranging from less than 10 years to almost 40 years. While the bulk of participants were completing a Master's in Education within the TL-DL context, one was completing the Diploma program (see Chapter 1 for more details on these programs). Although students tended to be older due to requirements that they have an education degree and a teaching certificate prior to enrollment, there was still variation within the age of participants (note: 14 of the 15 participants agreed to provide their age). Three participants were in their thirties at the time of data collection; seven were in their forties; and four were in their fifties (see Appendix 7 for more specific details regarding their age). This pattern is consistent with the mean age of late 30's to early 40's for individuals in this program (Jennifer Branch, personal communication, March 9, 2010). Although the majority of participants were married, one was single, and one was divorced (though she did have a partner). All but one of the participants had children. Finally, all of the participants were practicing teachers, with three of them on teaching leave at the time of the interviews. Collectively, these students provided insight into information behaviours in the online classroom, as well as the motivation behind these behaviours.

As mentioned in the "informed consent" section (3.3.1), an intermediary was used to recruit participants. Letters requesting participation in the study were sent to the students from the TL-DL program coordinator acting as the intermediary. The use of an intermediary served two important purposes. First, it provided a gateway

into the TL-DL community, a strategy that can aid in the recruitment process (Eide, 2008, p. 744). Second, it ensured that the participants did not feel compelled to participate, simply because they felt uncomfortable declining the researcher directly. As a result, they could freely choose not to respond to the request. For those agreeing to participate, the coordinator forwarded their individual contact details and I then contacted the participant directly to arrange a time for the interview. Students who had participated in the study were also asked to recommend this study to their peers, though the success of this technique in recruiting additional participants was not tracked.

To facilitate maximum variation in sampling<sup>6</sup>, participants were recruited in relatively even numbers from the beginning, middle, and end of the TL-DL program. Participants were then selected using the theoretical sampling technique described by Strauss and Corbin (1998, pp. 176-193; Dey, 1999, pp. 4-5). In essence, theoretical sampling is the result of constant and comparative analysis. As the interviews progress, categories begin to develop and future sampling decisions are then guided by these emerging categories. This technique differs from many traditional (especially quantitative) sampling practices, where the sample is not refined after its initial selection at the beginning of the study and is based on its capacity to generalize to the larger population (Strauss &

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<sup>6</sup> Maximum variation sampling can be defined as “searching for cases or individuals who cover the spectrum of positions and perspectives in relation to the phenomenon one is studying”. (Palys, 2008, p. 698)

Corbin, 1998, p. 190). There are three stages within the sampling process: open sampling, relational sampling, and discriminate sampling.

Open Sampling. This stage of sampling requires an effort to remain receptive to all contexts that may have enhanced understanding and discovery (Strauss & Corbin, 1998, p. 181). Accordingly, sampling at this stage was both open and purposive in nature; students were recruited broadly within the general criteria outlined earlier (i.e., students who were in the early, middle, and latter stages of the TL-DL program). This open, but purposive method of sampling facilitated the discovery of relevant categories and enabled further exploration of these categories in future interviews.

Variational or Relational Sampling. The next stage of sampling, according to Strauss and Corbin (1998, p. 185) is relational or variational sampling. Here, samples were collected using theoretically relevant concepts, but with a shift in focus. Instead of simply looking for discrete categories, I was now looking for variations and relationships in the samples. An example that illustrates the value of this sampling approach in this study was the exploration of the differences in information sharing patterns between those who were comfortable with technology and those who were not. Hence, sampling shifted to capture the categorical variations and relationships that I had noted and wished to explore further. With the earlier example, a question about their technology preference for conducting the interview (e.g., online communication device vs. telephone)

was used to assess the appropriateness of new recruits to address these emerging questions of technical proficiency. Here, theoretical sampling became critical. Students who could help build on the emerging theory were recruited. In the early stages, most of the participants agreed to use the online technology for the interviews. However, participants who opted to chat over the telephone were later recruited to represent students who were perhaps not as comfortable with new social technologies, such as Skype. This shift in recruitment was driven by earlier data that had been collected, which indicated that students who were less comfortable with technology may have different modes of both seeking and sharing information. The ability to adapt the focus of sampling was critical to advancing the grounded theory.

Discriminate Sampling. The final stage of the sampling process is called discriminate sampling. Here, the formation of theory occurs through the integration of the categories, leading to the development of a core category. Validating the proposed relations between categories is essential (Strauss & Corbin, 1998, p. 187). To that end, participants were selected based on their capacity to ensure maximum comparative analysis because at this stage, the goal is to saturate the categories that had been created (that is, collecting data to the point that no new information about a category is found). As data came in, comparisons were made with existing data (noting negative cases), and theoretical modifications were made as warranted. Critical at this stage of sampling was the selection of

participants who provided extreme variability within a category (Strauss & Corbin, 1998, pp. 158-159). Attempts to fill in potential gaps of perspective occurred at this sampling stage, included interviewing a Diploma student to determine if program stream would alter information behaviours. Another gap was the lack of participants from the greater Edmonton area interviewed in the earlier stages of the research process. This distinction was potentially important because these students could (potentially) have easier access to the University of Alberta's print collection resulting in different information seeking experiences. A relevant participant was subsequently interviewed to provide additional variation to the overall sample.

Theoretical Saturation. Sampling is complete when theoretical saturation has occurred. The three signs that saturation has occurred described by Strauss and Corbin (1998, pp. 158-159) were used to determine when to cease sampling. First, further data collection provides no new insights. Second, each category has well-developed characteristics and finally, proposed relations between each of the categories are well developed. The recruitment of participants with a range of different demographic and academic characteristics were critical to attaining theoretical saturation..

Participants – Group 2. The second set of participants included coordinators of the TL-DL program and selected instructors (see Appendix 7 for key informant profiles). These individuals were all considered key

informants, an important part of qualitative research because of the informants' capacity to share their expansive knowledge of the community being studied. Key informants are also important because their extensive knowledge of the community adds the required depth to the data, normally unattainable without great investment of time and resources in interviews and observations (Fetterman, 2008, p. 477). In this study, the key informants offered insights on the program's culture, on student-to-student interactions, and on the students' behaviours in the virtual learning environment. The key informants were all interviewed, which is a typical mode of collecting data from key informants (Fetterman, 2008, p. 477). The coordinators of the TL-DL community were asked to provide historical context on the development of the program and its changes over the years. When speaking with the coordinators of the TL-DL community, attention was paid to understanding how information behaviours had shifted since the program's inception in 1996. In selecting the instructors to interview, an effort was made to speak with both a newer and more seasoned instructor in order to get varied instructor perspectives on their students' information behaviours in the virtual learning environment. Importantly, because the TL-DL program was not cohort-based at the time of data collection, these instructors had (and have) the opportunity to observe students who ranged from those who had just begun the program to those who were nearing completion. Data collected from the key informants were integrated with the information provided by the students

themselves to offer a comprehensive understanding of this learning environment.

### 3.5 Data Collection Methods

Interviews were selected as the preferred method of data collection to address the research questions because they are one of the best means by which to understand individuals' points of view (Green & Thorogood, 2004). To that end, online, semi-structured interviews were conducted between December of 2008 and April of 2009 with students completing either their Master's or Diploma in teacher-librarianship . The use of an online data collection tool in these interviews supports the assertion made by Kazmer and Xie (2008, pp. 257-258) that online interviews work best when the activity itself relates to the online world (in this instance, online distance learning). Skype was the online tool used to interview the participants and it allowed a range of communication options that included phoning, computer-to-computer, computer-to-telephone, instant messaging, and file sharing (Klock & Gomes, 2008).

The interviews were conducted until theoretical and data saturation were reached. For grounded theorists, this may occur between 15 and 20 interviews (Onwuegbuzie & Collins, 2007, p. 289; see also Creswell, 2002). I reached theoretical saturation after completing semi-structured interviews with 15 students enrolled in the TL-DL program. At this stage, I was confident that I was not hearing anything new from the participants, and that further data collection would add no greater depth to my

theoretical analysis (Sandelowski, 2008, p. 875). Participants were given a choice between Skype Video, Skype Audio, and telephone for the interviews. The range of options were provided so as not to exclude any potential participants and to be consistent with the values of qualitative researchers in ensuring that all potential participants have an equal chance of being heard (Fabian, 2008, p. 943). That is, it ensured that their voices were not discounted because of access to or comfort with a certain type of technology. These options also helped to maximize sampling variation by including students who possessed differing levels of comfort with and access to technology (i.e., those who chose to use Skype versus those choosing to use the phone). In choosing their preferred mode, seven participants decided to use Skype video, two participants decided upon Skype audio, and six elected to be interviewed over the phone. Also, semi-structured interviews with three key informants (i.e., coordinators of the TL-DL community and instructors) were also conducted in order to further understand the nature of student information behaviours in this particular environment from a non-student perspective. With the key informant interviews, two participants elected to be interviewed over the telephone and the third chose to use Skype video.

Semi-structured interviews using Skype or telephone (depending on participant preference) were the sole data collection method used in this project. Virtual or telephone interviews seemed the ideal choice because they allowed me to speak directly with participants, despite

geographical distance. Addressing the issue of geographical distance was particularly important in the context of this dissertation research because I conducted the study from New Zealand with participants from Canada. Moreover, the majority of students in the TL-DL program did not reside in Edmonton (i.e., the city where the TL-DL program is administered). Indeed, geographic flexibility is perceived to be one of the core advantages of online and telephone interviews (Davis, Bolding, Hart, Sherr, & Elford, 2004, p. 944; Hughes, 2008, p. 862; James & Busher, 2006, p. 405; Stieger & Goritz, 2006, p. 552).

Punch (2005) recommends numerous preparations that must be made prior to the start of the interview(s). For this study, an interview schedule was prepared for both the students and the key informants (see Appendices 8 and 9). Berg (2001, p. 70) suggests that a schedule for semi-structured interviews includes a number of pre-determined topics that must be addressed, although there is also freedom to explore unanticipated areas of interest. This flexibility was critical to the early stages of grounded theory development, where exploration helped lead to the development of categories, while the structure of this type of schedule ensured that the conceptual categories emerging in the early interviews were fleshed out in subsequent interactions.

At the outset of each interview, I made the participants aware of the study's purpose and the confidentiality of the data, as well as the fact that their interviews would be audio-recorded. If participants had elected not to

have their responses recorded, detailed notes would have been taken during and after the interview. However, no one declined to have their call recorded (one recording failed, but this was identified immediately after the interview and hence the researcher was able to take detailed notes that summarized the interview in extensive detail). Participants were also assured that they could withdraw from the study at any time during the interview. By this point, all participants had already provided email consent when recruited for the study (see Appendices 1, 2, 3, and 4 for copies of the consent forms and information letters). The participants were also informed that after the interview was completed, they could not withdraw their responses because the data would be anonymized and could not be linked back to participants for that purpose.

Consistent with Chenitz and Swanson's recommendation (1986, p. 72), participants in this study were made aware of how long the interview would last (i.e., 60-90 minutes), so that they could both mentally prepare for the interview and allocate adequate time to accommodate the full interview. I also built extra time into my schedule to ensure that each interviewee did not feel rushed. In addition, only three to four interviews were scheduled per week, to allow time to review the existing data before each subsequent interview. A key tenet of grounded theory is for each interview to build upon the former and, as a result, categories from one interview must then be incorporated into the next interview. This strategic

scheduling ensured that the critical reflection time was incorporated into the overall data collection procedure.

For the purpose of structuring the interview, a funnel approach was used, starting with the more general research-related questions and then progressing to the more specific (see Appendices 8 and 9). Within my questionnaire, the funnel approach was used once for the information seeking section and once for the information sharing section. This approach provides two main advantages. First, it facilitated the discovery of unforeseen replies (Wengraff, 2001, p. 108), which is important for grounded theory development because it captures greater variation of responses. As discussed in the sampling section, variation is an important component of grounded theory because it enhances the transferability of results (Strauss & Corbin, 1998, pp. 158-159). The second key advantage of using the funnel approach is to limit the bias and preconceived notions of the researcher (Wengraff, 2001, 108). By using the funnel approach, I was less likely to project my own values and notions about the topic onto the interviewee. Given that grounded theorists seek to have the theory emerge from the data, it was important that the data reflected the participants' ideas and not my own.

Using the funnel interview approach, two types of questions were asked: essential and probing questions (Berg, 2001, pp. 75-76). Essential questions are those critical to the study itself, exploring the basic ideas that the researcher wishes to examine in the context of their research

questions (Berg, 2001, p. 75). In grounded theory, the essential questions continue to evolve to reflect the continuing development of conceptual categories. One such development in this study was to ask participants how (or if) their information behaviours had changed since starting the program to understand how increased competence motivated these students to explore additional information sources. The probing questions were equally important as they provided the opportunity to add depth to participant responses (Bowling & Ebrahim, 2005, p. 219; Liamputtong & Ezzy, 2005, pp. 63-65). The probing questions tended to be fairly neutral and often simply required that the participant elaborate on what they had just said, perhaps providing examples to backup their comments. It is these probing questions that helped add richness and depth to my data (Berg, 2001, p. 76). The information behaviour questions themselves were loosely adapted from a scale used by Whitmire in 2001 that looked at the use of the academic library by undergraduates, while the motivation items were influenced in part by the concepts and items described by Noels (2001; see also Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1993) in her study of Spanish language learners. As needed, additional questions were added to the schedule to adequately address the research questions.

With respect to verbal cues, attention was also paid to the language being used by the participant (Berg, 2001, p. 70). I tried to converse using terms that were familiar to the participant to facilitate a more

conversational tone. Because the participants were all practicing teachers, we spoke frequently about interesting pedagogical issues and how these influenced their studies. In addition to noting participants' verbal responses, non-verbal cues were also noted when video was available (Green & Thorogood, 2004, pp. 98-99; Liamputtong & Ezzy, 2005, p. 58). For example, a yawn was seen as a sign of participant boredom, indicating the need to be more interactive in my interviewing style. Demographic questions were asked at the start of the interview because these types of questions are not too difficult to answer and helped put the participant at ease (Bowling & Ebrahim, 2005, p. 219). Moreover, the demographic information helped contextualize each participant's subsequent responses (Bowling & Ebrahim, 2005, p. 219). Throughout the interview, the schedule was used to maintain focus on the research questions, which is increasingly critical as the conceptual categories begin to emerge from the constant comparative analysis.

The implications of an interview conducted in a virtual or telephone environment versus the face-to-face context are important to consider. In one respect, the virtual/telephone interview style has a distinct advantage over other types of virtual interviews that are typically asynchronous, such as the use of email (Kazmer & Xie, 2008, p. 274). The use of either video or audio technology in this study provided synchronous communication, which made it easier to clarify points made by the participants in "real-time". In particular, it was easier for the participant to elaborate "in the

moment" on the meaning behind their comment, rather than having a delay between their initial statement and my own follow-up as would be the case with email correspondence. Although it may actually be easier for participants to elaborate and reflect on their points in an asynchronous environment, because they have additional time to think about their responses (Kazmer & Xie, 2008, p. 269). Alternate interview techniques, such as the use of prompts (e.g., nodding one's head in a video environment), probes (e.g., asking what else happened), and allowing for natural breaks in the conversation were all used to get the interviewee to elaborate on specific issues (Green & Thorogood, 2004, pp. 98-100).

Although the synchronous environment could be more natural than the asynchronous environment, it still differed from the face-to-face environment. First, both the researcher and participant needed to be aware that there may be a slight time lag when using virtual video/audio, or telephone technology. As such, it was important to allow for breaks in the conversation (Green & Thorogood, 2004, p. 100), so that the interviewee was not cut off in responding or were not interrupted in their thought processes. Second, in the video-enabled interviews, nonverbal cues have the potential to be more difficult to interpret if the researcher does not have a full view of the interviewee, and vice versa. For this reason, it was important to test and adjust the camera angle ahead of time to ensure that both parties could easily see the other person's face and hands. A well-adjusted video feed enabled the participant to see that I

was attentive through my nods and eye contact and it also enabled me to gauge the participant's engagement, through such visual cues as animated hand gestures or yawning. As discussed by Illingworth (2001, Hidden Populations section, para. 1; see also Green & Thorogood, 2004, pp. 98-99), body language is an important component in understanding what the participant is saying.

Because non-verbal communication was absent during the telephone/Skype audio interviews, I paid particular attention to verbal distinctions in these interactions (Hughes, 2008, p. 862). For example, attention to the participant's intonations allowed me to adjust the conversation to flow more freely. To ensure that the participants felt free to elaborate, I allowed for natural silences that often indicated the participant was thinking about their response. I also listened for sounds of confusion in the participants' voices, which helped to indicate the need to clarify a question. Once the interview began, I gave the interviewee time to relax and get comfortable by providing details about myself and the project, as well as giving them the opportunity to ask questions (Green & Thorogood, 2004, p. 97). These strategies helped build and maintain the rapport in the interviews, offsetting potential barriers in the video-conferencing or telephone environment.

### 3.6 Data Analysis Approach

The underlying goal of grounded theory analysis is to uncover the core category. This core category will form the basis for the development

of a theory around information behaviours and motivation in online classrooms. Developing this core category requires theoretical sensitivity (Dey, 1999, p. 111). One might be aware of other relevant theories, but no one theory is privileged over another. The theory and the core category exist in the data and the researcher must systematically search for it there. Furthermore, Punch (2005, pp. 205-212) suggests that three analytic levels form the basis for locating the core category. At the first level of analysis (open coding), the goal is to develop conceptual categories. At the second level (axial coding), it is essential to understand and report how the conceptual categories and their sub-categories relate to one another. The core category is located at the third level of analysis (substantive coding) and at this point I was able to develop a theory to explain the phenomena of interest. At each of these stages, memoing in the form of detailed notes that reflect analytic thoughts, advances data coding to higher levels of abstraction. As such, memoing was a core step in the analysis of the data collected in this particular project. It is also important to mention that one quote can be tagged multiple times during the analysis process, such that the quote represents multiple categories. For example, one could seek information both because it saves time, but also because it is more convenient to access. Although the stages of analysis are discrete, they can and did take place concurrently (Punch, 2005, p. 205). For conceptual purposes, they are described here in a linear fashion.

Open Coding. In the open coding phase of analysis, substantive codes are created (Punch, 2005, pp. 205-209). Please see Appendix 10 for a list of open codes. Open codes can be described as initial conceptual or abstract categories. In examining the codes that have been labeled with a seek code, it is important to highlight the fact that this concept of seek refers to information that has been located actively, as well as information that has been encountered. These substantive codes were critical to my theory development as the analysis progressed. As data were being labeled or coded at this stage, two important exercises were taking place. Initially, data were constantly being compared to other data in order to develop robust conceptual categories. Second, I was constantly questioning the thematic importance of different pieces of data. Given my relatively limited experience with grounded theory analysis, it was important to code the data line-by-line. This process is strongly recommended for less seasoned researchers to ensure that no conceptual categories are missed in the data analysis process (Punch, 2005, p. 207). Moreover, it also helped me to ensure that the categories were being derived from the data and not from preconceived notions. At this stage of my analysis, the conceptual categories were often provisional and changed as the constant comparative analysis advanced. At a certain point in the open coding process, it became essential to take a step back to see macro level patterns. Using the labels and memos created in my open coding process, I began to look for conceptual patterns (Punch,

2005, p. 209), which allowed for the creation of more abstract conceptual categories that traversed the data.

Axial Coding. At this stage of analysis, I began to look for ways to connect the conceptual categories through the creation of theoretical codes (Punch, 2005, pp. 209-210). According to Punch (2005, p. 210), “axial coding is an understanding of the central phenomenon in the data in terms of the conditions which gave rise to it, the context in which it is embedded, the action/interaction strategies by which it is handled managed or carried out, and the consequences of those strategies”. As with conceptual codes, theoretical codes are generated from the data.

Selective Coding. According to Punch (2005, p. 205), the core code is discovered at the selective coding level. It is at this stage of coding that the theory is further refined and where theoretical saturation is reached. Here, no new information should emerge about the categories and the relations between categories (Strauss & Corbin, 1998, p. 188). The significant conceptual categories that were integrated through selective coding formed the basis for my theory. The core category emerged from this integration and the other categories were situated around this core or central concept. The core category may be developed by creating storylines and diagrams, reviewing memos, or through the use of computer analysis (Strauss & Corbin, 1998, pp. 116-142). I took advantage of computer analysis, using NVivo to aid in the creation of the core category and the theory. This software provided an efficient means

of reviewing my memos to advance the development of the core category.

The finalization of my theory required a number of additional steps as outlined by Strauss & Corbin (1998, pp. 251-257): elaborating underdeveloped conceptual and theoretical categories, streamlining the theory to include only the concepts that align, validating the theoretical idea against the raw data, noting and explaining negative cases, as well as sampling for further variation to strengthen my theory. Each of these strategies was completed in my analysis process.

Computer Analysis. As mentioned above, NVivo was the computer software used to help analyze my data. Seale (2005, p. 202) notes that computer software allows constant and systematic comparative analysis, enabling researchers to see, more easily, if a concept is either present or absent in a particular piece of data. NVivo facilitated my line-by-line coding, along with my revision of codes through its easy-to-use search and replace functionality. Moreover, I was also able to display quotes by categories to see if they were in alignment conceptually. This too helped facilitate the building of relationships between categories that are essential in axial coding. Finally, the process of memoing and diagram-building was aided by NVivo, which streamlined the review and sorting of memos to uncover the core concept/category and the final theory.

Card Sorting. Although NVivo was my primary analysis tool, I also used a card-sorting technique for axial coding because it was an excellent tool for visualizing the relationships between the open codes. I employed

what Rosenfeld and Morville refer to as an “open card sort”, which allowed me to “cluster labels for existing content into [my] own categories and then label those categories” (Rosenfeld & Morville, 2002, p. 101). This approach involved physically taking the papers that represented my open codes and then grouping them into piles representing the related codes. For example, card-sorting made it easier to see that the open codes for “planning”, “citation mining”, and “getting on with the search”, were all related to one another because they were types of search strategies. Subsequently, I could then more easily conceptualize the approaches used by individuals in the TL-DL environment for gathering information.

The information provided in this section highlighted the methods employed in my dissertation work, while the section to follow will use this information to assess the trustworthiness of my study. Trustworthiness is assessed in the context of transferability, credibility, confirmability, and dependability.

### 3.7 Trustworthiness

Conceptually, trustworthiness provides a set of criteria by which the value of a qualitative research study can be measured (Lincoln & Guba, 1985, p. 290). These criteria were essential to consider when crafting and operationalizing the methods used in my dissertation research.

Qualitative researchers have reframed the quantitative notions of generalizability, validity, reliability, and objectivity in qualitative research and now address these concepts in the following language: transferability,

credibility, dependability, and confirmability (Lincoln & Guba, 1985, p. 328). The following is an overview of steps taken in this study to conform to these important concepts.

Transferability. Within the grounded theory context, a study is transferable if it has substantive explanatory power, allowing it to be applied to a range of contexts (Lincoln & Guba, 1985, p. 316). One way to enhance explanatory power is to have greater sampling variation (Strauss & Corbin, 1998, p. 255). To help facilitate this variation, this study used participants who were at differing points in the TL-DL program, had varying levels of comfort with technology, and who had a range of experience as teachers. Furthermore, Chiovitti and Piran (2003, p. 433) note that researchers should provide readers with the detail necessary to determine how and in what context a theory was generated, thereby allowing the reader to determine the capacity for transferability. Hence, the method of analysis (open, axial, and selective coding) has been described in detail, so as to facilitate the readers' own decisions about transferability.

Credibility. Credibility in qualitative research is met in two ways: the researcher must describe the phenomenon in a rich and descriptive manner, and must be true to the phenomenon of interest (Chiovitti & Piran, 2003, p. 430). This study established credibility by using the participants' voices throughout the analysis and writing process. To that end, quotes from participants were part of the code descriptions. This

helped ensure that participants' views were not being misinterpreted in the codes as their voices were "right there". Moreover, this use of voice also provided depth to the experiential data that may have been missing if descriptions of phenomena had been exclusively paraphrased.

Confirmability. Confirmability in qualitative research is achieved when the researcher has ensured that their analyses are consistent with what is found in the actual data (Lincoln & Guba, 1985, p. 323). Corbin and Strauss (1990, p. 84; pp. 108-109) describe two means for enhancing confirmability in a qualitative research study: constant comparison and identification of negative cases. First, by constantly making comparisons between old and new data (i.e., data collected initially in the research process and the data that is subsequently collected), old ideas are constantly being reassessed for viability in the context of the new data. I adhered to the constant comparative method by ensuring that each interview underwent preliminary analysis before proceeding to the next interview. In this way, old data was continually being compared with the new data. In addition, negative cases were identified to ensure that I was not simply replicating the patterns that I believed to be true. That is, I needed to be able to explain why the theory does not work in certain instances.

Dependability. Results are considered to be dependable if the researcher has provided the details necessary for someone else to collect data in a similar context and using similar methods. If the analysis is

dependable, similar interpretations should be found in both the original and subsequent data collection contexts (Lincoln & Guba, 1985, pp. 316-318). Although dependability is quite difficult to achieve in qualitative research, Strauss and Corbin (1998, p. 251) do note that a similar theoretical stance, similar data collection instruments, and data collected in similar conditions may lead to a similar explanation of the research phenomenon. To that end, the concept of auditability is considered essential (Chiovitti and Piran, 2003, p. 430). To ensure auditability, I have provided a thorough discussion of both the steps involved in coding the data and the sampling procedures that were used. This included a discussion of open, axial, and selective coding, along with a description of the theoretical sampling procedure that was used. Although social phenomena are quite fluid and unpredictable, this approach helped to establish dependability.

Taken as a whole, these methods provided the framework by which I was able to produce the results and conclusions that follow. They ensured that the results I produced were dependable, transferable, confirmable, and credible.

## CHAPTER 4 – RESULTS & DISCUSSION

### 4.1 Introduction

To build a greater understanding of the TL-DL program, this section begins with a brief overview of the program itself from the perspective of the students, instructors, and coordinators<sup>7</sup>. This discussion provides additional context for understanding the key themes that were developed for each research question. Following the background description, a thematic exploration of each research question is provided, closing with a proposed theory of motivation for seeking and sharing information in a graduate-level, online learning environment. In this exploration, I will tie my findings to the existing literature and describe how my research supports and extends it; however, the core focus of this section is the participants' quotes and their relationship to the identified themes. This is essential, so as to ensure that the participants' voices are appropriately represented in my analysis; as mentioned in Chapter 3, this will help build the credibility of my study. A listing of the open codes developed during the early stages of analysis is presented in Appendix 3, while the results of the axial coding are present in the thematic analysis of research questions one and two. Here, the relationships between the open codes are thematically explored and described. The core category (one for

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<sup>7</sup> All participants in the interview provided consent to be interviewed in accordance with the consent details found in Appendices 1 and 3. In the consent agreements, it was noted that pseudonyms would be used when participants were quoted in the text. For this reason, all participants have been assigned pseudonyms (the pseudonyms match the genders of the participants). For profiles of the participants, please see Appendix 7.

motivation to seek and one for motivation to share information) is described in research question three, when the final theory is proposed. All of the quotes found below were provided by participants during the course of their interviews. They are typically considered to be thematic exemplars of comments made by the other individuals who were interviewed in this study. In certain instances, square brackets and ellipses have been used to provide additional context and improve the readability of a quote, as well as to protect the participant's identity.

#### 4.2 Understanding the TL-DL Context

In its current form, the TL-DL program focuses its pedagogy on a number of different areas. The courses relate to issues of 1) technology; 2) inquiry-based learning; 3) management of school libraries; 4) research methods; and 5) curriculum design (Teacher-Librarianship by Distance Learning, 2009a). To help support their learning, the following library services are available to these often geographically remote students: 1) they have access to any full text resources provided through the online databases and/or catalogue; 2) they can have materials from the library catalogue delivered to their home or work address; and, 3) they can visit and use the library when they are in Edmonton. Moreover, as University of Alberta students, they are also entitled to borrow materials from academic libraries across Canada (University of Alberta Libraries, 2010).

In January 2010, the TL-DL program introduced its first cohort program, where students pass through core courses in the program

together. Prior to the introduction of the cohort program, students had more flexibility with the types of courses they could take; in her interview, key informant Violet called it the “choose your own adventure” model. As long-time member of the TL-DL community Tish pointed out, this could have the undesired effect of skewing the students’ programs in a particular direction:

Because it has been a very open program, we sometimes get students who decide that they're only going to do children's literature things. And they end up being not well prepared for the work that they need to do in schools. Or they decide that they are going to avoid the courses in technology, or they're only going to do the technology, high-tech things, and they're not going to do anything in children's literature or young adult literature, even though they don't have any background in that area... So it is really about the integrity of the credential. We want to be able to say: when these students are finished, they have this broad training in the various areas that they are required to address in our schools, and a real depth in terms of instructional leadership.

Instructor Yolanda pointed out that the cohort program will enable the TL-DL program as a whole to further foster collaboration and personal relationships amongst its students, while limiting the amount of time required to engage in this process of relationship development:

It will save some of that, ‘getting to know you’, in every single course. Although the instructor may not know every person, they'll know each other really well. So there won't be as much time. You won't have to set aside two or three weeks at the beginning of every term for people to get to know one another again. That's because we all know that's really important and we all do it, but when you start thinking: two weeks out of every course, and you've got ten courses, is spent getting to know you, that is more than a full term's worth of work, that you could be spending doing work. One of the things that we're working on is doing some sort of orientation in the fall, and what will that look like, and how are we going to foster that sense of community and collaboration; as an

orientation thing before their first classes in January. So there are some exciting things happening in that regard.

Turning to the history of the program, it is important to review how the program was formed and how it evolved. Offering its first course in 1996, the University of Alberta's TL-DL program was formed out of the realization that there were no longer enough students in the greater Edmonton area to support a face-to-face program. Said key informant Tish:

I mean the motivation was basically, there weren't enough students in the area, in the local area of Edmonton, to actually make a viable program. And there were programs that were closing down in the other prairie provinces: Saskatchewan and Manitoba. [We] increasingly became aware that if [we] didn't find some way to do distance learning, [we] could give up being school library educator[s]; it just wasn't going to happen. Because we were struggling to find enough students, actually, to fill the few number of courses we were offering.

After the launch of the first course and with little direction on how to operate an online course, it became apparent to Tish that the instructors needed to establish a stronger bond with their students:

Well the first course was quite a shocker for me. Because I have a fairly decent record as a teacher, and I got very poor course evaluations. This was, needless to say, quite upsetting...what I was not doing in the online environment, was developing that personal connection with students. The sort of thing that you do at the beginning of class, and at coffee break, and after class where you chat about things. I didn't know how to do that in an online environment, and nobody had really pointed that out. I'm sure that all online instructors or distance instructors have had to learn that, but nobody mentioned that to me. Or if they mentioned it, I wasn't aware of how important that was in terms of the students' response... So in the next offerings, needless to say, we have space for a coffee kind of room. And I spent some time at the beginning talking to them, emailing of course...talking about where I was actually physically located, who I am as a person, what my

hopes and dreams are for them and for myself in the program. It really also gave them an opportunity...[to] introduce themselves and talk about what they were doing, and where they were and so on. So it was really locating ourselves; finding a space. I mean I sometimes, you know that old country and western song: home-home on the range? It was really then that I realized that we needed a home-home on the web.

Certainly, this change in the early days seems to have resonated with current TL-DL students, who note that sharing their background details has helped encourage a sense of community amongst the classmates. This is certainly consistent with earlier research, which has noted that establishing personal relationships between classmates helps facilitate information sharing (Haythornthwaite, 2002). As argued by Hersberger et al. (2005), information exchange is considered a core component of virtual community development. Angela, a recent graduate of the TL-DL program, noted:

I actually felt more of a sense of community with the distance learning, than I tend to feel when I've taken on face-to-face classes, which is interesting because the face-to-face classes, the ones that are part-time, you work all day, you go to class, then you go home. You don't tend to hang out, go for coffee, that sort of thing. But with the online courses, we were, in effect, going for coffee by having all of these off-topic chats.

In terms of culture, the program was established on the principle of collaboration and this has remained a core value in the TL-DL program. In the early days, the instructors worked closely together to help build the program's content. This pattern continues today with the challenge now being to foster this collaboration among more geographically remote instructors. As Tish observed:

As a program, if one of us wanted to make a change, we had to consult with the other people. And we started the practice which Violet still has today of bringing the team together over lunch at a restaurant, or at one of our homes, over food. You know, bringing friends together, you've got to do that, twice a year. So twice a year, even though we're spread all over, and we don't necessarily see each other very much during the year; we're online a lot and emailing a lot, but we don't necessarily see each other. To bring the team together and really talk about what are we noticing, what do we need to do more of, how do we need to change? So that has really continued. We have discovered that it is very hard to integrate instructors who have not been part of that collaborative process, and who can not be there. Like we have instructors from several provinces away or in other countries. Inevitably, I suppose, despite our best efforts to explain the culture, that we're very responsive, that we work on weekends because that is when the students are available to do the work. That we don't disappear for a week without telling everyone, our students and other instructors, that we're doing these things. You know, that sort of responsive culture. It is hard to convey, we've found, with instructors who haven't had the experience of working together. If we're going to continue to use a distributed instructor model, we're going to have to develop some better ways, I mean we need to spend some time in a virtual world together. We have to stop privileging the people who live with us, or within our local community, and just getting together with them for meals. I mean we have to stop that if we're going to use instructors beyond our local communities, we have to change our practices.

This commitment to a collaborative culture also filters through to the students. As Tish pointed out, new students are often helped along by those at a more advanced stage of the program:

We do have a very collaborative environment. The students when they come in are, it is quite interesting actually, they hear the instructors, who are teaching the required research course and their required curriculum course that everyone in [an Education] Master's program takes. And they always comment on how our TL-DL students are there to help each other out and orient the newbies, so that it isn't just the instructor that has to do all of that.

The TL-DL program is viewed as collaborative by the students as well.

Karrie's comment below was similar to those made by many other student interviewees:

And all of the colleagues that I've shared classes with have always been very professional but very good about offering support and information. If you have a question about something, and you raise the question to the prof, but often if someone else has suggestions, they will come in and say: 'You know, you might want to say this,' or 'I've done this, and this worked.' So it has been a very positive experience in that way.

This observation is consistent with the findings of other researchers, who have observed that collaboration between students can enhance the online learning experience (e.g., Green, 2006; Stewart, Uth, & Wastaway, 2004). For example, Green (2006) found that graduate-level students could learn a great deal from one another when developing effective search skills.

In addition to the value placed on collaboration, the TL-DL program also valued relevance in the learning process. That is, instructors and coordinators in this program strive to make the students' projects or assignments personally meaningful, recognizing the professional and personal demands already pulling the students in multiple directions. As instructor Yolanda sagely pointed out:

I think that is one thing, as a program, we do very well, is really recognize that...the students in our class...all have lives outside of school for sure. They're all teachers, most of them are parents, most of them are also taking care of elderly parents themselves. Most of them are women, so they're juggling lots of other things in addition to these courses. So we really try to make things as practical and meaningful to them as we can.

From the student perspective, this focus on the practical and the meaningful helped make this program successful. Irene was but one of the respondents who articulated her appreciation for this focus:

Also [the assignments are] also practical as far as...you know really looking for the practical connection to your role and what you're doing, and how can you use this in a school situation.

The role that relevance has to play in the information behaviours of the TL-DL students will be explored in detail in the sections to follow. Other researchers have certainly argued that information seeking is often tied to peoples' interests and attitudes (e.g., Reagan et al., 1998; Teo, 2001; Toms, 1999).

#### 4.3 Research Question 1a – Information Seeking Behaviours

In what types of information seeking behaviours do students engage in online learning environments? With this question, my goal was to discern the information seeking behaviours of students in this environment. As described in the introduction and elaborated upon in the literature review, this may include the active seeking of information needed for the students' coursework. However, it could also include information that comes to them more serendipitously, but that they still incorporate into their information repertoire. It may also include looking for, but not attaining, requisite information.

##### *4.3.1 - The Local Context*

One key and very interesting theme that emerged from the students' discussions of their information behaviours was the influence

and importance of their local context to their information seeking. The important role that community plays in shaping the information behaviours of students outside of a traditional classroom has been observed by a number of researchers (e.g., de Jong & Branch, 2006; Haythornthwaite et al., 2007; Kazmer, 2005a, 2005b). De Jong and Branch (2006) have argued that online and particularly distance learners rely too heavily on local materials to the detriment of their overall information retrieval. However, I would argue that these local materials are an important supplement to those resources available through the University. In the current study, for example, these students gathered information from colleagues in their school district. Karen noted the importance of having a local mentor:

Yes, and one of my colleagues in my district is...sort of my mentor, or whatever. Like, I can call him every once and awhile if I am stuck on something. So, like: 'What search engines do you recommend using?' Or, 'Where would you go to find such and such?' Yeah, I would ask him.

Karrie also pointed to the importance of local colleagues in finding additional materials for her coursework:

And something as simple as a selection tool...I didn't know what it was. So I had to start by just getting clarification on what that was...I process slowly, so I had to work through finding different selection tools to sort of get an understanding of what that meant...We're provided with a list of selection tools. So I just started looking through those to get an understanding of what it would look like, or what it was, exactly, that it did. And once you have an idea then, I spoke with our teacher-librarian from the high school, and she was quite knowledgeable. So she had a list of items and journals that she uses at the high school that I hadn't even really thought of. So she was a wealth of information, and she shared those with me.

The importance of having local colleagues is also telling in a comment by Eva, who noted how she felt unsupported because there were a lack of cataloguing specialists in her rural community and she therefore had no local experts to help her with assignments:

We have no specialists in our district. So where a lot of [other students] were referring to specialists, when they had to research and find information, I had none of that. I had one person in my district who had taken five cataloguing courses, so I was using her as a reference.

Eva's desire to connect with experts in the field is consistent with observations by Vezossi (2009), who noted that people are still considered a key resource for recommending quality information. Research by Kazmer (2005a, 2005b; Haythornthwaite et al., 2007) also highlights how people/experts from the students' communities enhance both the learning and information gathering processes.

When information was scant, some would also draw upon their own personal experiences as a teacher-librarian. In essence, they would use their professional experiences at the local level to help inform their coursework. Kazmer (2005a) has suggested that it is common to pull the students' physical (e.g., Gracie's role as a teacher) and virtual (e.g., Gracie's role as an online learner) environments together. Gracie's experience with her capping paper helps exemplify this approach:

We still didn't find a whole lot of resources for my [capping] topic, and a lot of it then became my experience and my own findings; what I'd experienced at school as a teacher-librarian [working with lower academic students]. So that became a big part of the focus of the paper then. Here's the research and here's...what working

with the teacher-librarian should result in. And here's my practical experience which aligns with what the research does, even though there wasn't a lot of research, because there wasn't a lot, and there isn't a lot, with what I was doing.

While the influence of local colleagues and personal experience was important, local information repositories were also mentioned. This is also consistent with the amalgamation of the students' physical and virtual realities, as discussed by Kazmer (2005a, 2005b). De Jong and Branch (2006) also noted that students were using local libraries and information centres. In the current study, Angela pointed out that she was able to tap into the resources available to her at a local school board library:

My school board doesn't have a professional library but our neighbouring school board does. So I use their professional library sometimes if I needed, a lot of the ERIC collection isn't digital yet; it's still on the microfiche, and they have that.

Similarly, Jill also pointed to the importance of these local, professional information repositories:

I found the [local] Consortium really good for resources. Because my project was all on assessment, or evaluating and inquiry... [The regional government] has some really good stuff.

In addition to these professional repositories of information, it was not uncommon for the students to use other libraries in their communities, including public and academic. Karen noted the role of the public librarians in helping her with research assignments:

Even down at the public library; going down there and asking them questions for some of the research assignments. I was amazed by how helpful they were and how willing they were to assist.

As someone with easy access to a city library system, Angela also noted the important role that this resource had on her studies:

I also have, in [my hometown], access to a superb city library system. In fact, for one of the courses we had to, it was like a collection development course, and we were supposed to use a school library or a branch library, but I can't get into the school library in the summer. So I pretty much camped out in a branch library for the summer. So that is handy. It would have been harder to do the courses had I live out in, say somewhere remote where I didn't have access to a city system.

Eva's experience in a remote region provides support for Angela's speculation about students in remote locales:

I also go to my...regional library and request books and sources, but they always take a long time to come in to my area.

Some students were also lucky enough to have local university libraries at their disposal and this was also mentioned as a valued resource. Similar to Karen's experience with the public librarians, Michelle found value in the advice provided by a local academic librarian:

But getting to know the librarian at the [local] University... was very useful to me, because he did help me think about my search parameters and that kind of thing, and different databases. I still rely pretty heavily on ProQuest, but he did talk about lots. But that was something that I arranged, through the research class, I arranged to get together with him and would not have done so otherwise. But that was something that I had instigated myself.

Other students noted that, when necessary, they would use resources from the local university. Lynn identified them as another option for getting the materials she needed when they were not available through the University of Alberta:

Using the online databases, through the U of A libraries, so that is primarily where I did all of my research, was through there. And

then, I mean, if there were things that I couldn't find through there, using our public library system and interlibrary loans, and we have a local university as well, so I would go up to their library and borrow things from them as well.

Likewise, Jody pointed to the utility of her local university library when looking for materials for her capping project, an area where she had found there was a dearth of information:

I did go to the [local university] library, which was good. I got quite a few educational journals, especially for French immersion, I found stuff there.

Interestingly, Terri noted that she did not typically use her local university library, but in one instance it was required as part of an assignment:

Also, she would like us to be able to find the print copy. It meant that you needed to go to a library. I'm fortunate in that I live very close to the [local university], so I went, I could just walk over, but I know in some situations, they don't have that option. I suspect that they would probably just contact them and say: 'I just don't have that option of finding one.'

Terri's comment is interesting in that you do wonder how students without this type of access would have completed the assignment. Turning back to the potential disparity noted earlier by Eva with respect to local experts, this disparity could also extend to students in more isolated communities without access to well-developed regional resource centres and libraries.

Some students' comments also reflected the importance of their own personal collections in supporting their distance learning. Angela owned a substantial collection of books and pointed out that in most instances it was superior to the materials found in her board's collection:

I have a collection of several hundred professional books myself, so if it was books, I could typically go to my own bookshelf... My

personal, professional collection is actually better than our [board's] collection...the board's professional collection, the stuff that is really good in that collection, that I might want to read, I tend to already own copies of.

The students' use of the local context was not limited to their professional worlds; some would get help from family members and friends when they required information. Morrison and Washburn (2004) noted similarly that friends and family are an important information source for distance learners. In the current study, this was perhaps particularly evident in the context of technology. Certainly, many family members were quite helpful in this regard. Eva pointed out how important her son was in helping her with the technical parts of the courses:

I had to build a website. Thank god I had my son there too, because by the time I did all the research for the website and got all the permission for all these different links, and everything under the sun, he was my html expert. He really put a lot of time in on that. I had nobody to ask for that either. So they expect an awful lot I think.

Similarly, Stacey noted the important role that her son played in providing the technical support she needed to complete her assignments:

Well, I have found some of it pretty challenging; doing it online, has definitely been challenging because my tech skills were fairly minimal, and I had support from my sons primarily.

I think one thing that I did learn, is that if I was having a problem doing something, it was really useful to have my older boy...help me. The last project that I did, I was trying to put pictures into the blog, and I was using Blogger, and I was just really struggling with it. And I couldn't get it to work, so we spent, maybe an hour together, just at a coffee shop, and he showed me again how he did it.

Although she was quite technologically adept, Lynn also pointed out that her husband was helpful in getting her set up, initially:

I didn't find that I had a lot of problems, and I am fairly technologically savvy, as well as my husband, and he had done his Master's as a combination of online and face-to-face program. So he was really helpful in getting me set up. Because when I started, I certainly didn't have the background that I have now, so I had him at home to help me out.

Collectively, these instances highlight how students are using resources from their local environment to supplement their online learning experiences. Certainly in speaking with program instructors and coordinators, there was awareness in the TL-DL program that this type of information seeking was and is taking place. As Yolanda pointed out:

It was very interesting, because Violet and I both taught this technology course, and the one thing that we both found was that many of our students were asking non-traditional experts for assistance; going to talk to their teenage kids, for example; going to ask their own students if they need help uploading a video to their blog. They're not coming to me to ask, they're not necessarily looking information up online, although I'm sure some of them are doing that as well. But they're asking the experts within their own little circle of friends and family to help them. I thought that was very interesting, that they recognize that young people, in particular, have a level of expertise that they're trying to tap into.

Similarly, key informant Violet pointed to the particular value of teenage boys in helping with the technology piece of the TL-DL program:

They go other places than here to get help [with technology]. You know, to a fifteen-year old boy, like we all do. You know, my kingdom for a fifteen-year old boy.

These results suggest that distance educators should be encouraging and highlighting the local resources that students have at their disposal in this type of learning environment (see Kazmer, 2005a, 2005b). That being

said, this should not be to the exclusion of the excellent resources provided by the students' own institutions (see de Jong & Branch, 2006; Kazmer, 2005b).

#### *4.3.2 - Frustrations*

Many students relayed challenges and frustrations when they described information seeking from the perspective of an online learner. These comments took a few key directions: anxiety, information overload, and an information deficit.

Anxiety. In some instances, the students' challenges came from their own anxieties about information seeking, relating to both their skills and the availability of support mechanisms. Angela suggested that her anxiety was derived from a sense of being more alone when trying to locate information for her online coursework:

I'm always nervous until I actually get into something. Particularly because you are a bit more on your own than you would be in a face-to-face class.

Angela's comment resonates with observations by de Jong and Branch (2006), who noted that online learning can be an isolating experience, which can make you less likely to seek information from your peers. Stacey's point about visiting her instructors in person before the program even began also speaks to how this sense of isolation can drive the anxieties felt by online learners:

I think I missed a few things that would have helped me if I spent time...I don't know, maybe if I'd gone to Alberta and said: 'Ok, I'm gonna start this... Can you show me some things in person that I need to know about the web, just how all that works?'

Many of the students' anxieties were based in a fear of the unknown. For example, some were anxious or overwhelmed when they started the search because they did not know whether they would find the requisite information. These feelings are perhaps not unexpected in the context of Kuhlthau's (1991, 1993, 2004) model of information seeking, which suggests that individuals do tend to be quite nervous and unsure as they begin a search for information. Irene's comment addresses this point quite well:

I was looking ahead to this big assignment we've got coming up ....even though you try to be kind of organized and stuff, you do have feelings of apprehension and nervousness, and you're thinking, ooooo, how am I going to...like find information and um...all that kind of stuff.

Karrie echoed Irene's point and provided further details around her feelings of anxiety at the beginning of a project:

I always find it difficult to start a project. I'm not, even in my undergrad, I'm not an A student, so it always takes me a while to get that understanding of what it is, exactly, that I'm doing. I have to go back and re-read things over and over again, so that I'm clear on what I'm doing. Like I'm starting, I'm half-way through an assignment now, but even that, I'm constantly referring to the notes: 'What is it exactly that she is asking?' Probably way more now than I would have done in my undergrad, because I wasn't one of those studious students. So now I'm doing it for all the right reasons, and it is very different. So often I start out overwhelmed and just think: 'Where do I begin? How do I even begin to find what it is that I'm looking for?' When often I'm struggling to figure out what it is that I'm supposed to be looking for. I think that is the hard part for me.

In other instances, the students' anxiety was related to the technology itself. The students often felt that they may not have or be

able to acquire the information and skills necessary to complete the technical part of an assignment. This finding shares commonalities with Mellon's (1986, 1988) observations of anxiety and academic libraries. Mellon (1986, 1988) found that students were intimidated and therefore anxious about using the library. In the current study, it was often the entirety of the online world that could be intimidating to these students because they feared technology. Like in Mellon's study (1986, 1988), the TL-DL students often felt that they did not know how to locate and/or use appropriate resources. For example, Eva expressed her discomfort at having to complete a podcasting assignment in one of her courses:

[In] another course we were expected to do voice threads or as I say, Audacity podcasting, for one of our assignments, right? Well you really don't expect, when you enter a children's literature course, that you're going to have to do all these voice threads or whatever. You know what I'm saying? So research-wise you could do them and prepare them and all that, but the technical aspect was frightening.

Irene had similar worries about the technological unknown. In her instance, she was nervous about creating a wiki:

And then, because one of the options for the final assignment was to develop a wiki, and I have...in fact, I have done a co-collaborative on a wiki, but it had been the partner who had done the initial setup and connecting of the pages. So I was a little bit worried.

Meanwhile Karen pointed to a technological anxiety that could run through all of a student's courses if training supports were not available. Karen was apprehensive about the use of academic databases themselves:

Just by going through a database was very frustrating, when you've never done that before. It was scary; it was quite overwhelming.

Karrie also relayed some anxieties around using the databases. In particular, she pointed to concerns that you sometimes don't know the questions to ask in order to get the information you need:

I think, again, for me, the frustration level comes more with my lack of understanding of things, and working through all those self-esteem issues, and saying: 'You can do this, you've just got to back up and do it slowly, and sometimes too, not knowing where to search.' Like my last assignment, there was...I only had a paper copy, and I couldn't find a website that matched it. So, I assumed there wasn't one and then in the comments back from my professor, she had said that you could have accessed this on ProQuest. But I didn't know to go look there. So sometimes it is a lack of not knowing where I can go to find information. And I don't know how I'm supposed to know that, because you don't always know what questions to ask. So you just assume that it is unavailable, but it isn't. So sometimes that is an issue as well.

These points around technological anxiety are important to consider given that Bruce (2004; see also Carr & Chambers, 2006) has noted how critical the appropriate use of information technology is to the success of the online learning experience.

While anxiety was certainly a dominant part of the students' information seeking experiences, the students were able to tap into a range of information sources that helped to alleviate these anxieties (see section 4.3.4). Understanding why the students are and were anxious may help program coordinators and instructors provide coping mechanisms, perhaps gaining insight from the students' own anxiety-reducing strategies.

Overload. A number of students were anxious over the sheer volume of material available to them. They needed to develop the skills to

filter this information in a timely and efficient manner. This is perhaps true, in particular, because these students were also busy professionals who typically had many obligations (e.g., family, other courses, work, etc.). As Bruce (2004) observed, obligations can impede the online learning experience, including information acquisition. Interestingly though, this may also lead to the students encountering information that they may need for other assignments (see Erdelez, 1999, 2005). In this study, Angela noted that it was often tempting to keep digging and digging for information, while ignoring the obligation to write her paper:

One of the things I've discovered is the more you learn, the more you know you don't know. So you get a taste and you want to keep going. In fact that is usually the challenge when I'm looking for information, is stopping and actually getting to the paper.

Lynn also pointed out that she tended to look at more articles than she needed when preparing her papers, largely because of the nature of online databases:

I found the one bad thing, well it's not bad, about the online databases is that you would do a search and then would find all these other articles that really didn't have specifically to do with what you are looking for, but are literally interesting, and so you get sidetracked a lot. Because you go: 'Oh, I want to read that one.'

Donna's experience with online databases was also quite similar, finding materials for both herself and others was quite addictive:

Oh [the online databases are] wonderful. But you know what? You start searching for something, and you find something else that looks interesting, and you read that. Then you run off something for a friend who was doing something, on something. You know, it really mushes on you (laughs)...Well, some people are addicted to Facebook, some people are addicted to online databases.

Others tended to be overwhelmed by information because their initial focus was too wide; because they started too broadly, they ended up with more information than they actually needed. According to Irene:

If anything, my personal challenge is my topics are too broad. I have to really work at narrowing the focus, so that it doesn't end up being forty to fifty pages, when it only needs to be twenty to twenty-five.

This point is echoed by Jill, who noted:

I think I was fine, before I actually started it. In my head I was going: 'Ok, I'll get this, I'll get this, I'll get this.' But once you started it, it was like there was so much information and it was really tough to narrow it down, because I had gathered so much information, before I had started the project. Then there were feelings, later on, I was feeling overwhelmed.

That being said, this issue often seems to take care of itself as the student gains experience. In a 2005 study, Vonderwell and Zachariah found that students could stem this feeling of information overload as the course progressed through the use of good time management practices. In this study, Michelle pointed out that you learn over time to focus your topic:

I have to say my capping paper, I was way more focused than on anything else, because I'd actually figured out what I wanted to do. In terms of any of the other work I did...as time wore on, I discovered a little bit more about how I wanted to phrase my question and how to figure out what it was I really wanted to figure out. The first time I did it, I was flying in a thousand different directions at once, and I actually noticed that my paper was flying in a different, you know my early papers are pretty scattered (laughs). So I do know that I did learn to focus over time... I could eliminate things way quicker, I could do things much more...much more focused searches and could find the information way more quickly. You know, experience and a little bit of knowledge goes a long way.

Similarly, Sharon also noted that over time, she has learned to be more efficient in her information seeking and as a result, she felt less overloaded than she did at the beginning of the program:

Yes, my information habits have changed since beginning the course. I am much more efficient at finding information and much less overwhelmed. I have begun to learn balance between the amount of information out there and what I can possibly use, so that has been helpful.

I find it easy to share information on Delicious, finding it a useful tool to exchange and get great articles [from] my colleagues. I also feel less pressured to read everything. I have found it to be better for research, writing papers, and general discussion if you focus on a few articles rather than skimming or trying to talk about numerous articles...

I find using our online discussion, course content and U of A Libraries [online], I have become much more efficient and focused. Before heading on the site, I ask myself: 'What am I looking for? How many articles or opinions am I looking for? What is my purpose?' This makes me much more efficient, less overwhelmed and I find it easier to use the web tools.

While Stacey also learned to feel less overwhelmed, for her it was about the technology and realizing that she did not need to know everything:

But if I kind of think: 'Well, I'm just doing the best I can and, you know, no matter.' So if I start here and end here and somebody else starts here and ends there...well that's not the end of the world, it just means that we're starting from different points. So the technology piece, is really is doing it, that makes it better. And again, the things that I miss, I don't know how to do a PowerPoint, but I imagine that they're going to fade out. It seems to me that people now do a blog, or they do a wiki, or they do something that is more flexible than a PowerPoint. So some things, you know, I may just never bother learning (laughs).

There was also a tendency for students to be overwhelmed by the sheer volume of what they needed to learn in their first course. Irene noted this tendency, but also pointed out that it does get easier, something that

would be useful for new students to know. For many students it was not so much the content of the first course, but really discovering how to navigate the online learning environment. As Irene stated:

I think back to my first course; it was Information Technologies for Learning. I remember feeling overwhelmed...The technology part and learning that whole e-craft setup, right? So I think it's just...part of it is just the learning curve; you have to get through that first course. You have to kind of figure out how all of it works and posting and uploading assignments, and I think then course two for these people will be easier regardless... It was just my very first course where I had to figure out...I had to download the newest version of Java. And I remember the first week the pop-up blocker wouldn't let me get the interface. And it is kind of figuring out your computer...and its interface with the U of A. Like there are things that you need to do like a new internet browser...you need a technology skill set yourself in order for it to work. I know that there have been courses where you can tell that people are brand new, because they're...I don't want to say freaking out, but I mean just even figuring out how to do a post and attach assignments.

As evident in the quotes above, the students felt overwhelmed by information in a number of different ways. This speaks to a need on the part of program coordinators and instructors to help offset some of this overload by developing strategies that will help students cope (e.g., an orientation before the first class, advice on how to focus research topics, etc.). This may also include, as observed by Vonderwell and Zachariah (2005), suggesting time management techniques that can help reduce these feelings of overload.

Information Deficit. On the other end of the spectrum, students could also be frustrated by a research deficit. In certain instances, information on their specific topics was not available and they had to learn how to expand their search to reveal relevant, if not directly related,

material. This skill was often developed through time and experience, as described by Chu and Law (2008; see also Halttunen & Jarvelin, 2005; Vakkari, Pennanen, & Serola, 2003; Yuan, 1997). Alternatively, they may have been unable to access the required resources because they were not available online or in their community. Lacking access to online and/or community resources is problematic, given Vezzosi's (2009) observation that graduate students turn to the institution's physical library when they can not find material online. Remotely situated students are obviously at a disadvantage in this regard.

Eva provides a good example of this disadvantage. She noted a few instances and challenges where she could not access the type of information she needed as a result of her physical location:

The cataloguing one was the biggest issue because the [requisite] resources were just not available in my school district. I also, being in a rural area... We don't have district specialists, which people from urban centres have. So they can lean on those people, they can question and get information; I don't have access to any of that, which is a real frustration for me. It seems like a bit of inequality at times.

Eva also noted the difficulty inherent in getting books brought in for particular courses, which were not available in a timely manner:

Also things like, for instance in the Canadian Children's Literature course, they assumed that everyone could go out and buy this massive amount of books; same with graphic novels. You could just go out and buy them at local bookstores. We have no local bookstores up here. The closest bookstores are two and a half hours drive each way. Then you have to order, even there. So they can't even fathom this sort of thing. Even in the public library system, where I'm from, yes we do have a local library, but it's only a branch. So the books that you want to get often take a month to a month and a half... They have to find which branch they're at,

get them in, mail them up, etc. So by the time that I'm able to access these, often that assignment is finished. So there is a huge inequality in terms of accessing resources and information.

Angela noted that not having access to the University's physical collection was a minor issue, but one she was able to transcend because she was geographically well situated:

The only thing that I found a bit awkward was the not having access to the University library... Although I managed to get around that. I think that would have been a bigger problem if I had lived in a small town, where I didn't have a good city library. Because if I had had to, I could have gone to [local universities].... I could have accessed our Teacher's College library if I had wanted to. If I had lived in [a smaller centre] or something; some small town, I think that would have been more of a problem. But that is probably the biggest disadvantage of being online, is not having physical access to the resources.

Jody made a similar point about not having access to the University's physical collection and how taking a course through a local university helped provide her with a physical library presence:

The advantage there, I thought, was that I could go and talk to a human and be in a library. Like, and find actual things and...that was the big difference. Because until then I had been...I was kind of restricted. If I found something at the U of A library, I didn't think I could get a hold of it.... I mean I think they'll mail it to you, but by the time I got it, you know, I wouldn't need it any more.

Karen made an interesting point about older materials. Certainly recent materials have been readily digitized, but this was and is not always the case with classical materials:

I had a lot of frustration finding the stuff that I wanted. I was doing a paper on self-censorship, by teacher-librarians, and it was about intellectual freedom, social responsibility, and all of that. So it was a very narrow topic. The information that I was looking for was really narrow, and it was really difficult to find. I remember once, looking for an article which was...from the 1960's, and I couldn't get

hold of it. It was a classic article, everybody quoted it, but I couldn't find it.

In some instances, it was not so much the lack of access to physical resources that proved problematic, but the lack of topical resources. In these instances, students needed to learn how to broaden their search parameters to pull in related, if not immediately relevant, information. Gracie's work on her capping project offered some interesting insight into this problem:

With my particular [capping project], there is very little actual research. There isn't a lot of research in working with the lower academic students. There really is very little. So you have to...that becomes a point in your capping paper, to say that that is an area maybe that somebody would like to research. There wasn't a whole lot... I do remember emailing Violet and saying: 'There's not a lot.' I didn't really expect to find a lot of research, but there is really very little on this topic. She had some other suggestions for me and she had actually emailed Yolanda. I had her as a prof in one of my previous classes, so we knew each other. The three of us kind of brainstormed through email on maybe other search topics which may be related, but under different search words that I perhaps hadn't thought of, and different approach. They actually did a little bit of searching for me. I guess three heads better than one, it leads to a little bit more, you know?

Lori's frustrations with finding information for her capping exercise were similar to Gracie's:

Lori: When I got to my capping I did [have frustrations], because not a lot has been done on my topic. Like, loads have been done on adolescent literacy, but not a lot has been done in terms of the role of the Teacher-Librarian in literacy plans. And supporting literacy plans in school.

Kristie: Ok, so how did you?

Lori: Well, we put together a lot of things. Like I would look at the idea of collaboration that...in so many of our schools is a big idea, and looking at the teacher-librarian role in collaboration, and pulling

in that, and applying it to a literacy model plan. So yeah, sometimes it had to be gluing research together.

Similar problems were noted by students who were looking for relevant Canadian content as well; sometimes the material simply does not exist and they must learn to extrapolate from what they could find and make it relevant to their context.

These two situations (i.e., lack of physical resources, lack of topical resources) speak to the importance of having instructors who communicate these potential problems at the outset of a course and/or project and who are available to troubleshoot solutions. Communicating these issues will 1) hasten the experience of search skill development, which can enhance a students' capacity to seek and locate appropriate information (Chu & Law, 2008); and 2) provide preemptory support to students whose access to physical resources is poor. The second point could perhaps be partially addressed through the provision of information literacy training around the use of regionally-available resources, consistent with the theory of community-embedded learning (Kazmer, 2005b).

#### *4.3.3 - Information Seeking Strategies*

The students were also keen to describe the strategies that they employed when seeking information and this again took a few key directions. This variability was interesting in that it does speak to the challenges of building a more linear model of information behaviour, as in the cases of, for example, Kuhlthau (1991, 1993) and Ellis (1989). In this

study and as described below, different students engaged in different information behaviour processes. First, there were the students who believed that the best way of tracking information was just to “get on with it”. They did not believe in procrastinating or mulling it over. These students just “jumped in” to the search process. Donna took this approach to her searching and found this approach got easier once she knew the literature better:

You just start it and do it. I'm not sure if that is the answer you wanted. I'm not frustrated anymore; I just get started and do it. I see what else I can find. By this stage, I know some of the names of the journals that I want to look first, and then you'll get some key words, and then it'll all kind of...It's a part of the search processes, I think.

Lori found that she was much more eager to get started if the topic was of interest to her:

But if I'm actually doing something that I am actually interested in, it is usually like: ok, I want to shut the door; I want some time by myself so I can just get this done and get focused, and go for it. I'm usually in quite a good state of mind.

This approach was also used when a student had a crisis in her personal life. From Jody's perspective, she had no choice but to “dig in”:

When I think...when I'm thinking about that little incident, that was when it was my second course and my mom was really sick...and... so I actually did my virtual seminar from the hospice. When I think back on it I, anyway. In a way it was better to keep doing normal [work]....get this thing done, I had to do it, I wanted to finish it. I didn't want that hanging over me. And to be, well not necessarily, well, I guess distracted I guess, by something that wasn't, thinking about how sad everything was.

For others, there was much more planning involved in their information seeking. In some instances, they employed strategies that

included storing information from the start of term that they thought would be useful later on. This strategy is similar to what Erdelez (1999) has referred to as information encountering. In an information encounter, people find information quite serendipitously; in the current study, the students stored this type of information for future use. Gracie, for example, had decided on the topic for her capping project early in the program and as a result, she could keep her eyes open for that type of information:

I think on the advice of...we did get some very good advice from Violet and Tish as well, to start looking at what your capping project might be earlier on in your Master's courses. So find out what you're interested in as you go along, and I was really keen on my school. And find out the area of teacher-librarianship and what you work towards... I probably knew about half way what I really wanted to do. I didn't really firm it up until you're closer to there, of course, but you kind of know. So then all along the way for a year and a half before you get to your capping project; even two years, you are kind of keeping an eye out for resources.

Irene preferred to keep a very tight focus on the assignment, keeping only relevant materials and then seeking out any missing information:

I look ahead as far as what my assignments are, then I kind of have that filter as I'm doing my course readings so that if there is something that kind of jumps off the page or whatever, or off the computer screen, then I make note of it. And I just kind of have that running. I guess it's kind of a very rough draft of just kind of ideas or quotes... I just have a word document where I just kind of, put it all in by assignment... And then that's where kind of, when its time for the assignment, I re-read what the assignment is and the criteria for the assessment. And then there will be stuff that doesn't pertain right? And that is when I start to go back and read and think about how I can shape this into a paper; what else do I still need.

Considering another type of search strategy, Macpherson (2003) observed that students like to orient themselves to a topic before

beginning their search. In the current study, the students familiarized themselves with a topic so that they could develop appropriate search terms. Karen noted:

Where does it start when I'm searching for information? Usually, it is always nice, I think, to start with some sort of general article of some sort; that gives me an overview. Either an article in a book, maybe a few pages in one of our textbooks, or just a general article, whatever. Read that. And then it gets you thinking, it helps you come up with the search terms that you need. And then off I go.

Another interesting practice mentioned by a number of the students is related to the mining of information. Interestingly, this referred to both citation mining and reviewing archived forum discussions to find valuable comments that other students or the instructor had made. The utility of such an archive was also mentioned by Haythornthwaite et al. (2007) and was considered to be an advantage of online learning. In the current instance, Lynn commented on how you could use the online forum to look for information that was suggested by others. In the face-to-face context, this information could be more easily lost:

Like I said before though, I really liked the online learning format, in that everything was archived. If someone did suggest a link to you, or if they suggested a book to you, then you could go back and search through those posts. Whereas if you were face-to-face, you may have jotted it down, but you lost the paper. There are all sorts of different things. Or you think you'll remember and you don't. I just liked being able to go back through the posts and re-read what people said, and re-read their suggestions and have everything in one place, where you could go search again.

Irene also noted the advantage of being able to revisit older comments and suggestions in that she pulled information from older courses into her current coursework:

Because the inquiry one is still up from last winter, I actually went back and checked a couple things that were posted, as far as reference and you know...because I couldn't find it in my binder. I kind of keep a binder from each course. I couldn't find it. So I went back to the online course and I found it. So even within the current coursework, I find I do go back to other courses and look things up. Either, if it is still online, or from what I had printed out in my binders, in my office.

The online learning environment also housed student assignments, so that the students could see the work that their classmates had completed and use that to inform their own learning. As Stacey revealed:

Actually the other thing that I'll do sometimes, I remember doing this with the information technology course, is looking up my classmate's stuff... By going to other people's blogs or whatever, I learned what they had sourced. So, kind of this networking thing. Maybe we were writing on the same topic, but somebody else went this way and found that source. So actually that was a big thing I was messing around with today, trying to save some of the links from this last course, and some of the wiki addresses because I would go back to them.

The more traditional mode of citation mining was also used by students, a practice that was formally highlighted in Ellis' (1989) model of information behaviour. More current research by Vezossi (2009) has reflected that this is still an important practice in today's educational context. During her interview, Jill mentioned this as a mode by which she accesses information:

The other thing I did, like I said, I used the index a lot. Like if they referred to an article in their article, then I would go and find that article, and read that article. Then I'd look at their references, and

you know... Yeah, and build it that way. Or if I found an author, and I really liked the article by that author, I'd look for that author; instead of by subject.

Karen and Angela also used this approach, applying the logic that a useful article should also house other helpful references.

Karen: And then you find the one article, and you skim through it, and you go: 'Oh my god, this is just what I need, this is fabulous.' And then I usually go to the end of that article, and look at their references, and then go from their references, to see if I can find some of those others. Because I figure, if this is just what I need, then these references helped develop that idea, then those are what I need.

Angela: I also, once I find one thing, I tell my kids this in school, one of the reasons for having a works cited is that it helps other people do research. Because if I find a good article or book, then I'll use that works cited as a springboard to find other materials.

While these students used a range of strategies to accomplish their information seeking goals, the most important message here is that there are many useful strategies for locating academic information. Different methods work best for different people and for different reasons. In this study, strategies such as 1) "jumping in" to the search; 2) information encountering (see Erdelez, 1999); 3) topic orientation (see Machpherson, 2003); and 4) information mining (see Haythornthwaite et al., 2007; Ellis, 1989; Vezossi, 2009) were all employed by the TL-DL students. Students in online learning environments (and perhaps beyond) should be taught about the different types of information seeking strategies available to them, relaying that the students then have to experiment to determine which works best for their individual situation.

#### 4.3.4 - Resources

After analyzing the interviews, it was evident that the students used a reasonably wide range of data sources in pulling together information for their assignments. They ranged from more classically academic sources, such as books and academic databases, to non-academic web sources and people.

Academic Databases. Academic databases were a very common source of information and this was due, in part, to their ease of use, their online nature, as well as the expectation that the resources found in the databases were of a high caliber. Sharon mentioned the currency of the articles as being an important factor, appreciating the fact that they were “cutting edge”. With respect to ease of use, Donna pointed out how much easier it was to use online databases, as compared with a photocopier:

Tracking down materials, online, through the databases, through the library, it works really well. It's easier than standing at a photocopier. At least this way, you just put the money into your ink cartridges (laughs)... You know, once you get into those library databases, it's...they're pretty user friendly. I didn't have lots of trouble.

Donna's comment may reflect why Brown (2005) found that graduate students preferred PubMed over the physical library space. Similarly, Lori also pointed out that online databases work very well for finding journal articles:

I would go from there, into...like, the U of A databases were great. We had awesome access. Then, I have access to the [local] University... So, I'd use their databases, and then I'd have access to their online databases. So between [the two universities], I was pretty well covered for journal articles.

Lynn goes on to point out that, as librarians, they should be using online databases. That is, most librarians are or should be using databases as part of their professional role. Furthermore, Lynn also mentioned that the materials she found in these databases were extremely useful and easy to access:

I found that ProQuest Education had very, very relevant materials for what I was looking for and they had specific to teacher-librarianship as well, a lot of different journals in their databases, and I just thought it was fantastic. When I did my [Bachelor of Education], which wasn't that long ago, but, you had to physically go into the library, and look through microfiche, and do all that stuff.

On the whole, the students in this program were all avid users of the online databases (especially ProQuest) and pointed out how convenient it was to access these materials online. Many pointed out that online databases were the first stop on their information seeking journey. Essentially, the students' comments indicate that online databases have become a core component of the online learning experience and make it easier to study at a distance. This is consistent with findings by other researchers, such as Kelley and Orr (2003, p. 189), who noted that online databases help ease the gap that distance learners who do not have access to the physical library may feel. Because these databases have become so central to the online learning experience, training becomes all the more critical. As Dee and Stanley (2005) pointed out, online database training offers the potential to further enhance how nursing students are

using this resource; certainly, this observation would also hold true for these online learners.

Books. Books were also used (though not as commonly as the online databases), but in most cases it was uncommon for them to use books from the University of Alberta's collection. Instead, it was more likely that they would either buy the books or in some instances use materials from their local library. This is consistent with findings by de Jong and Branch (2006), who noted that students relied on print materials from local sources. Angela is an excellent example of a student who used her personal book collection to inform her studies, as opposed to using the collection through the University of Alberta:

Yeah, I buy books compulsively. So if it was a book, I could typically find it on my own shelf.

Other students, such as Stacey, also mentioned buying books as a viable option:

Yeah, and that's the nice thing about being an older student too, if you just want the book, you can just buy it (laughs).

If necessary, students could and would use books from their local context. Terri pointed to the presence of a local university as being helpful in instances that she did need to access a book. Similarly, although Angela typically had access to the books she needed in her own collection, she did know that there were other professional outlets available to her:

I like having things at my finger tips. I mean that is why I volunteered my library to host, my board doesn't really have a professional library. There's a very small education collection, which is in one corner of my school library. We host the entire

board's professional library because I wanted the stuff at my finger tips. We also host the...Planning for Independence Program...we also host that group's library, their subject council library. Again, I figured I could read the stuff.

Issues of timeliness were mentioned as a reason for not getting print resources sent from the University of Alberta, though few students had actually used their system. One local student did mention using print materials from the University of Alberta, while another remotely-situated student found the Libraries' mail-order service was an excellent option.

Karen noted:

You know what, I've been going online, onto the University website, in their catalogue for the Library. And then I look for books too, and then order them from distance learning, and I have those kind as well, sometimes, if I find something that is really good. I've got a whole heap of them up here, on my shelf, my brown shelf. See them all on the top there? Those are all from the University (laughs).

With respect to their coursework, books were not as important to these students as the online databases. This was partly related to the perception that they could not be accessed easily and quickly. Similar to my findings here, other researchers have also noted that students may avoid materials that can not be accessed in a timely fashion (Prabha et al., 2007; Warwick et al., 2009; Weiler, 2005). However, Karen's experience above suggests that the TL-DL program could more actively promote the book mailing service offered through the University of Alberta Libraries as it is not as time-intensive as people think. This recommendation deserves consideration given Stacey's comment about the viability of books for her

coursework. Stacey suggested that books can be a good fit for some people/courses:

And with Violet's course, I think we quite quickly got a couple of gurus and somebody found a book – the Wikis, Blogs, and Podcast book, by Will Richardson, I think. And now they're actually using it as a textbook. And I kind of used it as a textbook too, because, again something about probably my age, but just reading something on the screen was not really enough for me. I needed to highlight it (laughs).

Online Material (Non-Academic). Non-academic web sources (e.g., Wikipedia) were also used by the students, but not exclusively. These students were proud of the fact that they were not Google dependent. As Irene pointed out:

I think previously I would do Google searches and now I know a lot more about the other search engines being much better as far as layering information and that kind of thing. So Google is certainly low on my list of where I would go to look for information.

Furthermore, in the cases where they did use Google, they were confident that they were using it better than members of the general public. When asked whether others have influenced how she looks for information, Jody observed:

Everyone else only uses Google (laughs). That's all anybody knows, and they all think they know how to find stuff. So, not really. I mean, I use Google too but I think I use it better than most people (laughs)...who are not in the program.

Lynn found there to be valuable information on the open web and noted that bloggers often provide a specialist source of information for areas in which she was passionate:

Yeah, and just starting to read professional blogs. So you get a few tips on those, through some of the courses. Especially [the course]

with Yolanda, the instructional technologies for learning. That is the one that sort of got the ball rolling for me and looking at webquests and different things like that. And just kind of, opening your eyes to the people out there who are blogging about some of the things they are doing, and I just had taken off on my own because of my own interest through that. Now at work, I'm using smart boards, and we're video-conferencing, and doing all sorts of really neat things. I'm really passionate about it, and I kind of figured that out as I was doing my program. I wouldn't have been exposed to it otherwise.

Furthermore, Lynn also noted the importance of the open web for finding information that is not published in databases, but still had value for her academic work. In this quote, Lynn spoke about the value of studies done by professional organizations:

They do all of these national studies on technology use...oh, why can't I think of the name...but there is a lot of different ones, even our local, I mean provincial teacher's federation had done a study on technology use, and they had them all published on their website. So there are just a lot of places to go for other research sources as well.

Open web materials were also used because they allowed students to orient themselves to a topic or because they provided another perspective (e.g., blogs, author websites, etc.). For example, Angela found that experts in the field often had their own websites that could provide valuable information. Furthermore, like Lynn, she also noted the utility of professional associations' websites:

I found that, for instance, Barbara Braxton had a really good site, or Joyce Valenza. They tend to have lots of information on their sites and links to other sites, they've collected documents. I'm a member of several associations, so I would use the association sites.

Irene used the web to help her select a topic. For one of her assignments, Irene used the open web to decide which illustrator she wanted to profile.

She was able to find information about a number of different illustrators and then select the one on which a significant amount of information was available:

Alright, so the last one, the bigger one that wasn't just a reflection type of thing, we did a illustrator assignment. So you had to select an illustrator, and do a biography of their work and life, and a bibliography of their works, and you know, looking for awards and do an analysis of their style and actually select one illustration and do an interpretive analysis of it. Anyway, so I started with...I started online. And because we could select an illustrator, I first tried to get Barbara Reid, because I love her, but I missed it by about five seconds; somebody else got in before me. Anyway, but then what I did, I just kind of surfed the web a little bit because you needed to have...enough information about them to actually [do the assignment]. I mean if you picked an obscure one, and you can't find any information or any articles, or they haven't won any awards, then it becomes much more difficult to actually write the body of the paper. So anyway, I chose Phoebe Gelman; she won a number of awards. There was a lot published about her, she had her own website, so I had three or four that I had just kind of did an initial, just a quick search on it and then I decided on Phoebe.

Karen also pointed out that while she does not prefer to use Google for most academic purposes that it does allow her to find "big picture" information:

You can use Google, but I find Google very frustrating, personally. When you're looking for academic stuff, there is usually not much that I would want to cite or use there. Although, sometimes, if you are starting with a definition, like: 'What is intellectual property?', I would have no qualms about going to Wikipedia; start there and just read a definition about what it is, so that I have the big general picture before I start.

This point is reiterated by Lori, who noted how she uses the internet as a starting point for locating course information:

I would usually just do a brief internet overview, to get the names and some of the terminology of what I was looking at, so usually go to the internet first... Yeah, just kind of get the names and find out,

ok, who are the big names in adolescent literacy? And then I would go to the journals armed with those names.

These comments suggest that students are not reliant on the open web, but that it can be a valuable tool for these students.

Increasingly, it is becoming a preferred source of information for many individuals (Vezzosi, 2009). For this reason, students need to be trained in how best to use it. For example, instructors may want to draw their students' attention to the concept of "power browsing", where individuals mine a range of formats for the perfect answer to their question (University College London, 2008, p. 8). This may help alert students to the fact that quality information can be found, for example, on the websites of professional and government organizations.

People. The students drew heavily from a wide variety of people in seeking the information that they needed for their online courses. This is consistent with the findings of other researchers, who have noted that people are an important source in individual information seeking (George et al., 2006; Head, 2008; Krikelas, 1983; Sadler & Given, 2007; Vezzosi, 2009). In this study, other students were mentioned frequently as a source of information. This was often because they had been in the program longer and had experience figuring out the inner-workings of the online learning environment. Karen was quite lucky to find that a co-student lived just down the block from her and was able to help with a general orientation to the online classroom, trouble-shooting, as well as helping to set up Karen's computer:

This gal that lives down the road, she came over and helped me set up my computer. She said: 'I'll come over, and we'll set it up, and I'll get you on the Blackboard [i.e., course management system] and everything.' So she did that, so I didn't really have to muddle through that myself. Then she got onto it, where she was, her Blackboard, and she demoed a couple of things for me. Then she said: 'Call if you're stuck.' I think that, other than calling her with one question, you know that frustration you have when you have six messages, and you answer message one and then two, three, four, five and six disappear into cyberspace. You know, they disappear. That kept happening, and I didn't know what I was doing wrong, so I phoned her, to talk to her about that.

Similarly, Karrie also pointed to the support that is available from students who have been in the program longer than her and how this can be an important source of assistance:

That is one of the nice things about the online program; there is so much dialoguing going on all the time. So if you're struggling, and you're brave enough, you put up your question on the bulletin board, and then, you know, there is always someone who has been there longer than you, or has more of a background than you have, and they will gladly come out and say: 'Have you tried this, or have you tried that?'

Consistent with Bowman's (2001) observation that pairings of students may facilitate the sharing of information, it was helpful for Lori to make a close friend in the program. In this sense, she had someone specific to whom she could turn for advice. Lori would essentially "call out" to her friend:

'I'm looking for something about this, if you notice anything...send it my way.'

Like in the last example, encountering information via other students was common. These students would frequently note resources that others had mentioned and go investigate these resources

themselves. In this way, they had become what Erdelez (1999, Who Encounters Information section) has termed a super-encounterer. That is, they viewed their encounters with information in the classroom forum as an important part of their information location. They recognized that they may come to information serendipitously through the comments of other students. As Jill pointed out:

They refer to a book, and you'll find you're going online trying to find it, or an article and you go online trying to find it...yeah.

Likewise, with respect to using information mentioned by other students, Terri noted:

If they give you some good ideas or someplace to look for other information, or they cite a particular author or an article, that you can access later on for another paper, then it is wonderful. That's great, to be able to have those resources.

Karen described in great detail how she deals with information that has been acquired from other students. Her comment brings to mind Kuhlthau's (1991, 1993, 2004) discussion of process. Kuhlthau describes the way in which students approach the information seeking process and that is what Karen has done here. Karen's comment seems quite pertinent to stage five in Kuhlthau's model, where documents relevant to the search are collected (Kuhlthau, 1991, p. 367). In this example, Karen was pointing out how she decides whether the information people have provided is worth collecting or not:

Well, I know, I mean, they might mention, when we're on the discussion boards, they might mention certain websites that they have gone to, or where they have found something. And when they cite something, I usually make a decision about do I really want to

do this? And learn more about this. Am I interested? Yes or no? If I am interested, I copy it out of the discussion and put it in my to-do list. Either I hand write it into my to-do list, or I, and put a little note about who recommended it. So I can get back to them and say: 'Yes or no'. But I don't always choose to follow...you know, what they recommend.

Interestingly, it was not only current students who were considered valued sources of information. The opportunity to gain information from former students was also an option. Lori pointed out:

I also found that the people that had graduated became a resource to those of us who were still in the program. Their capping papers were posted, and we could get access to them. Violet would...like if I had a question for somebody, she would match us up.

Not surprisingly and also encouraging is the fact that instructors, on the whole, were considered to be a valued source of information. Donna's comment provides support for this assertion:

[The instructors are] always super helpful; always helpful. If you can't find something...they just go out of their way to get you the stuff, help you find the stuff, and I just can't say enough... That is why I chose this program, because of the people in it.

In a more specific example, Karrie noted how useful it was for the instructor to provide detailed instructions around how to use a technology:

I was having trouble finding...ProQuest again, so I asked my prof, and she walked me through the steps, sent me an email and said: 'This is where you go, this is what you have to do, this is where you'll find it.' That was really helpful.

For students who were new to the program, it was useful for them to have these types of details as they helped the students navigate through a novel environment. Similarly, Jill mentioned that the reading materials

provided by instructors offered a great launching point for her information searches:

So [the instructor will] provide us with five readings and will say that we'll discuss these next week, so make sure that you've read them before next week. So her providing those readings gave me a starting point for a lot of my research. So I could get the keywords from there, I could search, I could look at who they referred to in their writing.

These instructor-developed reading lists were widely mentioned as helpful to the students as they found their way in the program and began to develop their own searches. They were highly valued by students, such as Stacey, who were re-entering the academic world after being away from formal education for many years and were unfamiliar with web-based searching:

Well, with [one of my instructor's] course...she had a big thing of web links; like 100. And I focused there because I do feel like I need to learn better search methods because...when I went to school before, you didn't use the internet, and even the online, you know the accessing the University of Alberta [libraries'] journals and stuff like that. We didn't really do that, back in '83 or '82. So for me, starting with the websites and the things that she suggested was definitely the way to go.

Instructors were not only helpful in providing access to academic information, others viewed them as a source of more general advice. Sharon, for example, was advised on how to rein in her use of information. This had the added benefit of making her feel less overwhelmed by the sheer volume of information. Karen, on the other hand, was able to get advice from her instructor on how to make projects more personally interesting:

I absolutely love [my instructor]. Although, I can see how she can be disconcerting to people, because she doesn't put firm parameters on things. She leaves things very open-ended. And usually, I'm not the type of gal who likes open-ended. I like to know exactly where is my rubric, blah, blah, blah. But anyway, I loved her. And I was able to...she was very flexible about the assignments. Like if you didn't like them, she would give you ideas on how to change it and make it...like, what you can do. She was very supportive.

While in the example above, the instructor was valued for being very open, this could potentially cause difficulties as well. As Irene pointed out:

I had one instructor, where you would ask questions, and she would not give you a straight answer. Like it would be...she would beat around the bush and kind of rephrase your question back to you... But sometimes you just need to have an answer right? You're the instructor. And then there is this one [instance] that just, she would not, or could not, I don't know, give an answer. So you're kind of lost in the dark and you're using the class email to each other, as...you know, you're emailing your classmates and you're trying to figure out 'what does she want?'

Despite Irene's experience with one instructor, these comments regarding the instructors were generally heartening, given that the education literature suggests an important role for instructors in facilitating students' information behaviours in the online learning environment (Faux & Black-Hughes, 2000; Marks, Sibley, & Arbaugh, 2005; Volery & Lord, 2000).

As mentioned in the section on local resources, these students also drew heavily on people from their local community when seeking information, often because of an expertise they felt was offered by the community member. This is a key component in the theory of community-embedded learning. Students bring information from their local worlds to be used and often shared in the online classroom (Haythornthwaite et al.,

2007; Kazmer, 2005b). Karrie, as mentioned previously, used a local teacher-librarian to help her with a selection tool, while Eva used someone from her local school district for their technical expertise.

However, it was not only local experts on whom these students relied. Some, such as Eva sought information from subject matter experts to enrich their work:

Remember when I told you that I like to find experts? I did a project on the history of whaling in our district; in our area. I interviewed so many people. I went right to the location and I took pictures there, I went to museums and found sources, I do a lot that way as well as just the online gathering.

Similarly, Lynn also relied on experts to help supplement and enhance her work:

There were different authors of articles, where if you had questions, they would often give their email addresses at the end of the article. You just emailed people and I would explain who I was and the program I was in, and ask the question. Some people responded and some people didn't. But it was nice to get their perspectives, and sometimes they would have suggestions about other places to look as well.

More commonly, students would use librarian as experts (both at the University of Alberta and beyond) to help facilitate their information seeking. Earlier research has supported this observation that librarians can be a valued source of information for these students (Donaldson, 2004; Mitchell & Watstein, 2007; Zhang, 1998; but see Pival, Lock, & Hunter, 2007) In this study, Karen, for example, relied on the University of Alberta librarians for their database expertise:

Again, [one librarian I worked with] was just awesome! She's the distance ed. librarian, and she walked me through...like, there was

a toll free number that I called to talk to her, and she said: 'Well, what you are doing now? Let's go through it now. She did an hour, online tutorial with me, and walked me all through it. I was writing down notes, as fast as I could, about things to do.' She's amazing. I can't say enough good things about her.

Jody used a librarian at her local university for a similar purpose. In her case, she was trying to get help with an information deficit:

Jody: And when I started trying looking for my subject...I forgot the word for it...not keyword, but the words that you actually need to use when you search in ERIC for instance. Same as the Sears subject heading and all that, how it's very restricted vocabulary, and if you don't use just the right word you're [out of luck]... So that was kind of a challenge. I even included that with my lit review because...just the difference...the fact that I could never find anything that had collection development; collection-whatever, in it. Collection management, collection development, collection maintenance, and French in the same article...like nothing. Zero results came up with those things... That was a bit frustrating to try and get those. Although, that's the thing, you learn what your kids learn too. How you're teaching them how to search and how specific you need to be when you're looking, and then you learn how hard it is to find that word; even if you're suppose to know what you're doing.

Kristie: Did you go to any one for any advice at that stage?

Jody: I did. I went to one of the reference librarians at [the local university]. And that helped.

Taken as a whole, this section reveals that people continue to play an important role in the information behaviours of online learners and that this extends across a multitude of contexts. Students may receive support from such diverse sources as colleagues, family members, fellow students, instructors, and librarians. Research by Kazmer (2005b) supported the observation that individuals from the students' local context (e.g., colleagues, family members) are important to the information

experience of online learners, while other researchers have noted the important role of the instructor in facilitating information behaviours in the online environment (see Faux & Black-Hughes, 2000; Marks, Sibley, & Arbaugh, 2005; Volery & Lord, 2000). Furthermore, In other research, librarians (see Donaldson, 2004; Mitchell & Watstein, 2007; Shepley, 2009; Zhang, 1998; but see Pival, Lock, & Hunter, 2007) and fellow students (see Green, 2006; Stewart, Uth, & Wastaway, 2004) have been described as important sources of information.

#### *4.3.5 – Role of Training*

In many instances, the students noted the difference that training made to their information seeking processes. An intervention study by Branch (2003; see also Dee & Stanley, 2005) noted the utility of training for enhancing students' skills in searching databases and using the library. Other researchers have observed that teachers and librarians should help facilitate the information training of online learners (Shepley, 2009; Tanni & Sormunen, 2008), while Brumfield (2008) described a case where online tutorials were used to help enhance the information seeking abilities of online learners. In this dissertation research, when students were aware of and participated in training opportunities, there were frequent accolades. For example, a number noted the utility of the RefWorks training modules in providing them with the skills to organize their information sources. There was also praise for the Elluminate sessions that highlighted via video how to search the databases; however, the

timing of these sessions was an issue for some students. This observation supports Brumfield's (2008) assertion that online tutorials are a valid means of enhancing the information behaviours of online learners. Interestingly though, these tutorials must be timed just right, so that students can maximize their learning. This resembles what Kuhlthau (2009, p. 71) has referred to as a "zone of intervention": a point in time where the learner will be receptive to the training because it is either new or useful. For example, Jill noted that she had taken the session too close to the beginning of the course:

The university actually offered, and it was online, a workshop with one of the librarians, and it was online. So you could participate in that, and you could ask your questions and stuff. Unfortunately, it was at the beginning of my course, and I didn't know what questions to ask. I listened to the presentation, which was really, really good, but I wish that it would have been, like if they offered it again with my next class, I'll take it again. So I think I'll get more out of it the second time, than I did the first time. The first time was within a week and a half of me signing up for the course.

Lynn also pointed out that Elluminate was helpful, but for her, having the tutorial at the beginning of her TL-DL program would have been even more useful:

They had Elluminate sessions, where you can learn how to effectively use the databases, but my groups, at least myself; we're not a cohort group as we all started at different times. It wasn't until midway through the program where we actually got that programming. I had been using all the databases a lot, but there were a lot of different tricks that I didn't know about, so it was nice to get the training. I think they are doing it more, at the beginning, I think they are offering every year now.

Michelle noted that she went to her local university to get support, primarily because at that stage there was no support via Elluminate and

this provided an important training opportunity. Michelle's comment provides support for earlier assertions that librarians can play an important role in enhancing the information literacy skills of online learners (Shepley, 2009; Tanni & Sormunen, 2008):

I actually learned a little bit more about search techniques out of [my local university's] classes, where I was able to sit down with a librarian. I had figured a lot of it out, but I think if I had had something like that...and now they have the Elluminate session at the U of A, which they didn't have when I started. That would have been hugely valuable after figuring out how to research. The online method to me was just a massively huge learning curve. I'm a dinosaur, I'm a person who looks in books (laughs). And so the whole online experience to me, was huge. So the online research was also huge.

Students also wanted to know what to expect before they began the TL-DL program. Earlier research has pointed to the utility of web-based information resources for helping inform online learners and these are one potential solution to the students' orientation needs (see Bartini, 2008; Bee & Usip, 1998; Cooper, 1999; Grimstad & Grabe, 2004). In the current study, Terri also suggested the potential utility of an introductory training course:

I think that one thing that would be nice is maybe to have some kind of introductory course that you'd have to have even before you're allowed to get into the coursework; on how to use this tool maybe, and where you can look for things. Certainly you can go and get help, but sometimes you just don't bother. You just try muddling your way through it and maybe that is something that should be part of the, before you ever take your first course or something. Or the expectation is that even if they have some kind of introductory thing that you have to take it before you get your degree, sort of thing, somewhere along those lines; that they know that you're accessing things. I wonder if I'm accessing everything that I could be sometimes. I've questioned whether I'm, maybe I'm

just kind of relying on a couple of areas more so than, I could be actually using other ones too.

Given Karrie's comments below, it would seem that she too would have benefited from an introductory course:

[During my first course], everything for me, was a learning curve. It was learning to do WebCT, and the course was on information technology. Well I didn't know anything about information technology, so I was learning; every topic was new for me. But to then go and do research too, that was new too. I think if it was a group of students, all starting their courses together, there would probably be instructions on how to go and find research. But an assumption is made, lots, that we already know how. When I'm sure there are many students who are like me, where they didn't really know where to begin.

Eva offered similar sentiments about the need for basic training at the outset of the TL-DL program:

Even my, when I first started the program, I didn't even know how to get, how to access the e-learning [environment]. I didn't have a lot of, I had some computer skills, so I thought I was ok, but obviously not as much as I thought. I didn't know how to get into it, nobody helped, nobody told you where you had to get your text. There was no orientation whatsoever. It was a big frustration, and I wasn't the only one in the setting, because many of us were emailing back and forth on the course. There were lots of people feeling the same way; nobody was responding to that.

Taken as a whole, these comments suggest that these students placed great value on training opportunities, when they were available. However, the students pointed out that training is not always available to them when they need it (to their knowledge). This suggests the need for additional training sessions or better marketing of existing sessions. In addition, these students did not necessarily know what they would need to know when they entered the program. As a result, they felt quite lost

when they first started. As the students' comments suggested, it may be of value to have a general orientation course or even orientation materials that tells them both what they need to know and where they can go to gather this information. Reaching them at this point in the program, when they are receptive and have questions, would be within the "zone of intervention" for training opportunities (Kuhlthau, 2009). Interestingly, this intervention was being developed during the course of these interviews; as Yolanda pointed out earlier in this chapter, an orientation was being developed for students entering the newly-established TL-DL cohort program.

#### 4.4 Research Question 1b – Motivation for Information Seeking

##### Behaviours

What motivates students to engage (or not engage) in information seeking behaviours in web-based classrooms? This section focuses on what drives students to seek information in the manner that they do. Motivation to seek (or not seek) information will be discussed in the context of personal/professional relevance, time, convenience, autonomy, expectations, and enjoyment. That is, I will argue that students are motivated to seek information for their academic coursework by the 1) personal and professional relevance of the topic; 2) time factors; 3) how convenient it is to access the resource; 4) how autonomous they feel in selecting the type of information to access; 5) the expectations of

themselves and others; and 6) the enjoyment they feel in seeking information.

#### *4.4.1 – Personal and Professional Relevance*

The issue of personal relevance was key to these students. They were motivated to work on and seek information for projects that had some relevance to their daily lives. The motivating influence of personalized academic work was also observed by Laszlo and Kupritz (2003), who noted a desire amongst students for course material that was relevant to their learning goals. Furthermore, in the ARCS model, provision of relevant material is certainly a key motivational component (Jacobson & Xu, 2002).

As the TL-DL program is professionally-oriented, I had anticipated to a certain extent that students would want to work on professionally relevant projects. However, I was surprised and intrigued by the idea of personal relevance. Many of the students mentioned seeking information that was relevant to both the course and their families. While not specific to the online learning context, there is evidence that people seek information that is personally relevant to them (e.g., Banas, 2009; Reagan et al., 1998; Reznowski, 2008; Toms, 1999). An article from the education literature by Norton (2003, p. 146) also provides some insight into relevance as a motivating factor in students' information seeking patterns. Norton pointed out that students need to feel that they "own" the material that they are reading (i.e., that it is relevant to them). It should be

material that they can enjoy and with which they personally can engage (see also, Heinstrom, 2006b). In Norton's (2003) example, this engagement led to more meaningful interactions and critiques of the comic book texts themselves. I argue that the students in the TL-DL program felt ownership over many of their projects in that they were able to pursue personally and professionally relevant topics. As a result, they feel more engaged with the topic itself and were more inclined to pursue pertinent information.

Beginning with the sub-theme of professional relevance, the students mentioned frequently that they wanted to bring the information they had learned in the TL-DL program back to the students in their classrooms . In this example, Donna described how personally important it was to bring her course experiences back to her students. She spoke of it generally and provided a tangible example:

I did make a web page for our own school library. It's pretty rudimentary, but I've had some positive feedback, so something like that was good. I mean, just about in every class, I can take something really useful back to my work situation, so that is really important for me. Also, for the people that I work with, they can see that [through] this coursework...I'm trying this, or this, and they're going to let me try that with a group of students. It is great.

Donna went on to comment about the professional relevance of her capping project:

With my capping project, this is a never ending topic. I could be looking into this for a really long time, because it is so important. Then, when I see my colleagues or with parents or with children, I can say things like...like one thing I already found in my readings is that reading out loud, makes such a difference to children's choice of books in recreational reading. That is not earth shattering. But

to turn and say that the research says that it is...we knew it, it says it, and we're good.

Gracie also pointed to the importance of being able to tie the academic to the practical:

There are many interesting aspects of teacher-librarianship, but that was the strong one for me, was working with the vocational students... I really love my job and admire the people who work with these vocational kids, so it was just...I don't know, it was very gratifying, I guess, to find an area that so keenly matched what you were doing and were curious about, and that was part of your Master's program.

Similarly, Irene stated how grateful she was to be able to pull her academic coursework into her work as a consultant:

It's academic, but it is also always keeping, very much, in mind the practical. Which, I don't know how much, if all the Master's programs have that component; I really appreciated it. Because it keeps you grounded, and that's what real... I'd say, especially because I am a divisional consultant, there are many times I will go back and kind of piggy back on what I have done before. Or, I'll use the article in a workshop, in a different context.

Talking less specifically, Karen noted the presence of her ever expanding to-do list that incorporated what she has learned in the TL-DL program. She entered the program after starting a new job and wanted to know more about twenty-first century librarianship:

[My husband] said that the librarian [at my husband's school] is going to be retiring, and he said that the principal came down and asked me if you would consider applying for the job. So, that was a very nice compliment. And then, the librarian came to see me too. At first I didn't want to, but I went and looked at [the library], and decided: yeah, it needed me. Because it was very stodgy, it was still right in the middle of the seventies. Anyway, I spent two years working on the library; had an action plan and went at it. First year, mostly physical plan; second year, attacked the collection. Then I just realized that I didn't have enough information for twenty-first century libraries. Like what should be in them. What is teacher-

librarianship about in the twenty-first century? So I thought: 'I am the piece here, holding up this whole process; I need more personal information.' So I found...I had a conversation with Violet, and then went from there and applied. I got my leave, got into the program, and here I am. Now, I know all the things that I need to do (laughs), and I just hope that I can do them...I have a to-do list on the computer, and every time I come across something, I go: 'Cripes, I have to do that!' I paste it right into my list, so it's growing.

Michelle made the point that the TL-DL program has also been helpful in drawing her attention to relevant materials that she had not previously considered using in the classroom:

With the comics and graphic novels...I've never really been interested in them. So learning more about them made me see more possibilities obviously. And so I thought, you know, there are such things as Social Studies, where kids really struggle because it is text, and it doesn't grab them. But there were a couple of graphic novels that I read, that I thought: 'This will fit perfectly in the social studies curriculum.'

To further understand why it is motivating to seek professionally-relevant materials, it is interesting to consider Kari and Savolainen's (2003, pp. 159-160) contextual model of online information seeking. In their model, they proposed that work-related domains can influence an individual's information behaviour. In the TL-DL context, the type of material these students were seeking and encountering could be tied back to their professional context. That is, they were keen to use the academic information they were seeking in their roles as teacher-librarians.

Turning to the issue of personal relevance, Eva pointed to the importance of establishing a personal connection with a topic and that this sustained her drive to pursue it:

If I make personal connections, then I would say that I'm more driven to keep pursuing and finding out what's going on. I did a huge project [based on an important community event]. I was doing Inquiry-Based Learning at the time, that was the course I was taking. I did a massive school-wide project on it and we used newspapers, and internet, and accessed things, and [on the] bulletin board, we mapped, we did everything, and the effect on our community. Actually I ended up getting a, I haven't told many people, but I ended up getting an...award for all the stuff I did with environmental concerns with the kids. So anyway, if my heart is in it, if I feel passion then I continue going on it. It's a drive. But if it feels like an assignment is kind of redundant or just for the sake of completion, then I think I'm quite content to let it go, when it goes in.

While Eva's personal connection to the topic was through her community, it was perhaps even more common for the students to forge this connection between academic information and their family. Stacey pointed out that it was her family's enthusiasm about one of her areas of study that helped sustain her interest even after the course was complete:

You get kind of hooked. And definitely with the graphics novels course, I, well actually, with both courses, with this one, my husband and sons, and daughter to some extent, like...um, grew up reading comics and stuff. And so they were really interested in what I was doing. In fact, I think my daughter read every book that I bought for the course, as did my husband.

While in an earlier example, Gracie had selected her capping project for its professional relevance, Lynn's interest in her capping project was partially related to her two sons:

It was pretty open-ended, we could sort of choose whatever we wanted to do as our final project, mainly, I think they kind of wanted to have you synthesize what you had learned throughout the entire program. So I had kind of focused a lot of my research, and my courses on looking at boys in literacy, but also on instructional technology. My final project looked at how using instructional technology could help increase literacy rates with students, especially male students in the population... I have two sons of my

own, so it was personally interesting, as well as professionally interesting.

As with the professional domain, Kari and Savolainen's (2003, pp. 159-160) contextual model of online information seeking also helps to explain students' personal motivations for seeking information. Here, Kari and Savolainen also described non-work related domains and observed that these too can influence information behaviours. As seen in the examples above, the students were frequently interested in or pursued information because it had some bearing on their families or other facets of their local environment.

Taken as a whole, these findings are interesting because they suggest that students are not simply motivated to find information that is relevant to the assignment itself, but also by a professional and/or personal connection. Lori's statement regarding how she feels when the project does not have relevance to her life summarizes this point and ties in nicely to the earlier discussion of Norton's (2003) work around the importance of ownership to motivation. For Lori, when she did not have ownership of a project, her desire to dig in and start her research waned:

If it is one of those assigned topics that has really nothing of relevance to your life, it's like: 'Oh boy...this again.'

#### *4.4.2 - Time*

Relevance related quite readily to another concept that was reflected in the students' responses: time. Certainly other researchers have also noted that students are motivated to pursue particular resources

when it saves them time (Prabha et al., 2007; Warwick et al., 2009, Weiler, 2005). This issue of time may be particularly important to these students as most were practicing teacher-librarians, students, and parents/caregivers. As mentioned above, many of these students strategically chose personally and/or professionally relevant research topics, because it did enable them to re-use course information in the classroom or with their families. This theme relates specifically to the time-saving strategies employed by these students in the course of their information seeking.

Many students used serendipitous information “seeking” in order to save time. If someone else (e.g., a fellow student, an instructor, or author) had mentioned a valuable resource, some students would save this resource for future use. In essence, they were using serendipitous information “seeking” to locate information in a way that would save them time in the future (see Erdelez, 1999, 2005). For example, Irene mentioned how she approaches information seeking in the interest of being time-efficient:

And one of the things I've learned is that as I am reading, rather than just highlighting, I kind of keep an electronic...it's not really like a journal, but if I'm doing my course readings then I know that this is going to connect to the paper, I'll right away, type it out, reference the quote or idea, the page number, and then you would have started a works cited page. I've found that going back later, and doing it all from scratch, I'd be thinking: 'Ok...where was that page?'... I mean that can take you...it did, it takes me an hour to find it right?

Students, such as Irene, saved time by not having to search for information that had already been provided to them, albeit earlier than actually needed. Similarly, the students would also re-purpose information that had been brought up in class discussions. In these cases, the students would peruse archives of the class discussions. Lynn found this method to be quite effective for her:

And I would go back to that and say I knew something that I'd encountered in my technologies class was going to be applicable to my leadership class, then I could go back to that forum and find out; find the research and use it.

By employing this approach, the students were able to fulfill their desire/need to save time by looking for information that they knew had already been provided by their classmates.

In the context of time, a number of the students also weighed the costs and benefits of reviewing particular types of information sources. The TL-DL students essentially employed a strategy similar to the undergraduates in a 2009 article, who assessed their options and made the best choice for their situation. In many instances, some resources simply took too long for these undergraduates to access (Warwick et al., 2009). For Michelle, the problem was that she did not have time to assess the quality of certain online resources (e.g., blogs). She needed to use resources that she knew were of a high quality:

Basically, time is an element. I did little bits and pieces of stuff like [blogs], but to get into that and to figure out who's reputable and who's not, I found that...I work full-time and I just didn't have time. I needed to use places that I was pretty sure about what I was getting.

Stacey also mentioned that time was a factor in how much information she was able to process. Time pressures and not interest often drove what could be read and considered for a given course. Stacey noted:

Well there's certainly time constraints. So I've felt sometimes that I didn't get every single thing read that I would have liked to have read. I guess that also depends on how big the class is. If you are reading, like in this last one, I think we did for a project, if you're reading everybody's project, in addition to your own stuff, I just didn't have time to do that. So time is really the limiting factor I think.

In sum, these responses illustrate how time influenced the strategies these students employed when seeking information. As mentioned earlier, these students were time-strapped professionals and as a result had to make decisions around what was possible in terms of their information seeking behaviours. They were keen to learn and engage, but also needed to be realistic. As pointed out by Warwick et al. (2009), students must make the best choices for their circumstances and this often meant selecting materials that could be accessed and used in a time-efficient fashion.

#### *4.4.3 - Convenience*

Closely related to the issue of time is the issue of convenience. In these instances, the students were often motivated to access resources that were easy to retrieve, while avoiding materials that were more difficult to access. Previous researchers have also found this to be the case (Prabha et al., 2007; Warwick et al., 2009, Weiler, 2005). This issue of convenience had two key and related components. First, the students

sought resources that were physically easy to access; and second, they wanted resources that could be accessed in a timely manner. This ties back again to the fact that these students were typically busy professionals who did not have the luxury of waiting for materials that were difficult to retrieve. The expectation is that relevant resources should be easily accessible, so that they can simply get on with their work. This is different from the theme of time in that this theme is really about how time-intensive (and inconvenient) it is to access particular resources and not about the strategies employed to save time (e.g., avoiding blogs, re-purposing information, etc.).

The convenience of online databases certainly seemed to influence the students' use of these resources. All but two of the students mentioned that they used the academic databases, with many commenting on their accessibility and ease of use. Lynn commented on the comfort associated with this ease of access:

The beauty of the online databases, is that on Sunday morning, in your pajamas, you can search for any article that you would want to find, essentially. And read it right from the comfort of your own home, which was really lovely.

Angela also pointed to their ease of use and noted how in some ways they were even easier to use in the online setting than they would be face-to-face:

Because even in a face-to-face course, I would have had to come home or go to a library and access the same databases. It just kind of seemed easier and more immediate, doing it this way.

While online databases certainly fit the criteria of being convenient in terms of both ease of access and time to access, other resources (particularly print) can be more challenging to access and therefore students are less motivated to use them. Eva's experience is perhaps the most telling in this regard:

Again, what they don't realize is that people in areas like mine, I've tried many times, ordering the resources. By the time they come, the course is almost over. So it doesn't really help a lot when the course is only three months long or four months long... September, October, November, ok four months long. When it takes two months just to get the resources, do you understand what I'm saying?

These comments around convenience support the idea that students will use relevant, high quality information (e.g., journal articles) if they are provided with a convenient way to access them (e.g., online databases). Thus, continuing encouragement and training on how to use these types of resources can be effective in encouraging students' use of high quality evidence to support their research. If resources (e.g., books) are more difficult to access, then the students should be advised on alternative options so as to alleviate their frustration and encourage them to continue seeking high quality information. As mentioned previously, online tutorials are considered an appropriate way to deliver this type of support (Brumfield, 2008).

#### *4.4.4 - Autonomy*

Autonomy was also a key element in motivating these students to seek information. They were motivated by the fact that the program and

instructors provided them with the autonomy and support they desired to locate information and work on projects in which they were interested. This observation is consistent with what self-determination theorists would have expected to find in that individuals who have their autonomy supported are more likely to persist at a task (Deci & Ryan, 1985). Furthermore, this finding also resonates with the earlier discussion around ownership in that students who feel a greater sense of ownership of their research project are more likely to actively engage in that project, including the information seeking process (Norton, 2003; see also Heinstrom, 2006b). Like time, autonomy is very much connected to the theme of relevance. In essence, these students are motivated by the autonomy they have to seek relevant materials. With its focus on inquiry-based learning, the TL-DL environment gives students the freedom to pursue their own interests and explore issues related to their own circumstances. Certainly Gracie used this to her advantage when selecting the project for her capping exercise:

They kept, they as in your advisor or your prof, kept encouraging you to kind of monitor yourself, where your areas of interest lie and build on that [when choosing the topic for your capping exercise].

Lynn also reported that it was this sense of autonomy (i.e., the capacity to explore and think for herself) that motivated her to find out more about a topic:

You pick your topic, and you have to find the information to support what you're trying to talk about. I just found, a lot of what I was learning, was personally interesting as well. That's what I liked about our program, was it was really inquiry-based. So within the

general framework of the courses, we got to pick the topics that were really most meaningful to us, in our situations; in our professional situations. A lot of what I was learning was immediately relevant to me, in my position as well, and was helping me do my job better. I was really interested in finding out more. I didn't really understand how much I liked learning. I found that my [Bachelor of Education] program was more hoop jumping; kind of give your professors what you want, and the Master's program was very much asking: 'Well what do you think, and how are you going to make this work for you, and what are you going to do with this?' It was wonderful, because you then went: 'Well, ok, I want to learn more about this', and you dug into it and it was really motivating, because you wanted to learn it; not because you had to learn it for someone else.

Students, such as Lori found that the autonomous online learning environment also encouraged them to seek out information for themselves, instead of simply asking the question as they would in a face-to-face environment:

I think in a face-to-face class, you might, as ideas or questions came to you, you might ask your professor; instead of going...to look for things yourself.

Jill also found that she and others were much more active and autonomous information participants in the online setting than in a face-to-face environment:

I find online, it is much more...you're active. Whereas, in a classroom, it is much more them feeding you information. That is what I find. It is us doing the discussion, not the professor. She starts the reading and the question, and then we have to go and do all the rest.

In the TL-DL program, students had a great deal of control over their information seeking processes. Not only were they encouraged to work on projects and seek information that was relevant to them, but they also learned to locate information for themselves. While not explicitly tied

to information behaviours, Karsenti (1999) noted that an autonomous learning environment did enhance general classroom motivation.

#### *4.4.5 - Expectations*

These students were also motivated to seek information in particular ways because of expectations, both self- and other-imposed. The motivation literature tells us that individuals are often driven by a need to feel competent (Deci & Ryan, 1985). In this study, students placed certain expectations on themselves, which helped meet this need for competency. Additionally, earlier LIS literature has pointed to the role that expectations can play in shaping student information behaviour, particularly with respect to instructor expectations (Urquhart & Roweley, 2007; Valentine, 2001).

In this study, the students often believed that their information seeking should be at a higher level because they were in a graduate program. Terri summed up this attitude in describing her approach to accessing articles for her assignments:

The instructors often will give you a list of readings and topics. So you can read those too. So I use those, but if I want to add a little bit more to it, I will do my own kind of search too. And on my last assignment, [my instructor] commented on that; that I had looked up a couple of articles that she's not read before, that she would like to look into. I guess it's just the way I am. I just don't feel that at this level that I should just depend on what the instructor has given us necessarily. Certainly I read it and take what I need from it, but I also feel that I should be looking for myself also. And just stretching that.

Karen described a similar belief about the information seeking role of a graduate student, one that was drilled into her by a mentor in her district:

He's actually the person who told me: 'You're a graduate student. You have to anticipate, read ahead, and be prepared. They expect you to be beyond what an undergraduate does. That you're already supposed to be...you're supposed to be proactive in initiating your own research.' He placed that foundation in my brain.

Karen mentioned another instance of high self-expectations with respect to her information seeking, noting that she kept looking for information until she was comfortable that she had all the information that she needed on a given topic:

This one I just did on copyright, this assignment on copyright, there was a discussion on board, a couple of people mentioned things. So I went into some of the sites, and did a bit more reading and that, because I just wanted to finish it up; to wrap it up for myself.

Karen's comment below was similar to those made by other students, who sought information that was current because of a desire to excel academically, which she conceded may be related to the fact that she was an older student:

My motivation is that I want to be current. A lot of online information is quite current. Just wanting to do really well and have a quality end product. So you take your time and you do things right. I probably put a lot of pressure on myself to do well. Maybe it is the older student syndrome. I've talked to a few people who decide to go back and do their Master's when they are older, and they have very, very high expectations of themselves; getting a B or a B plus just isn't good enough. So that is a real motivator to get really focused and find as much information as you can.

This drive to seek information because they wanted to fulfill academic expectations (e.g., getting particular grades, meeting a deadline) was pervasive. As with many students, grades were important. When asked

why she sought information for her coursework, Angela made this point quite succinctly:

It is an assignment, it's worth marks and I tend to be quite driven; I like to do really well.

The students also believed that the instructors had particular expectations in terms of the types of information that was used. Hence, if they wanted to do well in their courses, they had to meet the instructor's expectations. This finding is similar to earlier observations by Valentine (2001), who noted that students seek to understand instructor expectations and then look for information that specifically meets these expectations. In this study, Terri, found that the instructors expected a particular type of information when completing certain course assignments:

Like I took a web 2.0 tools course and oh my goodness... The expectation was that you investigate the tools but you also looked at [their implications for teaching and learning]. So you had to find professional articles that supported that particular tool or how you present that tool. So yes, they really encourage you to look for information and more articles. So they are very influential in what they expect from you. The level of expectation is higher than doing an undergraduate degree. They want you to be a professional so they tend to encourage that a lot. The current course that I will be taking, she is very-very knowledgeable in her field of reference collection. I know that she is going to be recommending particular journals and particular systems to use; online systems and that.

Meanwhile, Lynn pointed out that there was also the expectation that the students would be using the databases because the instructors were preparing the TL-DL students to be better librarians:

Well, I mean, we were trained in how to use them, and they expected you, at least my assumption was that we were training to

be better librarians, so we should know how to use these things, so I think they did focus on having us learn how to use them, and use them a great deal.

Essentially, these students were driven to look for particular types of information and in particular ways, because they believed, or in some instances had been told that this is what they were supposed to do. As mentioned earlier, information behaviours can be influenced by the expectations that are placed on students (Urquhart & Roweley, 2007; Valentine, 2001); more generally, the need to feel competent is also an important motivator (Deci & Ryan, 1985).

#### *4.4.6 - Enjoyment*

In contrast to feeling a sense of obligation, many students actually enjoyed the information seeking process itself. This section relates readily to intrinsic motivation, in which individuals engage in an activity because they find it pleasurable (Deci & Ryan, 1985). Previous LIS researchers have also found that intrinsic motivation (and enjoyment) influenced how an individual sought information. For example, Julien and Michels (2004) found that students tracked more information when they were intrinsically motivated. Similarly, Heinstrom (2006b) found that intrinsically motivated students pursue information at a greater level of depth. Some of the TL-DL students linked their information seeking behaviours to the fact that they enjoyed their profession (which related to information seeking), while others mentioned that it was like a puzzle and they enjoyed filling in the missing pieces. They liked to find those pieces of information that filled a

gap in their paper. Others had an avid curiosity and enjoyed poking through resources, relevant or not, because it improved their knowledge of a topic. They considered themselves to be lifelong learners.

Speaking about her profession, Angela described herself as a "library person". As a result, she stated: "I like finding stuff". Lynn relayed similar feelings about her profession, but linked it to being both a librarian and a teacher:

Because we're librarians (laugh). We like finding stuff! 'Hey...have you checked here? This will be really good for your research.' I think teachers are just helpful people that way, they give people the answer, but if you find other things that might be useful to them, you just share and suggest.

Karen pointed to the fact that for her, the enjoyment was derived from the hunt, she liked filling in the missing pieces and putting that puzzle together:

I'm probably quite sick, in that I really enjoy searching for information. Like, this for me is a lot of fun. It is like the hunt. Like, you're playing detective. So...I love to look for information. I love it; it's the best part.

Similarly, Terri also liked the hunt for information, but found creating the actual paper to be less satisfying:

Yeah, I love research. I laugh because I guess I must be a bit of a nerd when it comes to looking up different reference material, because I really enjoy that part. Now having to sit down and pull it all together and actually write the paper, I don't enjoy that part, but the actual research end of it – love finding all sorts of goodies.

Stacey, among others, also pointed to the fact that viewing information seeking as a puzzle made it quite fun:

I started to think, well, I don't know how to do this, but I think if I do it this way, and finding information that kind of, I don't know, lateral thinking. It is like a puzzle, and it does get to be kind of fun (laughs).

For others, their enjoyment of lifelong learning drove them to seek information. Eva pointed out that she tends to be innately curious about almost everything:

I actually love to learn. Always have, always very inquisitive, very curious. Not just about research topics, but about people; what makes them tick? So I really enjoy interacting and finding out about people. So if I question about something, I'm not doing that just to fill in some space. I'm doing it because I really want to know. Like I really want to know why those sirens are going past my house.

Angela also viewed herself as a lifelong learner and as a result, finding information was fun for her:

I tend to get caught up in the search and it is actually a challenge to say: 'Ok, I've got enough, now I've actually got to write the, to do the assignment.' But yeah, I like learning. You know, the whole life long learner thing? That's me.

While people enjoy information seeking for different reasons, the important point to draw from these responses is that there are people who enjoy information seeking. Understanding the source of this enjoyment may help educators determine how to make information seeking fun for those who do not currently take pleasure in the process. This may in turn enhance students' intrinsic motivation towards the information seeking task, which can lead to improved engagement in the activity (Heinstrom, 2006b; Julien & Michels, 2004).

#### 4.5 Research Question 2a – Information Sharing Behaviours

In what types of information sharing behaviours do students engage in online learning environments? While the earlier questions focused on how students were seeking information, my next goal was to understand how students are sharing information and how information is being shared with the students. This included both how information was being shared in the online classroom, as well as how information from the outside world was shared by the students and incorporated into the classroom environment. This goal also extended to understanding how and if students were sharing information from the online classroom with people outside this immediate context. It is also important to point out that information sharing can be of a voluntary or required nature. Both types of sharing have some value. Certainly voluntary sharing of information, such as personal details, helps to establish a sense of community (see Hersberger et al., 2005). While voluntary information sharing may also be of an academic nature, this is particularly true for required sharing. Thus, required sharing is also important as it encourages students to put their academic ideas forward and share these ideas with others, providing a diverse and engaging learning environment.

##### *4.5.1 – Who is Sharing?*

In describing their information sharing behaviours, the students described both who shared with them, as well as those with whom they would share information. Certainly, there was a great degree of bi-

directional sharing of course-related materials amongst classmates. This is heartening given that online classrooms can feel isolating (de Jong & Branch, 2006). Eva provided an example of how she learned a great deal about graphic novels from her classmates:

Everybody will then say: 'Oh try this, or I've found this, or look at this site.' Graphic novels are the prime example. When people ask about graphic novels for elementary school... Everybody will put forward information that they know or they'll guide you to a particular site, or someone that's done their capping experience in graphic novels, whatever.

Eva's comment is certainly consistent with earlier research, which noted that students can often learn a great deal from one another (Green, 2006; Stewart, Uth, & Wastaway, 2004).

Karen pointed out that people who had been in previous courses with her would often be quite inclined to share information with her, suggesting that personal connections help foster additional information sharing:

I found that there are a couple of people, because now remember, this is course five, six seven right. So I'm having a bit of overlap with a few people. And I'm finding that some of the people that I knew before in other courses, that knew me...know me as much as you can in this context, they will recommend things to me and make suggestions. And that is really neat when they do that. I find the things that they recommend are usually the things that I pay attention to. Those people that I value, I guess, my friends, I guess from these courses, that I know. Like, I appreciate what they have to say, and I really value their comments.

Interestingly and consistent with findings by Nardi and O'Day (1999; see also Fusco & Schlager, 2003), some of the students who had also met face-to-face were now even more comfortable sharing with each other

online. Irene pointed out how her on-campus course helped her to build more personal relationships with some of her fellow students.

Especially now, having met some that have been in courses together, and being on campus together, taking the course... We'll pick up the phone, and we'll just email; either through the U of A email, or the course email. And we'll help each other out, as far as that information kind of support as well.

Sharon shared a similar experience regarding her face-to-face course, where after meeting in person, they opted to continue that relationship in the online context:

When we met [face-to-face] in July, all my classmates felt it would be great to exchange information after leaving campus and before our assignments were due.

To summarize, the students commented that relationship building enhances the information sharing process, which is not unlike what other researchers have found in this area. Certainly, interpersonal bonds are thought to enhance the trust in the classroom, which can lead to increased sharing of information (Haines, Hurlbert, & Beggs, 1996; see also, Haythornthwaite & Bregman, 2004; Haythornthwaite et al., 2000). Indeed, a greater sense of relatedness more generally can enhance the information sharing process in the online classroom (Haythornthwaite, 2002).

Also related to the academic world, the students also pointed out that instructors frequently shared information with them. This is important given that online learners have previously expressed a desire for more communication from their instructors (Faux & Black-Hughes, 2000), and

that instructors are expected to interact with their students (Selim, 2007).

Karen pointed to a particular instance of sharing by instructor Yolanda that she encouraged other instructors to adopt:

Yolanda does something that I really love, and that is: Every Monday morning, she puts an announcement up, like a morning message. Remember in elementary school, the morning messages? And it would be on the blackboard. She puts up a message on Monday mornings: 'Ok, this week, we're going to look at this, we're going to do this, and we're going to do that. And a reminder that you should be working on this, because that assignment is due on this date.' That is just the most incredible thing. I love that message. And yet, the other instructors weren't doing it. And I think that is why I was having so much difficulty getting into this whole thing, this term. So finally, after agonizing over this, and going through, and trying to figure out: 'Oh my god, have I got everything done?' Like, I'm worried about making deadlines and stuff, or missing something, you know? There is nothing worse than people talking about something on the discussion board and: 'Oh my god, where did that come from?' You go back and you read these seventy eight messages that are there and you can't find how they got to that point. So I sent emails, personal emails, off to both of those instructors and I said: 'One of my instructors does a Monday morning message, where they tell us what is happening and everything. And it is so nice, because you can share what you are doing in your world, that makes you more personal to us. And it helps us all, just double check that we're on track and everything. And I really need this for my own learning, and please could you consider doing this?' Both of them did it. It was wonderful.

In a similar vein, Lori also mentioned the helpfulness of an instructor when she was working on a particular project:

Well, Violet, in the TL-DL program was amazing. Like she was...you'd say something, like I'm working on this [project]...and she'd come up with thirty names; like she was just a wealth of information.

For her part, Donna simply loved hearing about the instructors' research and appreciated it when they discussed it in the online forums:

Especially those who were talking about their research and things that they have written and that they have found. How exciting is that (laughs)? It is pretty cool!

While these instances of sharing within the confines of the online course were interesting, it was particularly compelling to see that information from the courses moved quite fluidly to and from the students' local context. For example, a number of these learners had study groups with their local colleagues and would pull information from the study groups to bring back into the TL-DL environment. Gracie pointed this out when describing the information she shared with fellow students and her study group colleagues, particularly as she became more confident in what she knew:

As you become more knowledgeable about what you should be doing, and you take those courses and you learn more, you share both ways. So I would take what I learned about TL-DL, and share it down with my colleagues [here], and I would take what they'd learned there and the practical experience and say: 'Here's what we're doing here, in this situation, online.' So it goes both ways really.

Not all study groups were formalized in this way. Perhaps because she was in a less populated part of the province, Lori shared information with her district library coordinator. In essence, the two of them formed their own study group. Again, there was the sense that the information was flowing in both directions:

In my school district, we have a district library coordinator, so she was my sounding board for a lot of things, and now she is taking the Master's program. She's about half way through, so that is neat, and we can share ideas that way. And she was also very helpful in suggesting things to me as well.

Looking at it from the other direction, Jill pointed out how she had been able to pull information from her course and bring it back to her professional learning groups:

We have professional learning groups in our staff, because we have a big staff, there are over sixty teachers. So, we each have professional learning groups of five or six people, and we signed up for what we wanted to sign up for. My group was a professional reading group. So we just wanted to read a variety of things. So when I became involved in those, we had read Don Tapscott's [Growing Up] Digital. In there was a lot about how kids learn now. So, because I was doing the Focus on Inquiry document, and that was what the basis of the course was, I brought that in.

For the students who were able to engage in these types of activities, there were clear benefits. However, as mentioned earlier, Eva felt at a disadvantage in this domain because she resided in a more isolated community. As a result, she did not have access to colleagues who, for example, may be able to help with her cataloguing assignments.

In addition to sharing with their colleagues, these students took material learned in the TL-DL program back to be used with their students. For example, Lori described how she took what she had learned about RefWorks back to her high school students:

We had this Elluminate session where we could hear [the librarian's] voice, we could speak to her in real time, we could watch what she was doing, we could hear about...like she showed us how to use RefWorks, all sorts of things that would have been wonderful in the first courses. And that development in technology and information sharing...it was priceless. The fact that it was taped so that we could go back and check on things, I've used it with my senior high classes a couple of times, to show them how to use things when they go to University. I'm like: 'Hey, this is how you use RefWorks.'

Stacey noted an instance where she was eagerly anticipating a particular course because it would help her teach her students how to search for information effectively:

My next course is on databases, and now I'm really excited about it because, again being in the school, the kids only want to go online. Books are not very interesting to them. But they're not very good at searching either.

Finally, these students also shared information from their courses with their family members. Sharon spoke about how her classmates provided useful resources to help with her daughter's medical condition, while Stacey's growing passion for graphic novels also extended into the family environment:

My sons aren't home any more, and so continuing to talk about it with them and...one of the assignments was looking at a comic to film adaptation. And of course they love all those movies: You know, Batman and Daredevil, so that's something I'm seeing...I'm seeing some of those, but with more educated eyes, and more openness.

In examining who the students were sharing with, it was evident that they were prolific sharers on the whole. That said, there was a student who chose not to share her knowledge around the efficiency of the University Libraries' mail-order system, because it ensured that she was able to get the information she needed when she needed it. As Karen pointed out:

They send them in an envelope and inside the envelope they put a white sticker, that you can put on...just a minute, I'm looking for one for you. Like this. I don't know how well you can see it...it's like this, and it's priority post, and it has the code right there, and you just stick that on the outside of an envelope, you usually put another envelope inside a padded envelope for the book. And

when you're finished with it, you just put in one, two, how many, it doesn't matter how many, and just slap this on and send it off. It is a wonderful system, and I don't think many people know about it, actually. I don't think that a lot of people in the distance learning [program], understand about how that works. I haven't said too much because this way I can get the books I need (laughs), without other people [ordering them]... For example, right now, my text book that I need, this reference skills, I ordered it from the States, and it still hasn't come. And I'm halfway through the course, so I ordered this from the U of A and I am able to use this right now, while I am waiting for mine to come.

However, this comment does not reflect Karen's general attitude towards information sharing; there are certainly many other instances where she happily shared resources with others and could likely still be described as a prolific sharer. It does speak to the fact that people are potentially less inclined to share finite resources (e.g., books).

Considering this section as a whole, it is interesting to observe that the students do not limit their sharing of resources to fellow students, but extend it to their local context. In addition, the students are able to tap into community resources for their personal use. As mentioned earlier, it is important that students realize how valuable the local context can be in supporting their studies. This is consistent with Kazmer's (2005b) earlier discussed theory of community-embedded learning, where students take information to and from the online and local settings. This desire to share information may stem from who they are as professionals (i.e., teachers and librarians typically want to help others), but it could also relate to the fact that the TL-DL culture is one that embraces and encourages sharing.

Key informant Violet observed that the TL-DL culture is not competitive and is collaborative, unlike her own experience with a Master's program:

It would be about, oh if you found the right article it would make a difference to your mark. That wasn't my, that wasn't the way I worked, but I know that was the way other people worked. That's not the case here. Like if you had one article better than someone else, that would not, a better grade make. So I don't see that at all... I see people saying: 'Oh, I found this really interesting article on ProQuest, or I just read this book, or I was just surfing and found this, or this website came across my desk, or did you hear about this professional development opportunity, or I'm taking this, do you want to, we're going to go on this webinar, do you want to be on this webinar.'

Another long-standing member of the TL-DL community, Tish, pointed out that the TL-DL program had been intentionally designed to foster collaboration:

The collaborative piece makes a big difference. And if you look at the change theory stuff, there's a whack of stuff around that stuff, around the importance of collaboration and that too. So it has been foundational, I think, for us. We've tried to model that in our practice, as educators, what we want our students to do; to be able to do in schools.

It is perhaps this design has led to sharing amongst so many different people in the students' lives.

#### *4.5.2 - Tools for Sharing*

In 2004, Robins noted that web boards were a common means of sharing information in the online learning environment. In this study, when the students spoke of the tools they used for sharing information, the classroom forum/web board (within WebCT) was the preferred medium to communicate ideas and share resources. It was readily accessible, they knew how to use it, and their instructors could see that they were actively

sharing information with others. Certainly, Jody and Karen's comments confirmed the forum's dominance in terms of information sharing and echoed the general feeling of the students in the TL-DL program:

Jody: Oh yeah, for sure the discussion boards are the number one thing. We'd post everything.

Karen: The number one way is the discussion board, on each particular course. That is our main way of communicating.

That is not to say that the students were not using other media. Certainly, both email and the telephone were mentioned as tools by which to share information, particularly when they were trying to be more discreet or communicate more efficiently (e.g., when doing group work). This points to the fact that different types of technologies can serve different purposes when sharing information in the online classroom (Haythornthwaite, 2002; Kazmer, 2007). Lori described a situation where the phone was simply the best tool for the job and so that was what they used:

Yeah, the best tool for the job. Saying: 'Ok, you know, I need a PowerPoint for this... We're going to have to actually get on the phone and speak.'

Likewise, Terri mentioned the utility of the telephone or email for group work:

We have had to do group projects with people who you don't get to see face-to-face. So we might set up, I've telephoned before, I've emailed them, I've emailed them directly from my own email account, but also the online system gives email access too.

As mentioned earlier, both the telephone and email do offer these students the capacity to be more discreet in their communications. Email,

in particular was commonly used when the students were trying to be discreet. Eva mentioned the use of email when people were frustrated, but did not want to share their frustrations in a public venue:

When things are not good, then it tends to go through the private, personal mail section [within the online learning environment]. Occasionally people even look up, find where you are and send you something privately through your [personal] email. I've had people do that too.

Jody mentioned a similar situation, where she wanted to let someone know that they had offended her, but did not want to do this in the context of the full class:

There was one course where somebody made a comment that really struck a nerve and I wrote her a separate email and said: 'I don't think that was fair that you said that.' We had a bit of an issue there but...it was small, but...it got resolved, but then less publicly. There was something that she had posted for everybody to see and I took exception to it, and I wrote to her, and said: 'I don't think that was fair.' And she wrote back and said: 'I'm really sorry.' And then she wrote a blanket apology to [the entire class].

Irene mentioned another reason for communicating via email. In certain instances, the information she was putting forth was too personal to share in the wider forum:

And if I need to communicate with someone about questions or whatever, on a more personal nature, I use the mail function that is in the e-learning course, or I use the U of A webmail. Because I think that even if it is a little more personal in nature, I wouldn't feel comfortable putting it in the coffee chat anyway, because everybody is reading it.

As social technologies grow in prevalence, so too does their presence in the online classroom. Wikis, Skype, Facebook, and more were mentioned as tools for sharing information with their classmates.

This is consistent with work by Corbus (2009; see also Baldwin, 2007; Kamel Boulos & Wheelert, 2007), who suggests that web 2.0 tools have important uses in the online/distance learning environment. In the current study, this usage was partially fuelled by a course in social technologies that many of these students had taken, but others came to recognize long-term value of web 2.0 tools for working on collaborative online projects.

Angela describes how Google Docs has been used in the online setting to facilitate the sharing of ideas amongst the students:

The last instructor, it was for the capping paper project, she had us set up Google Doc accounts; Google Docs is neat! So that we could you know, be posting our papers and she had us assigned to groups where you could comment on each other's papers as they were being written, so we were using Google Docs to do that. That was really neat; something else I'd really like to be able to use in school.

Similarly, other students used wikis to collaborate on documents. As Irene pointed out, using this type of technology was particularly valuable when working on group projects across a distance:

Last semester, for a curriculum course, we had to do a collaborative online project. So I worked – I'm in one part of Canada, so I worked with someone in [another part of Canada] and we did a collaborative wiki... And doing the wiki...it was a great collaborative tool, because you can both be writers and post and publish. That is a really good model.

Others saw the value of Facebook for group projects. For Lori, it was a convenient way to send targeted messages:

Say you had a group for an assignment, it was really quite easy to just send out a Facebook message to four people, than to put it on the discussion board and having other people answering. So Facebook actually became quite helpful.

While Skype was certainly not the most common social technology in play, one of the students was a particularly big fan. Karen saw value in its audio capabilities:

I just recently started to invite people to Skype with me. So, I'm planning something with a partner, where instead of writing all of these countless emails, back and forth, it was just easier to have three Skype conversations with people in my class, which I initiated, because I don't learn well unless you can verbalize.

As mentioned, the predominant tool for sharing information was the discussion forum in WebCT. This is perhaps not surprising given that participation marks were often associated with comments made in the forums. Moreover, it was a convenient tool that was integrated directly with the online learning environment. However, there were clearly other things going on in this setting. Certainly, it was heartening to see that students were seeing the value in using different tools for different sharing situations. Haythornthwaite (2002; see also Kazmer, 2007) has noted the value of using multiple communication tools in the online learning environment and even argued that multiple tools have the potential to further enhance feelings of relatedness.

#### *4.5.3 - Types of Information Being Shared*

The type of information that students shared varied. Certainly, academic comments and resources were commonly shared, particularly in the online forums. However, these comments would often extend beyond the purely intellectual and course-related material. Consistent with Kazmer's (2005b) theory of community-embedded learning, professional

and personal information was also commonly shared amongst these students.

In the academic realm, it was common for these students to share information resources amongst themselves, with journal articles or web links being the most commonly shared. As Angela pointed out:

Or people would recommend authors, or readings, or books, or 'Have you seen so-and-so's website?'... Or people would post links to articles and websites that went beyond the class readings.

Lori mentioned this type of information sharing as well, but on a more intimate level. For Lori, there was one really good friend within the program and they looked out for each other; as they would encounter information (see Erdelez, 1999, 2005), they would then pass that information along:

And then, one of my TL-DL colleagues and I would sort of keep each other's topics in mind as we were looking for things for ourselves; and a lot of emailing back and forth saying: 'Hey, I found this article, what do you think?'

Meanwhile, Terri spoke to the generosity of these students more generally:

They're all very generous, so you just know that you can make a difference by sharing some of your experiences and information with them. It is amazing, someone will say: 'Oh you're really interested in that, I know this really great website; you should go to it.' Even though it was just something that they caught from reading your response. So that is excellent.

The students would also share audiovisual clips with one another. Video clips were mentioned as being useful for demonstration purposes. Jill pointed out how she has provided this type of information to others:

If there is a really good YouTube video or a video online that demonstrates something, I put that on there.

Similarly, Stacey also pointed to a particularly useful set of videos that other students shared with her:

Sometimes it was links to other things; there were a bunch of little YouTube videos... they're very funny, but they are really clear.

In the same realm as videos, some students would also share other types of information technology with one another. Terri mentioned a specific example of an assistive technology tool that was suggested to her when she asked what others were using in their libraries:

Somebody let me know that this is a particular tool that they use in assistive technology: 'You might go out and use that.'

Related to this last point is the fact that this group was comprised of professionals who had often been working in a related field for a number of years. As a result, they shared their professional stories, pulling these experiences into the online classes. A number of the interviewees acknowledged that being able to learn from such a wide range of professionals scattered across the globe was particularly enlightening, especially given that they were often the only teacher-librarian in their school or even community. The students in Kazmer's (2005b) study also noted the opportunity inherent in being able to communicate with individuals in the same profession. In this study, the TL-DL students reflected that online learning had something unique to offer in this respect. Karrie, for example, described how their professional world could be incorporated into their assignments:

So lots of times, we're asked to, like in our last assignment, we had to give a description of our school and the makeup of it. In previous assignments, we've looked at our own libraries and ways that we could improve them. So in that sense, we're often bringing our outside world into our class, and discussing that and issues that we're concerned about, or things that are positive that are happening, or we think is happening in our libraries. So we share a lot of what is going on in our outside world in the discussion.

Lynn suggested that this professional sharing of information occurred more organically as well. Many of these students asked and responded to each other's queries outside the context of their assignments. Lynn observed:

People were just...I guess because we were all similar professionals as well, we're doing a lot of similar things, there was a lot of sharing and asking questions and wondering what they were doing with this and that.

Likewise, Michelle pointed to the unique opportunity provided by the online classroom in learning about the experiences of professionals from across the country:

There were one or two people from Europe and various places in the online community, but for the most part, the people in the online community range from Ontario to British Columbia. And there is a vast array of different levels of what we do as educators in each of those provinces, so I think what is different with doing it online is that you're hearing about Ontario, and Manitoba, and Saskatchewan, and Alberta, and BC. Whereas if you're doing an in-person class, I'm hearing maybe the local kind of thing. But I'm certainly not hearing what is happening across the country. I think that is the part that made [online learning] a) valuable, and b) different.

The information being shared was not limited to their roles as students, teachers, librarians, or teacher-librarians. Indeed, they often shared personal details with one another, with the postulation that getting

to know one another personally made it easier to share the academic information. Program coordinators and instructors helped to encourage this information sharing by 1) creating a section of the WebCT environment called coffee talk, where students could freely share academic information without worry of disrupting the academic conversation in the regular forum; and 2) by actively encouraging introductions and in some case photographs at the beginning of each course. Angela provided a good overview of this personal sharing of information:

So the instructors would always set up, like I said, this coffee break section on the discussion board, and that was probably the liveliest session. People would post pictures of themselves, their trip, or [note]: 'can't believe your baby is two now, he was just born last time we met.' It really created a sense of community.

Karen, pointed in particular to the value of personal introductions at the outset of each course:

I think it is always nice when your instructors start out with something of a more personal nature, just so you get to know people. The introductions are important to me, and I think using the first week to do that, to establish who you are interacting with, is good.

Like the people with whom the students shared information, the type of information shared was quite diverse and typically spanned all corners of the students' lives. This again suggests a commitment to the general philosophy of sharing, rather than hoarding information. It also suggests that these students see value in sharing information that comes from outside the academic context (e.g., teaching experiences), as well as

taking their academic information out into their local contexts (e.g., technologies to be used with students in their schools) (see Kazmer, 2005b; Haythornthwaite et al., 2007).

#### *4.5.4- Information Overload*

Like in the seeking context, information overload was perceived to be a problem for people sharing information and for the people with whom information was being shared. A number of individuals were prolific posters in the online classroom and this led to some students being overwhelmed by the sheer volume of information being shared. As a new student, Jill certainly found this challenging:

Except sometimes, if you don't...sometimes you'll go on every single day, and there won't be anything. And if you miss one day, you go on and there are fifty (laughs)! But that is not, that's just, you know, the way it is...I don't know if that is an annoyance or just a...like sometimes, you can get overwhelmed. Like if I had been really, really busy, and I can only go on the next morning, and there is so much to read. You think: 'Oh my goodness, I'm never going to get through all of this and participate in every conversation.' I guess it is learning to prioritize. But I'm sure that the more courses that I take, the better I'll get at it.

However, this feeling of being overwhelmed was definitely not specific to newer students. Karen, who was midway through her program, also found that the amount of information shared in the program could be overwhelming. Although, she does point out that this problem was related to a specific course:

And the discussion board, for that one course, is really the only one, I must say, that was [too much]. I think that happened because the instructor made such a point of saying that discussion comments are going to be marked, and here is the criteria, and blah, blah, blah, and set it up that way. And then, when we got into

another project later, where people were sharing these wikis that we had created, the conversations that were going back and forth, the discussions and everything, just took hours of time; every evening. It was just horrible.

It was also the case that students could be overloaded with irrelevant information. Eva pointed out that she became frustrated with the amount of personal information that seeped into the classroom:

Most of the instructors just let them go on, and on, and on. That is a bit frustrating because when you're reading through all of the discussion threads, then it starts talking about what time their babies are crying till and what night, and they're going back and forth and back and forth. You know, I don't care. That is nice that their babies are up all night. I've been there, I've done it before, but I don't care when we're talking about the importance of playing cards in math; that's not the right place. So I agree with the instructors that say: 'Stick that down in coffee talk, that way you can talk to your heart's content.'

The students were also unsure how much and what type of information had to be shared. This too could lead to over- or under-posting. Eva ran into this situation when she was told that she shared too much information and got marked down for it as a result:

I was doing everything she said that [should be done]...she gave me a really low mark and said that I posted way too many times. Said my comments were kind of like 'I agree' sort of comments... I looked back and I re-read them all and I didn't see anything like that. So that dropped my mark to an A minus in that course, and I thought I should have had an A plus, but anyway.

Terri also pointed out that a lack of clarity on the appropriate amount of information to post led to strife within the classroom:

One instructor did evaluate how we felt about what we had done on the discussion board, and we had to back it up. Then when she gave us that mark, she would justify why she gave that mark, but one thing that came up was that some people had been on the discussion board too frequently. Yet she had not said that she was

giving a certain number of entries or anything. So she did back down from that. I think someone must have said to her: 'You never said that we should only be on 18 times or 10 times.' She hadn't given a limit. But she was concerned that some people were just constantly going on and sometimes they would say just a couple of sentences and then, it wasn't anything of any great substance to it. So I think that was probably what she was trying to get at. Some people were concerned, those like myself, who don't go on constantly, I never said anything because I wasn't that concerned, I just knew that I wasn't going to get involved in that. But I think that there were people who felt guilty that they weren't going on as much as student B, who's been going on it all the time; always seemed to have something to say to everyone. So they were feeling guilty about it, so I think this was the way the instructor was trying to find that kind of a balance. I think that is something that they just need to make clear when they give the instructions and the introduction at the course in the first place; when they introduce themselves and the expectations of that particular course. Is maybe make some kind of general comment about: 'Make sure that you remain focused on the topic and don't feel that you have to respond to every person in your class.' So some instructors had said that, but they've not necessarily said how frequently.

Terri's comment helps summarize what can be drawn from this theme. Essentially, instructors need to offer guidance both in how much information should be posted and how to deal with the information coming in. Providing guidelines in this way will help create a more functional sharing environment, where people know what they are expected to share. Guidelines may also help students understand how to manage their time with respect to the posted comments, which Vonderwell and Zachariah (2005) have observed is important to reduce feelings of overload as the online course progresses. Although, as Karen pointed out, the students must also make good decisions about how much to share, which can help reduce the overload felt by others:

I gave a brief synopsis of what it is; what the article was about and how it could help them, and just put a hyperlink in there and just sent it off. I try not to do that too much, because I don't want to overwhelm them. But when I come across something really good, I try to share it with other people.

#### 4.6 Research Question 2b – Motivation for Information Sharing

##### Behaviours

What motivates students to engage (or not engage) in information sharing behaviours in web-based classrooms? Similar to understanding what drives information seeking behaviours, it was also important to understand what drives students to share information with others. That is, what makes them venture beyond their own personal information needs and share that information with other students, family members, colleagues, and beyond? Sharing may occur on a one-to-one basis, but may also reflect the contributions that student make to the WebCT online forum. This last point is an important consideration, given that other students actively mine the forum archives for relevant information. In this section, the motivation for information sharing will be discussed in the context of 1) a desire to help; 2) comfort; 3) time factors; 4) impression management; 5) personal and professional relevance; and 6) a culture of sharing.

###### *4.6.1 – Desire to Help*

When queried as to why they shared information with others, many students viewed it as a desire to be helpful. Interestingly, many of those who expressed this desire to help, point to it as part of their professional

identity. Urquhart & Rowley (2007, p. 1192) observed that disciplinary differences can shape information behaviours. This could be considered relevant here in that the students in this study were enrolled in a program (discipline), where helping others was a key part of their present and future professional identity. Certainly, both teaching and librarianship can be considered helping professions (Eichhorn, 2009; Mitchell, 2006). It is also possible that people become teachers and librarians due to their desire to help others and therefore this helpfulness extends quite readily into their roles as online learners.

For Karen, it was about helping her fellow students. To that end, she used the serendipitous location of information for both herself, as well as others (see Erdelez, 1999). Interestingly, Karen did this discreetly to let her classmates know that she was helping them and not just after participation marks:

Sometimes I might come across something that I know someone is doing a unit on. You know how you stumble upon something? So then I'll fire them off an email. Usually, I do that so that the instructor doesn't know that I've done it. I do it under the table. Like: 'Hey, I found this great thing, it's just what you need.' And then send that to them, just to sort of help them like we're all in this together, sort of thing.

In a similar vein, Gracie also sought to help others by sharing relevant resources. For her, it was an awareness that some of her fellow "human beings" might need a little help and she could help them succeed:

[It's] a bit of just trying to help somebody out...you have to help out your fellow human being to do well.

Eva also wanted to help others by sharing what she knew and was learning; but in particular, she wanted to help those with whom she worked. She does not see the point of hoarding information when it could be used to help others:

What is the point of taking all of these courses, what is the point of just improving yourself? Why not make things better for the children and the staff and share. So that is what I do.

Like Eva, Jill also took the information she had learned and passed that on to her own students. For her, it was important to take what she had learned and apply it:

Well, when students come in to do a research, now I can sit down and I can say: 'This is why we're doing it'. I can say: 'Well before you even start, let's come up with some key questions that are going to guide your research, and how do you make those key questions.' I find that I do a lot more teaching. Instead of just saying: 'Here is the information, here is a pathfinder, there you go'... More skill-based instead of just finding the information. Yeah, teaching the kids how to find. And I do a lot more in-servicing with the teachers than I was doing before. And I think that has to do with confidence.

Lori reflected that her desire to share information with others was a part of her professional identity as a librarian:

If you have information and somebody else can benefit, you might as well share it with someone. Like, hoarding information is not something that we, as librarians, do.

This rationale for why they share was echoed by numerous other students, including Angela:

I think it is part of that whole library personality thing. That tends to be my bent anyway. I'm forever recommending books, websites, articles to people, whether or not they ask me. Because I've done a lot of work with libraries and developmentally disabled students, I get people from our boards and other boards contacting me about

that. It's always been my bent. I enjoy searching for information and then being able to share it with other people. I tend to lend my books...I think it is part of that library personality thing; if you're not interested in finding and sharing, then a library is probably not the place for you.

Terri made similar comments about how sharing information was linked to her professional identity, but for her it was about her role as a teacher.

I think that we just, well, we need to, we don't have that classroom setting, a physical classroom setting to talk about different ideas and resources. So we do that online with one another, to support one another's learning. Just knowing that for some people, they just don't have accessibility to a lot of resources. Being just very much aware of this, we want to help one another out, and you don't feel, it's not a competition so everybody just really wants to help each other; they're very generous. I think a lot of online learners are, especially to be in this program, you have to have been teaching for a few years and so they are very mature and professional, so they do want to support each other. That's part of being a teacher.

On the whole, these comments describe an online learning community, where there is a genuine desire for the students to help one another out. From the research literature, Lin (2007) also found that individuals share information to be helpful. In the current research study, the students' remarks indicate that they share information because of a common identity as teachers and/or librarians. For online learning educators, this suggests that they may be able enhance the amount of sharing between students by showing them their common connection. As Karen pointed out, it may be as simple as demonstrating to these students that they are all in the same boat and can help each other out. Fostering relatedness in the online classroom could then have the added benefit of enhanced information sharing (Haythornthwaite, 2002).

#### 4.6.2 – *Comfort*

Not surprisingly, students were more likely to share if they felt comfortable sharing that information (both with eachother and their work colleagues). This often related to them becoming more confident and comfortable with their own knowledge as the program and/or courses progressed.

Sharing Professional Knowledge. Michelle discussed her comfort with information sharing in the context of her professional role. As she moved through the TL-DL program, she became more confident and comfortable sharing information with her work colleagues:

I didn't feel I had any information to share when I started and now, at the end of the classes, I recognize that I did know something. More to the point now, as a teacher-librarian in my collegial professional situation that I'm in now, I feel really confident in knowing that I have a good background to speak to what...information literacy is, but even probably more importantly, at this stage in my life, is as a professional educator, I feel way more confident in knowing how it is that we're helping kids. I think that taking the time to use my quest for learning in that way was probably really important. I feel that I share...I feel that I'm able to converse more as an educator and certainly share ideas more with my colleagues.

Donna made a similar point, noting that her coursework has enabled her to converse with her colleagues on issues that she previously had little time to investigate:

I've experienced, I think, a lot of professional growth and confidence. Because within...when you're doing coursework, you have to do these readings. And in day-to-day work, you don't...there's not time to do that. So that is one reason why I wanted to continue on with this program at this stage in my career. Because I wanted to know what was going on in my field, and I wanted to be able to do the readings and read the new research,

and find out what was happening. Especially because...it is pivotal for our kids to learn how to survive in this information rich world. So I'm excited about what I'm doing. So I would be...what I'm saying to you is the kinds of things that I would be talking about with my colleagues about also.

Contributing to the Class Discussion. Other students spoke specifically to sharing information in the online forum. Karrie, for example, lacked confidence at the beginning of her courses. However, as the program advanced, her confidence increased and as such, she felt more comfortable sharing:

I might be more willing now to give my opinion. Where when I first started, I might have held back, because I felt uncertain, and unsure, and maybe a little overwhelmed by the material we were learning, and maybe felt like I didn't have as much to add. I think too, that I've gained a little bit more self confidence in myself, and thought: my opinion is important too and you can share what you think as well. So I think that I'm willing to put myself out there.

Given that the students were able to search the forums for earlier conversations, it was important that the students felt comfortable enough to share their comments in this online setting. As mentioned earlier, the forum archives are a valued source of information for many of these students. The students' level of comfort also related to the fact that they were online and this made it easier for all voices to be heard. This was unlike the traditional classroom, where perhaps only those who were bold or thought quickly on their feet would speak out. Online, people could take their time to respond to the comments and queries of others. Gracie made this point quite eloquently:

I'm more an introvert. What I really appreciated ...was the equal voice that you have online. In a [face-to-face] class of twelve or

thirty or whatever your class is, it is those people who are more extroverted who volunteer their opinions, and they're probably wonderful opinions, but by the time...you feel comfortable as an introvert to express your view or input to it, the conversation is kind of almost winding down at that point. But online you don't know who your introvert and extrovert are, so everybody's voice is equal. So you have the time to gather your thoughts and put them in a logical order or refine them or revise them before you post them, or that sort of thing. So that...the depths of a person's thoughts...the care that they give their thoughts is apparent, rather than just the verbal expression of the... person who expresses themselves well, quickly, in the classroom.

Angela provided a similar point of view, comparing how she believes she would share information in the face-to-face setting, as compared with the online environment:

I found it easier. I'm not the most social of people, I'm not comfortable in crowds, so in a face-to-face class I'd probably be the quiet one. But I was actually more comfortable online, and I actually felt that there was a greater sense of community online than in face-to-face.

These responses suggest that if distance learning instructors hope to establish active sharing communities, that they must strive to make the students comfortable in the online setting. In part, this can be facilitated by building trust in the online setting. As Haythornthwaite et al. (2000; see also Hew & Hara, 2007) observed, information sharing comes more easily in environments where students trust one another. In essence, this trust-building enables students to become more comfortable sharing information, particularly in online forums. Related to this, it is also important for the students to get to know one another, so that they are comfortable sharing information with one another. To that end, the instructor could encourage students to introduce themselves to one

another at the beginning of the course and encourage personal, professional, and academic dialogue as the course progresses. This model seemed to have worked well in the TL-DL program. Moreover, Haythornthwaite (2002) has noted that stronger interpersonal bonds are important for enhanced information sharing in the online setting. In addition, instructor feedback may have the advantageous effect of bolstering the students' confidence and comfort-level as the course progresses (Deci & Ryan, 1985). As illustrated by the students' comments, this may encourage them to share resources both within and outside the online learning environment. Certainly, Faux and Black-Hughes (2000) have argued in favour of instructor feedback in the online classroom.

#### *4.6.3 – Time*

Connected to the themes of 1) a desire to help; and 2) comfort, is the issue of time. The students were aware that enrollees in the TL-DL program were busy (i.e., time-deficient) and so it was quite helpful to share what they could. As well, the fluidity of time in the online classroom made it easier to share. Students were able to make comments on their own schedule, whether at 2pm in the afternoon or 3am in the morning. Moreover, as mentioned previously, the students could take the time to edit their comments until they were comfortable sharing that piece of information. Lynn was an excellent example of someone who shared

information because she realized that others in the program are equally busy:

A lot of us were doing research in sometimes similar, but usually very different areas, so if we stumbled across things, we were often thinking of other people's projects. We often had to read other people's work and respond to it, so you kind of got to know what everybody was working on. So you just wanted to help people out if you came across information that was useful to them. We were all working; a lot of us parents as well, and our time is at a premium...you don't have a lot of it. So you just want to help each other get through.

Lori in turn expressed her gratitude at being provided with relevant information by her fellow students. Lori was a busy parent and so benevolent sharing was extremely helpful to her:

Well in every course, she and I took almost every course together, and she'd be like 'Hey Lori, I discovered this, what do you think?' I'm like: 'Great, I don't have to look for it.'

Donna also made the point that the students were all busy people and that this influenced the type of information that she and others tended to share:

For the most part, it is on the online discussion groups and Blackboard. I mean, it is course-related for the most part. I mean, that is what we're there for, that's what the work part is. I mean, you certainly learn other people's viewpoints, on issues related to the topic. There is some...most instructors put up sort of a coffee talk or more of an informal chat place. It just depends on the group, how much that gets used. I think it also has to do with how busy people are too. If you're trying to work full-time and then do a course (laughs). You're going to be doing the course.

Related to Donna's point, Hew and Hara (2007) have observed that students may share less information when they are pressed for time. For these students, time-deprivation may have influenced the amount of personal information they were sharing.

The fluidity of time in the online setting enabled these busy students to post and share information at their leisure, which was certainly helpful. Michelle made the following point in that regard:

You do it in your time and the time that works for you, whereas when you're in a face-to-face class, you are confined to that three and a half hours, or whatever it is, to do that conversing. Whereas with online, the conversing happens 24/7. You can see when people are doing some of their postings... You can tell that people are working at different times and different spaces, and different spaces in life too.

Jill pointed out that that this flexibility of time also helped overcome geographic challenges as well. Because the courses were online, she could go on with other life events and still be an active participant in the classroom:

I remember the first time I got [a group assignment], I thought: how the heck are we suppose to have a group assignment when [we're so geographically spread out]. I couldn't believe how well it worked in the end... Yeah, we just got together... [With one group project], I was going [away] for spring break, but that's the beauty of the online thing, you can do it from anywhere. We just had to coordinate our times.

The fluid nature of time in the online setting was also helpful because, unlike in a conventional classroom, the students did not have to respond immediately. That is, they could take the time to collect their thoughts.

Karrie observed:

In an online setting, you get a little bit more time to think about your answers. So someone could raise the question, and some days I don't think very well, and I think: 'You know, I'm going to leave that right now and come back to it the next day.' And it is easier to respond to. Where with face-to-face, you've got now, or you've got never right? So it's instant right? So that is one of the benefits of an online classroom; you have that thinking time.

Angela built on this point further, pointing to the virtue of being able to build on ideas and conversations over the course of a few days:

I would share if I would come across anything interesting, or websites, or if somebody posted a question, if it was something that I knew about I would try to get back to it. I found myself sharing a lot more online than I probably would have in person...Because you didn't have to be right there. You could read the question, think about it and go back the next day with an answer or a comment. Whereas in a face-to-face class, if you don't participate when the conversation is going on, then it has moved on. You can't really go back to it. I like that about the online courses; the chats were all saved so you could go back and respond to something that was said the day before. You know, build on things... So I found that conversations actually went on for longer and got deeper than I think they would have in person. Because there wasn't this pressure to reply immediately, or the opportunity is gone. People could read the post, go away and think about it, reply, or come back the next day, or come back the next day with more. Some of the conversations went on for quite a while.

In sum, one key advantage of the online setting is the flexibility of time. Students can send each other resources at all hours of the day, they can take time to construct their responses to a query, and they can extend a conversation outside the normal classroom parameters. This finding resonates with Kazmer's (2007) observation that asynchronous communication provides students with the needed flexibility to share with others in the online classroom. Certainly this is very important for students who are trying to work and do courses at the same time, not to mention take care of their family.

#### *4.6.4 - Impression Management*

There was also a sense that students were sharing information (or not) because of the impression that it made on others. For some, it

helped them to bolster their academic image if they could post intellectual comments. This is suggestive of individuals who are partially motivated by performance goals, where they seek to illustrate their own prowess over others. (Maehr & McInerney, 2004, pp. 72-73). Gracie pointed out that her desire to "look good" was part of being at the Master's level:

There is a certain competition for grades, because it is the University Master's program... So you just want to look good, so you just share something that you know, before somebody else shares something, you know? And hope that there is a little difference in the mark you know?

In addition, Karen initially felt that she needed a thesaurus at her side in order to achieve an intellectual effect, while Lynn pointed out how valuable it can be to edit your comments before posting them:

Karen: When I first started typing in online discussions, I had my thesaurus beside me, because I found that I just didn't have the jargon or the language that makes the academic impression online. As I'm going along, that part is becoming more comfortable.

Lynn: I found that if you typed something quickly and then read it, you might say: 'Oh, I don't sound as smart as I'd like, so let's edit a little bit (laugh).'

Some students found that "peacocking" behavior could have a negative influence on the classroom climate. Certainly, Karen found this to be a particularly frustrating experience in one of her courses:

There was one course that I took, where I just hated the discussions...because it turned into one of these, 'my response is more insightful than yours, type of thing'... When I wrote a comment down, somebody else would immediately pounce on that and say: 'Well, what about this?'; or 'How have you taken it to this?'; or 'What are the implications for that?', and asked you a question, where it really wasn't where you wanted to go.

In contrast, some students were not as initially confident; as a result, it took them some time to feel comfortable sharing information online. They did not want people to view them as unintelligent or unaware. This is consistent with the findings of Hersberger et al. (2005; see also Chatman, 1992), who have observed that individuals with lower self-esteem tend to share information less. In this study, while it was acknowledged that the students gained insights from their classmates, many struggled with the vulnerability they felt in putting themselves out there. As a result, students in the early stages would often be more reticent about posting comments, until they became more confident about what they had to offer. For Michelle, a part of this struggle was the fact that she had been out of school for thirty years. She needed time to adapt:

Remembering that I had been out of school for nigh on to thirty years, I found it really intimidating at first, because I didn't know what these guys knew, and couldn't pull it off the top of my head, and I had to think really hard about what it was they were talking about. I mean it was the learning curve again. What is it that they were talking about and how do I respond to that. And over time, I realized that I did know what they were talking about and could respond because of that.

Stacey made the point that sharing her coursework online was quite stressful. She struggled with the idea that others would see work that she herself viewed as less than perfect:

Actually the other thing that I'll do sometimes, I remember doing this with information technology course, is looking up my classmate's stuff. Actually that was something that really freaked me out a little bit at first. You know, everyone sees your stuff. Because maybe because I'm a perfectionist, but not really good

enough to be a perfectionist. I think that is probably my hang up. So it unnerved me a little bit that others were going to see my, not very pretty wiki, or whatever.

Related to Stacey's comment, the online learning environment could lead to discomfort for some because they were concerned about privacy.

Karen noted:

I find it hard to put my personal thoughts and ideas out there, in the internet. I mean everything that goes onto the internet, stays on the internet, and I really have trouble with that. I can't say that I really like that. And when I am writing things, I always am thinking, who will read this? Will my principal be reading this? All you have to do is search [my name] and my blog will come up. So I feel that it restricts my comments and my honesty and stuff.

Taken together, these comments suggest that these students do care what their peers think and that this is an important part of the online learning experience. Early guidance on appropriate posting of information, as well as advice to alleviate the nervousness associated with posting written information online could enhance and bolster the sharing of information in the online setting. The instructor as classroom moderator has an important role to play in this regard (Marks, Sibley, & Arbaugh, 2005; Robins, 2004; Volery & Lord, 2000).

#### *4.6.5 – Personal and Professional Relevance*

The idea of relevance manifested itself in three different ways. First, the students were learning information that was relevant to their professional role and hence they were able to take this information back to their colleagues and students. Second, the students were immersed in an online environment with other teacher-librarians. Because teacher-

librarians do not often have colleagues within the same school or even district, this situation provided them with the opportunity to share relevant materials with individuals who understood their professional mandate. Kazmer's (2005b) discussion of community-embedded learning suggests that these can be key advantages in the online learning environment. Indeed, Fusco and Schlager (2003) have noted that a connection with one's local experience is key to bolstering the success of a community of practice. Finally, these students explored topics relevant to their family and members of their local community. This enabled them to share information with people outside of their academic and professional context.

When sharing outside the online classroom context, these students were often motivated to share information because they viewed it as part of their professional role. Because this was a professionally-oriented program, these students were enrolled in these courses to improve their skills as teacher-librarians. Hence, it made sense for them to take relevant information from the online learning environment and bring it into their schools/libraries. Lynn described the information technology tools that she brought back into her school from her experience in the TL-DL program:

A lot of what I focused on was instructional technology and at the beginning of the Master's program, I could do a PowerPoint, and I was pretty proficient at Word, and your basic Windows applications. But by the end I was blogging, and wikiing, and I was belonging to a bunch of Ning groups, and different stuff. And at school, I started building wikis with students. I guess midway through my program, I

developed my own library websites, I was using FrontPage, and of course as part of the online program, you have to find different ways to present, so there were a lot of PowerPoint's, and different things like that; so just becoming proficient in all of those things, and then taking that to school, and providing some in-service for my own staff on how to use some of these tools, and using these tools with my students.

Within the online learning environment, these students had the opportunity to share their own professional expertise with co-members of their profession. Gracie pointed out how relevant, professionally-oriented information was willingly shared amongst students in the TL-DL program. She described coursework related to Gardner's multiple intelligence theory to make her point:

And if you're looking to improve your literacy levels in your school, and you want to incorporate Gardner's multiple intelligences, then you look at your library. And what you do, or what you could do, to meet the different ways that people learn, and you could demonstrate that. So then, as an online class, you can either strategize, or share your success, or 'here's what I'm going to do differently, or I'm going to try this arrangement because, or I'm going to make my chairs lower or higher, or I'm going to put this poster on this wall, or I'm going to do this display differently.' And you have a common interest, because...most people work in a library, so you have a frame of reference there. And a lot of it is sharing your successes, I guess, as well as: 'well I did that in my last school, have you tried this?' And that expertise is there and very willing to be shared.

Jill also observed how the students' experiences as teacher-librarians motivated them to share with one another and shaped the type of information that they shared:

We're sharing because it is collaborative. It's not: 'I can do this too.' It's: 'Here is something you might find useful in your class.' Because they'll ask questions and stuff, or I'll ask questions, and I'll find stuff too. They go beyond just the course. Because one of the teachers, one of the teacher-librarians needs to do presentations to

the school board on why they still need teacher-librarians. So she had emailed us and said: 'Can you give me some information? What reading would you take?' So we all replied back. So that goes beyond the course itself.

Similarly, Lynn also noted how information was shared between these professionals, across varying levels of experience:

[In the TL-DL program, there were] different people with different levels of experience in the position as well, so if you were really new and there were other people with more experience, and there was a lot of questions: 'How do you do that, and what do you think about this, and my staff is wondering about certain things, and I don't know what to tell them, and what do you do?' Yeah, just a lot of sharing and advice.

In Donna's comment below, she had taken the information that she had learned back to her classroom, but was also thrilled to be able to communicate with likeminded professionals:

I really appreciate when people...like I say, that Dewey Decimal [video] clip was...I mean that was so wonderful, and the kids enjoyed it. I mean, you get such good ideas from people, because they are interested in the same things as you. You're working in the same field, and usually in a school, you're the only one of them. So to have other people who are keenly interested in reading children's books, and referrals like: 'Have you read such and such?' I mean that is just great!

While the quotes above have focused on the students' professional context, there were certainly also cases where students were sharing information with both their family and members of their immediate community. For example, in an earlier quote, Eva described how she used her course in inquiry-based learning to explore the significance of a local disaster on her community. Her students were involved and the community recognized the importance of the work she had completed on

their behalf, noting her contributions with a formal award. In another instance, Stacey spoke about how she shared the topic of her assignment with her kids and then allowed them to reflect on it, in this case incorporating them into the actual assignment:

Well, I guess because I'm so devoted to my family; I just enjoy them so much...when I did a podcast, I had my three kids talking about video games. And it was great! It was probably one of the best things that I did. And Tom helped me with the technology piece of that, it would take some effort for me to do a podcast on my own, I think. But interviewing them about that brought them into what I was doing, and they liked that a lot.

In essence, information sharing has the potential to be enhanced if instructors are able to highlight how the classroom material can be moved outside of that context and used in other aspects of the students' life (see Haythornthwaite et al., 2007; Kazmer, 2005b). Moreover, and as mentioned earlier, if instructors are able to highlight commonalities amongst the students (e.g., professional interests), this should create additional sharing opportunities.

#### *4.6.6 – Culture of Sharing*

It was acknowledged by many of the students that there seemed to be a culture of sharing and collaboration inherent in the TL-DL program. Thus, they were motivated to share information with others because it seemed natural to share in this type of environment. Interestingly, the act of sharing can actually help to build the sense of community itself and facilitate further sharing of information (Hersberger et al., 2005). The

collaborative culture in the TL-DL environment has developed in a number of ways.

First, there was a sense that the instructors generally encouraged information sharing and that students were not expected to “go it alone”, speaking again to the role that the instructor has to play in moderating the discussion and setting the tone for information exchange (Marks, Sibley, & Arbaugh, 2005; Robins, 2004; Volery & Lord, 2000). As Karen pointed out, the instructors helped validate that it was okay to have these information exchanges:

I would say that instructors certainly do set the tone, and it is important. I really like it when an instructor dives into a conversation. And says things that validate that it is ok to have these exchanges back and forth. Like, when I made that comment to that one girl and [the instructor] came back and said: ‘I fully support everything she says, and blah, blah, blah’. That then empowers other people to make similar comments online. I think that the instructors do have an important role, because they do set the tone of how those conversations are going to be going in amongst people, and what information you can share.

The instructors also provided opportunities for students to share personal details with one another (e.g., in a section of the website called coffee talk or through the course introductions). They sanctioned the sharing of information in this way. Gracie noted:

Most of them set up a little discussion board that they called coffee shop, or something like that. You could say: ‘This has been the week from hell’, or ‘I’ve just had the most fantastic experience’; whatever you wanted to say there. And not detract from the business of the course. But it had its own community, so you could share. So if somebody said: ‘My Mom just died’ or something, you had everybody’s email and you could just email them privately or you could post it publicly or whatever you felt comfortable with.

Second, many of the instructors modeled information sharing, by also providing information and resources, academic and otherwise. This speaks, in part, to Selim's (2007; see also, Mazzolini & Madison, 2007) point that instructors need to interact with their students. In the TL-DL setting, the instructor helped students feel more comfortable sharing information with others by sharing information and resources themselves.

As Angela pointed out:

The instructors also shared a lot of information themselves. Like their families, trips, and they would also share a lot of information not simply related to the class, like if they found a good article, or a good website, or they come across a good book. So they were also doing it. Basically, everyone in the courses tended to be real library-oriented people, well teacher-types too; finding things and sharing them. Because the instructors were doing that, we were, I think we were free-er to do it ourselves.

Jill made a similar point with respect to how information sharing was modeled by the instructors:

I guess, because she'll say something like: 'This is a really good reading, and you should read this'. Then we'll read it, and somebody else will add to it saying: 'Well this is a really good reading and this adds to that.'

Third, in some respects, information sharing was mandated. Early on, and as mentioned in the section on impression management, students had to become comfortable putting themselves out there and sharing their assignments. Jody made the point that this can be initially daunting but that you do adapt:

It was a bit weird at the beginning to be posting unmarked assignments for everybody to see, I felt very vulnerable; especially the very beginning. We'd post our documents, and attach things and post them up there... But I was always a bit worried about

what they would think of mine. It got better obviously, but I just remember the very first courses I thought: '(gasp) I don't know what I'm doing, I can't believe I have to put this up there for everybody to see!' Then I thought...I remember my mom, when I was a kid, saying: 'Nobody else cares! It's ok, they're not all worried about you.' She didn't say that to me about those courses, but that is what came to mind later on.

Fourth, the students themselves modeled good information sharing. Because others were actively sharing, it helped build a snowball sharing effect. Angela made this point quite nicely:

The classes tended to be quite collegial and there was a real feeling of community. So you felt connected to these people, they were also sharing. People would get back to you and say thanks for that and say: 'Oh by the way, that is really neat, have you seen this?' So the sharing was welcomed and supportive. So that encouraged all of us to share more. You kind of build on each other.

Donna also pointed out that the students were always there to share with one another. Helping one another was considered a part of the TL-DL environment:

Everyone just sort of helps one another. If somebody can't find something, then somebody helps them find it. I was even thinking, we were writing annotations for one course, and somebody said: 'I found this really neat description on how to do them, and go and look here.' People are always providing information that is, of course, related to the course, but quite often related to our work experiences and things like that. Of course, a year ago, I was...I was trying to do something on Dewey Decimal, for primary kids, just to give them an introduction. Like how you find your way around the library and it's the book's address. Somebody in my course said to me: 'have you seen this little video clip that you can download, I think from the Library of Congress?' Well that was perfect! It was stuff like that is great eh?

Moreover, they also had respect for one another, with the environment being more collaborative than competitive. Hence, sharing was easier

because the students did not feel like they were going to be humiliated whenever they put themselves out there and made a comment or suggestions. Gracie pointed out that someone in the TL-DL setting (i.e., a student or instructor) was always willing to validate what was being said:

I think your opinion is respected. There is usually somebody in the class who is very validating, no matter what it is, so that's the good word about it. So, you feel good you know?

Furthermore, Angela noted that people were sensitive to the comments made by others and if they were going to say something contentious, they would couch it appropriately, so as not to offend:

I think people really did care about each other. I think it did influence what was shared and how it was shared, like the care and the concern. People were very careful, if they did post something that they thought might be controversial, they were very careful about how they did it. Or they would say up front: I realize this might be controversial, but here is what I'm trying to say. That sort of thing.

As reflected in the above comments, the TL-DL environment evoked a culture of sharing. While the instructor may have been the catalyst for building this culture initially, it was often through the efforts of the students that this culture of collaboration was maintained. As Leimeister et al. (2008) observed, the individuals who contribute most actively to an online group often feel the most supported by the interactions taking place. It certainly speaks to the advantages of fostering a culture of relatedness (Deci & Ryan, 1985; Haythornthwaite et al., 2000, 2007), where students have the opportunity to learn from one another (Green, 2006; Stewart, Uth, & Wastaway, 2004).

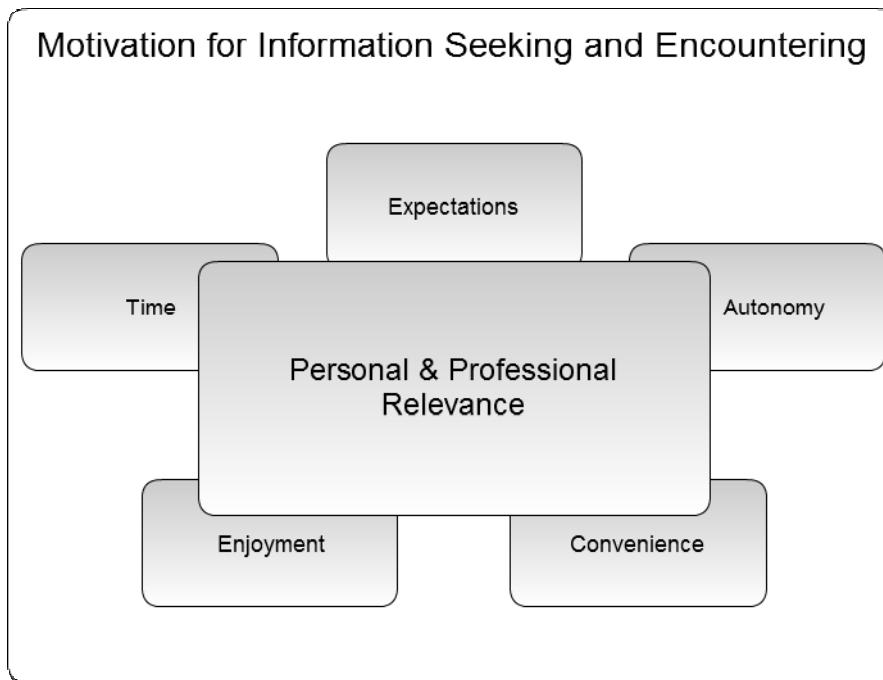
#### 4.7 Research Question 3 – A Grounded Theory of Information Seeking and Sharing Behaviours

Can a theoretical model of students' motivational orientations as they apply to their information behaviours be developed? Determining a core category is crucial for building the grounded theory as it establishes links between all of the other categories (Strauss & Corbin, 1998, p. 187). In essence, it helps you to establish a more holistic understanding of the research question(s).

Motivation to Seek Information. In this instance, the core category was relevance (see figure 1 for a visual representation). Here, students sought course material that was relevant to their academic, professional, and even personal lives. Material could be topically relevant, but certain types of resources might also be more relevant than others. For example, resources from academic databases were often more relevant for the student's coursework than less rigorous resources found on the open web (e.g., blogs).

The theme of time has strong connections with the relevance theme as these time-deprived students often chose to retrieve academic material that was also relevant to their personal and/or professional lives. Choosing cross-relevant materials enabled these students to save time because they were re-purposing relevant materials. A connection between time and relevance can also be established when observing that these students were keeping a keen eye out for relevant materials, even

before they were required. This is important because it enabled them to save time looking for materials later on. For example, some students did not find the time-intensity required to monitor relevant blogs was a good use of their time. In contrast, the students were aware that the typically rigorous material found in academic databases was revered by their professors. For this reason, it made sense to focus their time and efforts on finding this type of resource as it was more relevant to meeting their academic goals.



*Figure 1. Grounded Theory: Motivation for Seeking Information*

Turning next to the related theme of convenience, relevant materials needed to be easy to access and relatively quick to review. Therefore, materials from online databases were considered to be of a more relevant type than, for example, books from the University of Alberta

Libraries, which would take longer to receive. In sum, most students found that material from academic databases could be accessed quickly and easily, making selection of this resource-type more common.

Autonomy is also related to the core category of relevance. Here, students appreciated that they were given the autonomy to seek out personally or professionally relevant materials. That is, their assignments were often flexible enough to allow these students to pursue resources that were useful in their local contexts, be that at work or home.

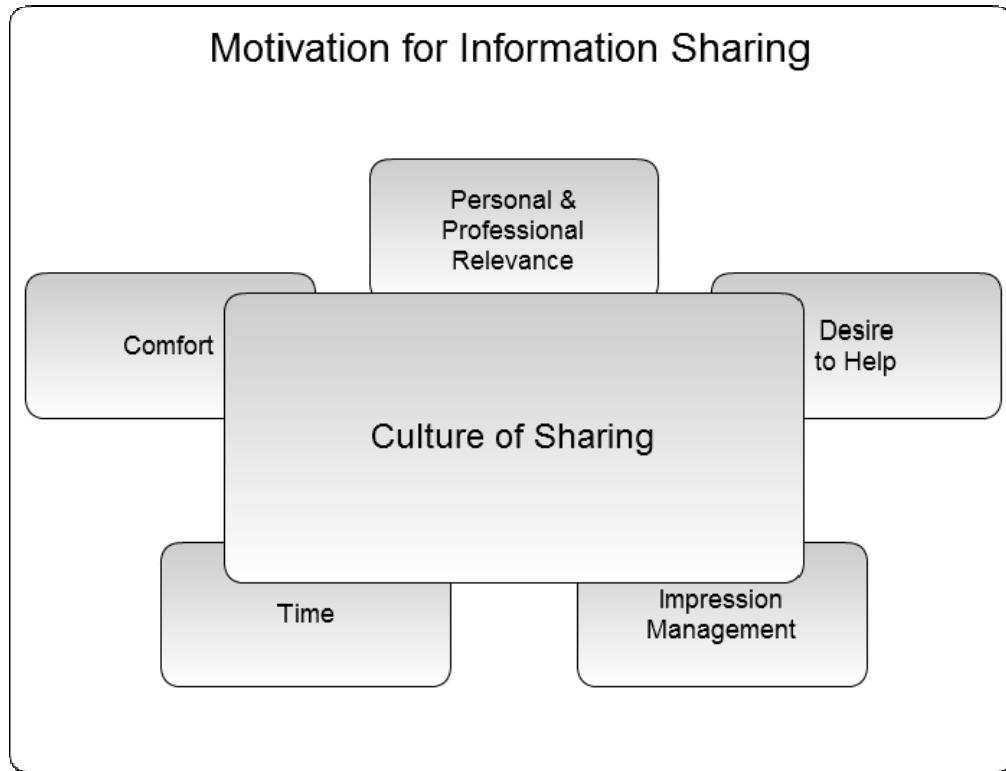
The theme of expectations can also be connected to the relevance theme. As mentioned above, these students often had very high expectations of themselves as graduate students. For this reason, it was often not enough to rely on the relevant materials provided by their instructor. Instead, they frequently sought to find additional relevant resources as they were seeking just the right resources for their projects. Moreover, they were also committed to finding the most relevant type of information. As mentioned earlier, it was often considered important to use academic databases as the students were dedicated to finding high quality, relevant resources. Self-expectations may have been particularly high for this group of teacher-librarians as they considered finding relevant materials to be part of their professional role. Hence, they had both high academic and professional expectations for themselves.

This theme of relevance was also related to the theme of enjoyment. In particular, many of these students enjoyed the fact that

information seeking was like a puzzle and they were therefore often motivated to track relevant information that helped them complete the puzzle. Furthermore, as individuals who enjoyed lifelong learning, their desire to answer scholarly questions was linked to finding relevant information. Instructors who are able to create assignments that are relevant to the students' personal and professional contexts may motivate their students to be more voracious information seekers.

In sum, the identified themes can all be linked back to the core category of relevance. In essence, students are most motivated to seek information that has some personal or professional relevance to them. This adds to their enjoyment, saves them time, and provides them with autonomy to pursue areas of interest. Finding relevant materials (by topic and type) also enabled them to meet the high academic expectations that are expected of students at a Master's level.

Motivation to Share Information. In this instance, a culture of sharing emerged as the core category (see Figure 2 below for a visual representation). The culture of sharing refers to an environment where the people and the place contribute to this general value of sharing. Each of the other themes within this grounded theory can be tied back to the sharing culture that had been established in the TL-DL environment.



*Figure 2. Grounded Theory: Motivation for Sharing Information*

The students' desire to help other students with their information needs can certainly be connected to the culture of sharing as this culture was largely related to the type of people who inhabit the TL-DL environment. As teachers and librarians, the students were already committed to helping others; hence, sharing came quite naturally to his group. Furthermore, they could see commonalities (e.g., they were all teachers, librarians, and students) amongst themselves that made them more likely to share with one another.

Also related to their professional background is the theme of relevance. That is, this culture of sharing was enhanced by the fact that these individuals were similar professionals who could easily use the

topically relevant information learned in the TL-DL environment and bring it back to be shared in their own schools. They viewed this as part of their professional responsibility and hence this was quite motivating.

Conversely, they were also able to take material from their professional context and share it with their fellow students. Here, they were motivated by the fact that they had the opportunity to bounce ideas off other like-minded professionals.

Because sharing was actively encouraged and modeled in the TL-DL environment (i.e., it was part of the culture), these students became quite comfortable sharing with one another, even if it took a little bit of time. Their motivation to share was enhanced by the fact that they were comfortable sharing material with one another in this online classroom. They in fact trusted one another. As a result, the theme of comfort can also be connected to the culture of sharing.

Likewise, the time theme can also be linked with the culture of sharing. First, because the TL-DL environment comprised working professionals, they were inclined to share with one another as they all knew what it felt like to be time-pressed. Second, the TL-DL environment provided more time for the students to hone their responses before sharing them with others, unlike the face-to-face context. This time-flexible environment helped establish and maintain a culture of sharing.

The culture of sharing was also related to the theme of impression management in that there was a general sense that students should be

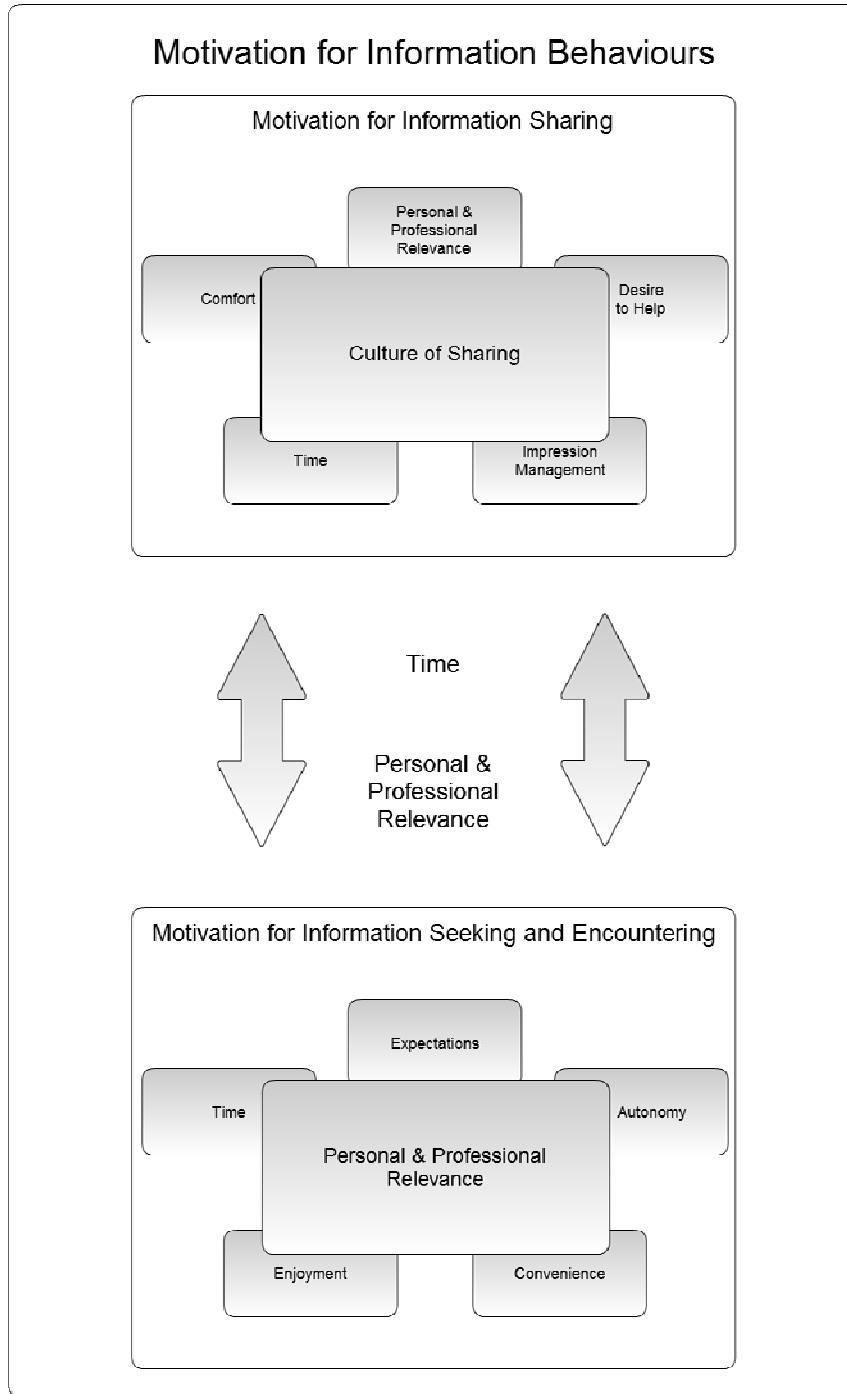
insightful and intelligent at the graduate level. That is, the environment comprised students who had a desire to highlight their intelligence and this could be partially accomplished by sharing materials and ideas of an intellectual nature. As a result, they behaved in ways that helped them manage the impression that they were making on others. That is, they could impress upon others that they were a good graduate student by sharing smart and thoughtful comments, as well as relevant resources. However, it could also mean that some students shared less for fear of seeming unintelligent.

That being said, on the whole, the TL-DL culture was conducive to sharing. Its online structure facilitated the sharing process (e.g., by providing people with the time required to respond to others) and the people within this environment were committed to sharing as well. These individuals were all engaged in a helping profession and this helped to maintain the culture of sharing. In addition, because they felt supported and enriched in the TL-DL environment, they were generally more comfortable sharing materials inside and outside the academic context. Their role as graduate students also helped to maintain this sharing culture as they were committed to sharing intelligent comments in a manner that befits students at this level (though fear of seeming unintelligent could cause some to hold back). They were also motivated to sustain this culture of sharing because the materials they shared and that were shared with them were relevant outside the academic context.

As a result, the students were motivated to contribute ideas and resources to the overall learning environment.

#### 4.8 Summary

On the whole, these students were very active in both information seeking and sharing. However, this was particularly enhanced if they were able to see the relevance of the information and coursework to their professional and personal situations. They enjoyed getting to know each other, partially because they were from similar professions and hence could learn and share mutually relevant experiences with one another. Again, the experiences of others had relevance to them. In this context, it was valuable for everyday, professional, and academic information behaviours to intersect, which helped establish a culture of sharing. Furthermore, when this information was relevant to multiple contexts, the students were able to re-purpose information they had found and share it with fellow students, colleagues, and other members of their local environment on a schedule that met the students' needs. Re-purposing information also saved time for these busy professionals. The following diagram is an appropriate way to close this section as it illustrates the commonalities that exist amongst the two models of information sharing and seeking, highlighting the mutual importance of time and relevance as described above.



*Figure 3. Integrated Model: Motivation for Information Behaviours*

## CHAPTER 5 – CONCLUSION

### 5.1 – Introduction

This chapter brings together and evaluates what was described in the Results and Discussion Chapter. It will begin by pointing to the practical implications of this research and noting where its findings could be applied in the “real world” context. The following section will highlight the research implications, discussing how this study has added to the emerging body of research on information behaviours in online learning environments. A look towards the future will close this chapter. In this last section, I will discuss further directions for this area of research and reiterate the most important messages that can be taken from the current dissertation work.

### 5.2 – Practical Implications

A number of practical implications emerged in the course of my analyses. First, online learners rely heavily on locally available resources. For this reason, when students first enter the online learning environment, they should be advised to make use of local resources that may include their public library or the libraries available at regional universities and/or colleges. Moreover, if they are professionals (as in the case of students in the TL-DL program), they should also be advised to tap into the resources available in their professional settings. For example, many professional associations will house libraries of academically and professionally relevant materials. The students could also be encouraged to contact

other professionals in their field and use their knowledge and resources as yet another source of valuable information. This is not to say that these students should not also be advised of and encouraged to use the online resources available through the university; rather, they should simply be made aware of a broader spectrum of potential information sources. This will help avoid a potentially narrow research focus, which de Jong and Branch (2006; see also Kazmer, 2005b) note as a potential concern.

From the interviews, it also emerged that training is a key factor in the successful use of online resources. In the TL-DL context, audiovisual sessions were seen as invaluable for helping the students understand both research databases and reference management software. Library training sessions should be considered core for these students, especially given the ever-increasing prevalence of online databases. Again, according to these students, online databases were a key component of their academic success. In addition to more targeted library training, the training might also include a more general overview of the types of resources available to the students. For example, this could include a discussion of the best ways to access books when in an online learning context (e.g., ordering them, accessing e-books, etc.). It would also be helpful to provide guidelines or an introductory discussion around the contexts in which non-academic materials (e.g., blogs) are appropriate to use in their academic work.

Guidance or support in dealing with information overload and deficits would also be appreciated by students, particularly at the beginning of the online learning program. The TL-DL students frequently mentioned that when they started their program, they often did not know when to stop gathering, reading, or even sharing information. Furthermore, they sometimes struggled with not being able to find enough information on particular topics and would certainly appreciate support in this area as well. These problems are obviously not unique to the online context. However, there are some unique opportunities available in online programs for dealing with these issues. While instructors can and certainly do provide advice and guidance in coping with information overload (e.g., expectations on how much time should be spent reading, posting responses to the comments of others, etc.) and research deficit (e.g., how to expand a literature search), the opportunity to tap into the collective knowledge of more senior students is also important. This could be approached both formally and informally. Using a more informal approach, instructors could simply provide a listserv (or something similar) on which students could ask questions of one another (beyond the immediate classroom context). Some of the TL-DL students mentioned that they tapped into the knowledge of students who had already completed the TL-DL program and so it would be useful to include those who were interested and willing on the listserv as well. In fact, the TL-DL program is already using this listserv model to good effect. A more formal

virtual mentorship program could also be arranged, consistent with a recommendation from Bowman (2001; see also de Jong & Branch, 2006). Here, more senior students could be paired with junior students with the expectation that a virtual relationship could develop in which the senior student might be able to advise the newer student on a number of problem areas (e.g., how they coped with information overload, information seeking strategies that they employed when they encountered a research deficit, etc.). This type of relationship may offer something different from what the instructor-student relationship can provide, including opinions and advice from someone who quite recently has been “in the trenches” and can relate to what the student is going through. This virtual mentorship is likely to be of particular value to very new online students. It was not uncommon to hear that students were less likely to contribute to the discussion board when they were new and hence having someone that they could personally contact may provide needed support. The online learning program provides a context in which people are used to communicating with one another online and as a result, tapping into resources provided via virtual support or mentorship may be quite natural. There were certainly informal examples of this already occurring amongst these students. From a design perspective, a searchable database of students’ (past and present) interests could be valuable, so that students can easily “pick the brains” of other students with similar interests.

When motivating students to locate information for their coursework, providing relevance to the students' personal and professional lives is key. Where possible, instructors should design assignments that allow students the flexibility to pursue knowledge that is relevant to their everyday contexts. While this is likely easier to do when students are in a related profession, simply providing more flexibility with assignment topics may provide students the latitude to pursue information that is relevant to them on some level. As Norton (2003) observed, students are more motivated to engage actively in a task if they have some ownership over that task. This may be even more important in the online context where it is crucial for students to develop a strong connection to their work as they are not able to be drawn in by the lectures themselves.

Forging personal connections was extremely important for establishing a culture of sharing in the online learning environment and this is something that the TL-DL program did particularly well. This was done in a number of different ways. First, students got to know each other and their interests through the introductions that were done at the beginning of each course. Second, many of the instructors established an online component that they called coffee talk. Here, students were encouraged to share personal information with one another as you would when going out for coffee with friends. Third, students were also required, in some instances, to work in groups and this too enabled them to get to

know each other. Fourth, students could take courses over the summer where they could meet some of their fellow students face-to-face. All of these components created an environment where students were more comfortable sharing with one another as they knew something about their classmates, beyond the fact that they were all enrolled in the same course. Other online learning programs could certainly use the TL-DL model as an example of how to facilitate and enhance information sharing in virtual classrooms. In essence, by highlighting personal characteristics, students can learn what they have in common and what is relevant to share with one another.

Because the students in the TL-DL program were from the helping professions of librarianship and teaching (Eichhorn, 2009; Mitchell, 2006), aiding one another by sharing relevant information came quite naturally to them. However, this can be fostered in other online learning environments as well. This relates back to the forging of personal connections, through which people can get to know each other and may be more likely to help one another. By establishing personal connections, students come to realize that they are all fellow students and that this in itself can lead one to feel quite pressed. Knowing that others are having similar experiences and stresses could encourage students to share information with one another and help the other out, though this is obviously not a given.

As mentioned above, working in groups is one way for students to get to know each other better. However, working on projects with

individuals across multiple locations can also be a frustrating experience. In the TL-DL context, students mentioned the value of web 2.0 tools (e.g., Google Docs, wikis) when working on group assignments. Students in the TL-DL context were lucky in that many were introduced to these technologies through their course in social technologies and hence knew their value for collaborative work. If instructors in other online learning environments are going to encourage group work, some mention of these collaborative tools is warranted, along with appropriate training for students enrolled in these programs.

My findings also speak to general design implications for the virtual classroom. In 2006, Saumure and Shiri suggested that it would be helpful if virtual learning environments (VLEs) had seamless access to library resources (i.e., no password required to access library resources if already logged into the VLE). This would certainly enhance the time-deprived students' capacity to access resources in a quick and expedient manner. Consistent with this idea, it could also be useful to include a subset of core e-journals and databases within the online classroom so that the new student has direct access to them without needing to maneuver through the library's website (much like the instructors' lists of recommended resources that they receive). Once the student has become confident in the online learning environment, they could then look towards adding the additional and important skill of using the library's website.

Saumure and Shiri (2006) also point to the importance of reusing resources. Certainly, students in the TL-DL environment pointed to the importance of being able to review the archive of student responses to see what people had said/recommended in the past and whether that could be used for their current assignment(s). To that end, it would be valuable to have advanced search functionality within these discussion boards/archives (i.e., enabling searches by keyword, author, or subject). This would enable students to mine these resources more efficiently. This approach could also be applied to old examples of students' assignments. If the instructors do make older examples of assignments available to help guide students in completing their work, this archive should also be more searchable to save the students time in locating relevant materials.

This section on practical implications has provided some tangible suggestions as to how some of the best practices from an established online learning program could be applied to other, similar settings. Moreover, these recommendations also offer insight into how the TL-DL program can continue to hone the information seeking and sharing practices of their students.

### 5.3 – Research Implications

In describing the research implications resulting from my analyses, I will highlight how this research builds upon and advances what we already know about information behaviours and the motivations behind them.

In chapter 2, it was noted that “power browsing” or “horizontal information seeking” had begun to emerge as a sub-type of active information seeking, where individuals skim the surface of a variety of resources, until they find the answer they are seeking. In these instances, the format is considered less important (University College London, 2008, p. 8). While not all students in the TL-DL environment exhibited this type of information seeking, it was interesting to note that it did occur and was perhaps most common in the most technically adept students. This suggests that there may be a need to look at technical aptitude in order to further understand the characteristics of individuals who engage in “horizontal information seeking”.

Thinking next about information seeking that has a more serendipitous quality, I turn to Erdelez’s (1999, 2004, 2005) conception of information encounters. In this dissertation work, I confirmed that students in the online learning environments do find information while they are looking for other materials. This is perhaps not surprising, but it was interesting to see how meticulous many of these students were in tucking this information away for future use (for both themselves and their fellow students). It would be interesting to further understand how individuals go about storing information that is not of immediate use. Is there a way to facilitate this process for these students? Can web 2.0 tools (e.g., social bookmarking software) be of assistance? These questions deserve further attention in the research on information encounters.

Rioux's (2005) work on information sharing also deserves discussion in the context of this dissertation research. Rioux (2005) notes the highly social nature of online information sharing. As indicated earlier, the TL-DL environment was designed to help forge personal relationships among the students. Certainly, my findings here suggest that students share information and that this helps solidify social relationships with their peers. In Rioux's work with Hersberger and Cruitt, (2005) he found that sharing information leads to the development of a community. Furthermore, when this community does form, information sharing becomes more pervasive (Hersberger et al., 2005). This is again consistent with my findings. Once this group had formed a community, the information flowed quite readily. In the TL-DL context, the students were able to share more easily once they knew each other's interests and had formed friendships. As mentioned earlier, the students introduced and shared personal information with each other at the outset of each course. To that end, it would be interesting to learn from future research whether online information sharing is further enhanced if the initial instance of information sharing is of a more personal (rather than professional or academic) nature.

In Chapter 2, I looked at the work of Chatman (1992) and Hersberger et al. (2005) and suggested that students who felt inept or incapable would tend to share less information. Indeed, this was what I found. Newer students often felt more anxious about what they did or did

not know and as a result, they were less likely to share with others. As the course progressed and their confidence grew, they tended to share more information. This speaks to the important role that training can play in fostering information sharing. Research that examines the link between information sharing in the online classroom, self-esteem, and training might help to delineate this possible relationship. This would help build on earlier research by Branch (2003), as well as Barsky and Bar-Ilan (2005). These researchers found that there were personal and academic benefits to students who received information literacy training.

It was interesting to find that Kuhlthau's model (1991, 1993, 2004; see also Kuhlthau, Heinstrom, & Todd, 2008) did not provide a convenient rubric for understanding these students' information behaviours. As noted in the results section, different students employed different strategies. Some would dive right into the information search with no qualms, while others preferred to do background reading. This is consistent with the findings of Holliday and Li (2004), who noted that students did not engage in each of Kuhlthau's stages. Their findings suggest a possible need to re-configure Kuhlthau's model to fit today's context, where the internet has made information seeking a much more fluid process. That is not to say that Kuhlthau's (1991, 1993, 2004) research had no bearing on this dissertation work. Indeed, it was clear that emotion still played a dominant role in information seeking and sharing. In particular, both anxiety and pleasure offered insights into the information seeking and sharing

processes of these students. That is, students had more trouble both seeking and sharing information when they felt anxious about the process, whereas information seeking increased when they actually enjoyed and felt happy engaging in this process. Understanding and attending to the role of emotion continues to be an important direction for information behaviour researchers to pursue.

While his research is now quite old, Krikelas' (1983) findings still have bearing on the current research. In particular and as noted in Chapter 2, I was curious as to whether people remained an important source of information in the online learning environment. Recent research (e.g., Head, 2008; Sadler & Given, 2007; Vezzosi, 2009) has certainly suggested that people remain an important source of information and my results confirmed this in the online learning setting. Interestingly, people both inside and outside the online learning context were perceived to be of value. These students sought information from family members, friends, and colleagues, as readily as they did from their online instructors and classmates. The role of people as information sources should be further examined in the online context (e.g., why are people still a preferred information source in this era of Google?).

Heinstrom (2003, 2005) has looked primarily at how personality influences information behaviours. While she typically discusses the five factor model of personality (as described in Chapter 2), only two of those factors show relevance for the current study. First, neurotic individuals

(i.e., those who are more nervous) did indeed encounter more barriers when it came to information seeking and sharing. In this online context, anxiety about using technology was an important barrier to information seeking. In addition, because one's thoughts and ideas were written down, there was often some anxiety about sharing information as they did not want to appear unintelligent (particularly in a format that they perceived to have more permanence). Heinstrom (2003, 2005) has also mentioned the differences between introverts and extroverts as it applies to information seeking, suggesting that extroverts are more confident in this domain. This study's findings are interesting in that they suggest that this division between extroverts and introverts is less important in an online learning environment. Here, students who described themselves as introverted or reserved in the traditional classroom setting were more likely to seek and share information in the online setting. It would seem that, like in social positioning theory (see Given, 2005), these typically introverted students were not having to position themselves as introverts, their virtual identity allowed them to position themselves in a new way. This finding suggests that it would be interesting for Heinstrom (2003, 2005) to consider how or if the five factor model of personality works in the online classroom.

Importantly, my dissertation work helps confirm the findings of Tella et al. (2007) and Fields (2005) with respect to self-efficacy and student information behaviour. These researchers suggest that higher levels of

self-efficacy improve students' information seeking performance and this is certainly consistent with what I saw in my interviews with the students.

At the beginning of the program, many students relied heavily on the lists of resources provided by the instructors. However, as their efficacy increased, so too did the types of resources that they accessed. Time and experience were important for increasing their self-efficacy. However, as the students readily pointed out, training also helped them feel more confident and comfortable accessing electronic information. Taking the importance of self-efficacy a step further than Tella et al. (2007) and Fields (2005), my research noted that self-efficacy also had a significant role to play in the students' information sharing practices. As students became confident in what they knew, they were more likely to put themselves out there and share information with others. Again, this was largely related to time and experience, but it does speak to the importance of good teachers as well. Students who effectively learn the content of their courses feel more efficacious and therefore are more comfortable passing their knowledge on to others. This finding about the role of self-efficacy and information sharing builds on the work of Endres et al. (2007), who noted that co-workers were more likely to share information with one another if they felt efficacious in doing so.

Hektor (2003) developed a model to help explain information behaviours that occur when interacting with the internet. However, it is not so much Hektor's process itself that helps inform the current study.

Instead, it is his explanation of why people turn to the web for acquiring information that resonates with the findings here. Hektor (2003) points out that people tend to use the web when it is the most convenient option. Certainly, this helps explains why these students preferred resources, such as online databases, whereas books played a secondary role.

As noted by Kari and Savolainen (2003, pp. 159-160), context can also help inform information seeking on the web. Certainly, factors that included the students' personal and professional identities were important in determining the type of information that these individuals sought out. That is, because they were all teacher-librarians, they tended to want to seek out information that they could bring back to their schools and use with their students. In addition, many of the TL-DL students also had family members with whom they would share their coursework. As a result, it made sense to seek out information that would be interesting to their family or to which their family members could contribute. The students' professional context was also important for understanding why they shared information. As mentioned earlier, because they were both teachers and librarians, they considered it their professional duty to help others.

In Chapter 2, Burnett's (2000) typology of information behaviours was described. Perhaps because there is a tacit understanding of acceptable classroom behaviour or because this is outlined at the beginning of the online learning program, few of Burnett's hostile

behaviours are noted. The closest instance to emerge in these interviews was a situation where one student noted her offence at what another student had posted. However, she dealt with her discomfort in a private email as opposed to posting her disdain for all to hear. The “offending” student apologized and that was essentially the end of it. The only other behaviour that could be construed in a slightly negative light would be over-posting. Some students did note that they felt overwhelmed when some students posted information in a seemingly perpetual manner.

Instances of Burnett’s positive behaviours were more common and often helped to build the community feeling that seemed to facilitate information sharing. For example, in the coffee talk section of the online course, students frequently engaged in small talk with one another. Second, the students also showed empathy for what the others were experiencing. This is perhaps best exemplified by highlighting the instance where the students shared information they had about the medical condition of a fellow student’s daughter. However, there were certainly other instances of this as well (e.g., sharing information with others because everyone is time-pressed). It would be interesting to see whether Burnett’s typologies are represented more broadly across the positive and negative spectrums in other online learning environments.

Fulton’s (2000) study of teleworkers was mentioned as having possible relevance to this study. However, given the current results, it seems more likely that Fulton’s findings are not readily applicable to this

particular situation. In particular, Fulton (2000) noted that teleworkers lacked ready access to information and also had trouble filling information gaps. This was not observed by the majority of students, who were able to get the bulk of the information that they needed online or from their local community and thus did not feel information poor. Interestingly however, there was one instance where a student from a rural community did find herself disadvantaged in terms of information access. This suggests that perhaps rural online learners are still experiencing some information gaps (like the teleworkers in 2000), but that this is no longer the case with other distance/online learning students. This likely speaks to the advances in technology that have occurred since Fulton (2000) completed her research.

I noted in Chapter 2 that Haythornthwaite and her colleagues had built an impressive body of research around a distance library education program (e.g., Haythornthwaite et al., 2000; Kazmer & Haythornthwaite, 2004). The findings in this dissertation work help to both confirm and build on these findings. It is quite clear from the findings in this current study, as well as in the findings of Haythornthwaite (2002; see also Haines, Hurlbert, & Beggs, 1996) that the formation of interpersonal relationships enhances the quality and quantity of information sharing that occurs in the online classroom. Consistent with self-determination theory, it is perhaps not surprising that students who feel close with one another are more likely to share information. These theorists would suggest that people do

tend to have more sustained motivation towards an activity when they feel a sense of relatedness with others (Deci & Ryan, 2002; Ryan & Deci, 2000). Also consistent with the findings in this study, Haythornthwaite et al. (2007) point to the opportunities that online classrooms offer the more introverted student. They suggest that this type of student may be more comfortable sharing their thoughts because the online classroom feels more anonymous. In addition, the use of the classroom conversation archive is also mentioned as a research tool. This is again consistent with my findings, where students found that they could gain additional insights by harvesting information that they had heard earlier. My findings did not support an observation by Haythornthwaite et al. (2007), who asserted that a wider breadth of information technologies in the online learning setting created a greater degree of connection between the learners. However, the theory of community-embedded learning, which is also represented in this 2007 article by Haythornthwaite et al. speaks extensively to what I found in my research. In this theory, individuals within an online learning environment are thought to occupy a number of roles simultaneously (e.g., student, teacher, mother, and so forth). As a result, it becomes possible to share information within and across multiple environments. The students described in this 2007 paper and the ones from my dissertation work do not simply share information with their fellow classmates, but they also take information learned in the online classroom and use it in their roles as teacher and mother. In addition, they take

information they have gleaned from these roles and use that information in the online classroom. My research suggests that one of the core reasons that students share information in this way relates to time. Because they are, in most cases, full-time professionals, it is to their advantage to re-purpose information from one environment to the next. In addition, I would also argue that many of these students are studying because they want to become better teacher-librarians. As a result, it makes sense for them to take the information that they are learning back to their local context. Moreover, because they are in an environment with other teacher-librarians, they are also keen to share the successes and challenges that they've had in their professional roles with their fellow students. This may be particularly true for teacher-librarians because they are often one-of-a-kind within a school and it is therefore satisfying to be able share ideas with like-minded professionals.

My dissertation work also shared commonalities with Nardi and O'Day (1999) who investigated the Pueblo online learning community. Here, the psychological needs of autonomy and relatedness are considered core components of information exchange. Certainly, in my dissertation work, these students shared information because they felt a bond with one another. Thierry Karsenti (1999) was confident that relatedness in the online classroom could surpass that of the traditional classroom and indeed a number of students did reflect on the strong bond that they felt with their fellow students in the online classroom. In fact,

many stated that they felt that the sense of community was greater in the online learning situation than in the face-to-face classroom.

The feeling of autonomy, on the other hand, was considered particularly important to facilitating information seeking. That said, it seems likely that because these students were able to generate passion about the individualized projects they worked on, they were more likely to share their thoughts and ideas about them with others. It was clear that these students were taking the information that they sought for their coursework and using it in the classroom or sharing it with members of their family/local community. Perceived choice (see Cordova & Lepper, 1996) enabled this passion for information seeking and then sharing to develop. Instructors in the TL-DL environment worked as champions who provided students with needed autonomy, but also supported these choices by offering guidance in pursuing them (see Ryan, 1993). Like work by Banas (2009) and Reznowski (2008), my dissertation work supports the notion that students are more motivated to persevere at a task if the accompanying informational materials are relevant to them.

Research into achievement needs also helps to explain some of the reasons that these students were seeking and sharing information. Here, it is important to point out, that students were often still doing the work in order to get good grades. They wanted to do well. Dweck's (1986, 1990) conception of goal theory is also important for understanding the information seeking patterns of the students. Students who enjoyed

information seeking and saw it as a puzzle were more focused on mastery goals. They enjoyed the information seeking process and wanted to improve their ability to find that perfect relevant piece of information to add to their assignment. While achievement needs were important for understanding why students sought information, the other social needs of affiliation, intimacy, and power were not seen to be important here. It was really the psychological needs of autonomy, competence, and relatedness that added substantively to our understanding of what motivated TL-DL students to seek and share information (see Reeve, 2005). For them, it was important to have autonomy to seek out the information that was personally and professionally relevant to them, to have the competence necessary to find and share what they know with others, and to care enough about others that they wanted to share their resources.

From the education literature, Volery and Lord (2000) point out that successful information exchange in the online classroom is tied to the depth of student interactions. Certainly, these interactions seemed highly developed in the TL-DL environment. In another context, Sun et al. (2008) have pointed out that cohesion can be difficult to foster in the online learning environment; however, this was not the case here. This may relate to the fact that online discussions, group work, and the divulging of personal details were all actively encouraged and helped facilitate relationship-building.

While my dissertation work obviously shares similarities with work that has been previously been done, I have attempted to highlight where my work has offered a unique finding. Moreover, by developing grounded theories to explain the motivation to both seek and share information, I have provided a unique way of putting these elements together (see section 4.7). I have been able to highlight how relevance forms the core of online information seeking and helps to facilitate the other motivating factors; and, I have illustrated how a culture of sharing helps pull together all of the other elements that facilitate information sharing in the online learning environment. That said, there is still a great deal of work to be done in advancing my dissertation work and it is to the necessity for future research that I now turn.

#### 5.4 – Future Research Directions

As described in Chapter Three, this study did not seek to generalize across distance learning environments. It instead sought to glean insights from a distance learning environment that was well established and as a result may have something to teach us about best practices. Indeed, I did learn a great deal about what this program has done well in terms of fostering a culture of sharing, as well as offering personally and/or professionally relevant research assignments. However, this was a very unique group of students in that they were practicing information professionals. As a result, their information seeking and sharing practices may not necessarily mirror that of another learning

environment. For that reason, this research could and should be expanded in a number of different directions.

First, it would be interesting to study the information behaviours of another group of working professionals. It would be interesting to see if, for example, a group of students who had similar demands on their time (i.e., working full-time) would have similar information seeking patterns. For example, would they too look for information that had relevance for both their academic, professional, and perhaps even personal roles?

It would also be interesting to pursue this line of research with other graduate students, who are not enrolled in a professional program. Many of the students noted that they looked for information in particular ways because they were graduate students and that information seeking on this level (e.g., in academic databases) was expected. Would other graduate-level distance learning students have similar feelings or would less tangible library support lead them to rely more heavily on search engines, such as Google? This line of questioning would be interesting to explore in further research. Similarly, it would also be of value to extend this research into the undergraduate world. Again, it would be interesting to determine if these students search for and share information differently than did the TL-DL students. If this were the case, it would be interesting to then develop strategies that would encourage them to be more sophisticated seekers and consumers of information. Furthermore, creating a culture of sharing akin to that of the TL-DL program offers

another line of information support in an environment where one could feel more remote from others.

Finally, this research was clearly and purposefully qualitative in its approach. However, in keeping with the doctrines of mixed-methods research (see Creswell & Tashakorri, 2008), it would be worthwhile to take this research into the quantitative domain. Certainly, quantitative methods offer the potential to reveal causal links between information behaviours and the motivations behind them. As a result, we could make more definitive statements about the relationships between the variables.

While there are certainly other areas that still need to be explored, this research has offered valuable insights into the importance of the local context for encouraging information seeking in this group of online learners. Furthermore, it has also drawn our attention to the role that time and relevance play both in information seeking and the resources that are retrieved, as well as the ease with which resources are shared in a well developed online learning environment. Ideally, these insights will encourage other online learning programs and instructors to attend to issues of locality and time when designing their courses. Instructors could encourage their students to pursue research projects that are more personal and relevant to their local environment, while also pointing out the flexibility of time in responding to other students. That is, there is no need to respond quickly and on a fixed schedule; instead, students would be encouraged to think through their responses and answer when ready.

Certainly, students are not under the pressure that the ticking clock of a typical classroom dictates and this point should be highlighted. By attending to these details, the end result could be a richer information experience for the online learning students, where individual voices are on a more level playing field that is not limited by time or space. Essentially, instructors and course designers need to play on the strengths of the online learning context; both local relevance and time-flexibility are among those strengths.

The value of this dissertation work is that it highlights a case where information seeking and sharing was by and large very successful. Most of these students were voracious information seekers who also enjoyed sharing the information they located with their classmates. In its current form, this research offers a window into how other online learning environments could incorporate some of these best practices, thereby motivating their students to seek and share information in greater quantity and quality.

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## Appendix 1 – Student Consent Form

### INTERVIEW CONSENT FORM: MOTIVATION AND INFORMATION BEHAVIOUR IN WEB-BASED CLASSROOMS

You are invited to participate in an interview study being conducted by Kristie Saumure from the School of Library and Information Studies at the University of Alberta. The purpose of this interview is to investigate the role that motivation plays in influencing the information behaviours of individuals in one particular type of online community, an online post-secondary classroom. You are being asked to participate in an interview, which will take approximately 1 hour.

Your responses will be kept completely confidential and will only be used for the purposes described above. Only the researcher or research assistants working on this project will have access to the information that you provide; no one else, including University instructors and administrators, will have access to your responses. The information that you provide will be used in professional research reports and presented at professional conferences. If we use a quotation from your interview, a pseudonym will be used. With your permission, we would like to record the interview in order to ensure that we have an accurate record of the interview. The interview data itself will be stored for a minimum of 5 years on a password protected computer to which only the researcher has access (sound files will also be encrypted). Once the data analysis has been completed, all materials will be destroyed.

Your decision to participate in this study is entirely voluntary and you may decide at any time to withdraw or participate in only a portion of the study (e.g., you may refrain from answering particular questions). Of note, once the interview is complete, the data will be anonymized and you will no longer be able to withdraw your response. Your decision to withdraw will not affect your status or access to services from the University of Alberta. We foresee minimal risk in participating in this study. However, if we gain new knowledge that may influence your decision to continue in the study, the researcher will inform you.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751.

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At the beginning of the interview, you will be asked to verbally indicate that you have read and understand the nature and purpose of the study. This will also indicate your willingness to participate in this study.

## Appendix 2 – Student Information Sheet

### **Information Letter - Sharing your online learning experiences**

I am interested in your experiences as an information seeker and sharer in the TL-DL online environment.

I am conducting this research as part of my PhD and hope that this research adds to the burgeoning body of research on online learners. By talking with you, I hope to learn what motivates individuals to both track down and share information in virtual classrooms.

Understanding virtual learning environments is becoming particularly important as the internet reduces the academic boundaries previously imposed by time and geography (Lee, 2000). For this reason, understanding the information behaviours of graduate students in virtual classrooms is increasingly important, particularly since online students may not have the same level of access to information resources as those who attend classes on campus (e.g., if they are geographically remote from the institution, they will not have easy access to the print materials that are available at the physical library). Learning what motivates individuals to seek and share information in virtual classrooms will help instructors in general design strategies for enhancing these seeking and sharing processes. It may also help librarians develop strategies that will facilitate these processes (e.g., increasing the numbers of available electronic books and journals). It is hoped that some of these strategies may benefit you in your future online learning endeavors, along with other online students.

In addition, as part of the University of Alberta's commitment to research, it is vital to have people (such as yourself) participate in research so that we can further develop scientific knowledge. Hopefully, your participation not only helps to develop science, but might also enhance your understanding of how research is conducted, which is important for you to know as both a student and consumer of scientific information.

If you would like additional information about this study, you can contact myself ([kdh@ualberta.ca](mailto:kdh@ualberta.ca)), the project supervisor, Dr. Lisa Given ([lisa.given@ualberta.ca](mailto:lisa.given@ualberta.ca)) or the conjoint supervisor, Dr. Kimberley Noels ([knoels@ualberta.ca](mailto:knoels@ualberta.ca)).

*The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta.*

## Appendix 3 – Key Informant Consent Form

### INTERVIEW CONSENT FORM: MOTIVATION AND INFORMATION BEHAVIOUR IN WEB-BASED CLASSROOMS

You are invited to participate in an interview study being conducted by Kristie Saumure from the School of Library and Information Studies at the University of Alberta. The purpose of this interview is to investigate the role that motivation plays in influencing the information behaviours of individuals in one particular type of online community, an online post-secondary classroom. You are being asked to participate in an interview, which will take approximately 1 hour.

Your responses will be kept completely confidential and will only be used for the purposes described above. Only the researcher or research assistants working on this project will have access to the information that you provide; no one else will have access to your responses. The information that you provide will be used in professional research reports and presented at professional conferences. If we use a quotation from your interview, a pseudonym will be used. With your permission, we would like to audio record the interview in order to ensure that we have an accurate record of the interview. The interview data itself will be stored for a minimum of 5 years on a password protected computer to which only the researcher has access (sound files will also be encrypted). Once the data analysis has been completed, all materials will be destroyed.

Your decision to participate in this study is entirely voluntary and you may decide at any time to withdraw or participate in only a portion of the study (e.g., you may refrain from answering particular questions). Of note, once the interview is complete, the data will be anonymized and you will no longer be able to withdraw your response. Your decision to withdraw will not affect your status or access to services from the University of Alberta. We foresee minimal risk in participating in this study. However, if we gain new knowledge that may influence your decision to continue in the study, the researcher will inform you.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEA REB at (780) 492-3751.

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You will be asked to email your consent to participate to the researcher. In addition, at the beginning of the interview, you will be asked to verbally indicate that you have read and understand the nature and purpose of the study. This will also indicate your willingness to participate in this study.

## Appendix 4 – Key Informant Information Sheet

### Information Letter - Online learning experiences

A growing body of literature in library and information studies (LIS) examines the means by which people seek and share information in online communities (e.g., Erdelez & Rioux, 2000, Haythornthwaite, Kazmer, Robins, & Shoemaker, 2000; Rioux, Hersberger, & Cruitt, 2005). Despite this recent proliferation, LIS researchers have paid little attention to understanding the motivations that drive these online information behaviours. Virtual learning environments are one example of an online community. Increasingly, the importance and prevalence of virtual learning environments is becoming particularly salient as the internet reduces the academic boundaries previously imposed by time and geography (Lee, 2000). For this reason, understanding the information behaviours of undergraduate students in virtual classrooms is increasingly important.

Learning what motivates individuals to seek and share information in virtual classrooms will help instructors design strategies for enhancing the process of seeking and sharing. It may also help librarians develop strategies that will facilitate these processes (e.g., increasing the numbers of available electronic books and journals). It is important to acknowledge that the University of Alberta Libraries have certainly made strong efforts to accommodate their distance learning students, by promoting access to the extensive electronic collection, as well as providing access to the print collection through mail and collaborative agreements with other academic institutions (University of Alberta Libraries, 2008). With these efforts in place and a strong culture of information sharing present in the TL-DL program, it will be interesting to see how these students perceive their access to information and how this influences their motivation to seek or share information. Given that scholastic achievement has been linked to information access (Bitso, 2000; de Jagr, 2002; Tella, Tella, Ayeni, & Omoba, 2007; Wells, 1995), it seems important to understand how motivation influences students' abilities and desire to both access and pass along relevant information.

If you would like additional information about this study, you can contact myself ([kdh@ualberta.ca](mailto:kdh@ualberta.ca)), the project supervisor, Dr. Lisa Given ([lisa.given@ualberta.ca](mailto:lisa.given@ualberta.ca)) or the conjoint supervisor, Dr. Kimberley Noels ([knoels@ualberta.ca](mailto:knoels@ualberta.ca)).

***The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta.***

## Appendix 5 – Confidentiality Agreement

### **Confidentiality Agreement**

This form may be used for individuals hired to conduct specific research tasks, e.g., recording or editing image or sound data, transcribing, interpreting, translating, entering data, destroying data.

Project title -

I, \_\_\_\_\_, the \_\_\_\_\_  
(specific job description, e.g., interpreter/translator) have been hired to

I agree to -

1. keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., disks, tapes, transcripts) with anyone other than the *Researcher(s)*.
2. keep all research information in any form or format (e.g., disks, tapes, transcripts) secure while it is in my possession.
3. return all research information in any form or format (e.g., disks, tapes, transcripts) to the *Researcher(s)* when I have completed the research tasks.
4. after consulting with the *Researcher(s)*, erase or destroy all research information in any form or format regarding this research project that is not returnable to the *Researcher(s)* (e.g., information stored on computer hard drive).
5. other (specify).

---

(Print Name)

---

(Signature)

---

(Date)

*Researcher(s)*

---

(Print Name)

---

(Signature)

---

(Date)

## Appendix 6 – Recruitment Details

As a member of the Teacher-Librarianship by Distance Learning program at the University of Alberta, I would love to talk to you about your experiences in that online environment. By talking with you, we hope to learn what motivates individuals to seek and share information in virtual classrooms. In turn, we hope this will help instructors design strategies for enhancing these seeking and sharing processes. Researchers have found that academic achievement is related to the ability to access relevant information (Bitso, 2000); as a result, it seems important to understand how motivation influences students' ability to access relevant information.

If you are interested in talking to us about your experience, please email the primary investigator Kristie Saumure at [kdh@ualberta.ca](mailto:kdh@ualberta.ca)

***The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension and Augustana Research Ethics Board (EEA REB) at the University of Alberta.***

## Appendix 7 – Participant Profiles

### **Participant Profiles: Students and Key Informants**

These profiles are in alphabetical order and the information is consistent with the time the data was collected. The names used are pseudonyms, so as to protect the anonymity of the student participants.

#### **Angela – Student**

At the time of the interview, 47-year old Angela was single and had no children. She had just completed her Master's in the TL-DL program in which she had been enrolled for four years. In 1988, she completed her Bachelor of Education, with a focus on intermediate and senior education and history. She is a teacher-librarian at a school in Ontario and is quite passionate about technology and the possibilities it holds for the students in her library.

#### **Donna – Student**

Donna was just finishing up the last of her Master's-level courses at the time of this interview. Having completed seven of her nine courses, she had taken a leave from teaching in order to complete the last two. Donna had completed her Bachelor of Education in the 1990's, with a specialty in teacher-librarianship. She was married with children (and grandchildren).

#### **Eva – Student**

At the time of the interview, Eva had been enrolled in the program for 2.5 years and was from a small community in British Columbia. She had completed six courses in her Master's program at the time of the interview. While her Bachelor of Education degree was primarily general, she had done some specialization in music. Eva was a 50-year old with one "almost-18" son and was divorced (although she did have a partner who lived some distance away).

#### **Gracie – Student**

Residing in Alberta, Gracie had just finished her Master's work in the TL-DL program at the time of the interview. Her Master's work took her four years in total to complete. Gracie was over 50 years old and a mother of four (one of whom was under 18). She completed her Bachelor of Education in 1974, where she had specialized in elementary education, math, and science.

**Irene – Student**

At the time of the interview, Irene had been enrolled in the Master's-level TL-DL program for two years and was currently enrolled in her fourth and fifth courses. She had completed her education degree in 1981, with a specialty in teacher-librarianship. Irene is 50-years old from Manitoba and is married with 3 children over the age of 18. At the time of the interview, she was on leave from teaching.

**Jill – Student**

Jill was very new to the TL-DL program at the time that I interviewed her in that she had only been enrolled for three months. She was in the process of applying to be officially enrolled as a Master's student in the TL-DL program. In 1993, Jill completed her Bachelor of Education. Her focus was on secondary education, with a specialization in English and social studies. Jill is 39-years old, married, and has two small children, aged 8 and 10.

**Jody – Student**

British Columbian Jody was in her 9<sup>th</sup> course of the TL-DL program at the time that I interviewed her. She was a married, 44-year old mother of two children (aged 11 and 13). In 1991, Jody finished her Education Degree, where her focus was on elementary education. She was practicing as a teacher-librarian at the time I interviewed her and was passionate about collection development issues.

**Karen – Student**

At the time of her interview, Karen had been enrolled in the Master's-level TL-DL program for one year and had completed four courses. She was on leave at the time that I interviewed her to enable her to focus on her coursework. Recently, Karen had taken on a new role and was keen to apply what she had learned to her library context. She was extremely comfortable with technology and had even encouraged some of her classmates to use Skype. Karen was 53-years old, married, and with two kids (a boy who was 14-years old and a 24-year old girl).

**Karrie – Student**

Karrie was the only one of my interviewees to be enrolled in the TL-DL Diploma program. She had completed two years of the program and was currently enrolled in her fourth course. Completed in 1985, the focus of her Bachelor of Education degree was French. Karrie was 48-years old and married with one 8-year old child. She resided in Manitoba.

**Lori – Student**

After spending four years in the program, 32-year old Lori had just finished her Master's work in the TL-DL program at the time of this interview. She was residing in British Columbia, was married and had a 3-year old child. Her Bachelor of Education degree was completed quite recently (i.e., 2000) and she had specialized in history and English.

**Lynn – Student**

Lynn was a technology-savvy recent graduate of the Master's-level TL-DL program. She was regularly looking for ways to apply new technologies in the classroom/library. With a focus in elementary education and social studies, 39-year old Lynn had finished her Education degree in 1993. Residing in British Columbia, she was married and had two sons (aged 10 and 13).

**Michelle – Student**

At the time of the interview, Michelle had just completed her TL-DL Master's (over the course of five years). Michelle viewed herself as a lifelong learner and was proud of the fact that she was often one of the oldest students at age 54. Michelle had completed her Education Degree in 1979, with a specialty in early childhood education. She resided in Saskatchewan, was married, and had three children over the age of 18.

**Sharon – Student**

Sharon, at the time of the interview, was 46-years old, married, and had two small girls (aged ten and eight). She was still fairly new to the TL-DL Master's program, having been enrolled for only one year and having just completed her third course. Newly residing in British Columbia, Sharon had finished her Education degree in 1985 with a focus on physical education and psychology.

**Stacey – Student**

New to the TL-DL program, 49-year old Stacey had recently completed her second course and had been enrolled in the program for one year. She had completed her education degree in 1983 with a specialization in secondary education, English, and social studies. Stacey is married and has three children, of which one is still under 18.

### **Terri – Student**

At the time of the interview, Albertan Terri was approaching the mid-point of her program as she had completed four courses. She was 52-years old and had been married for 25 years. Her children ranged in age from 13 to 19 at the time of the interview. She had completed her Bachelor of Education in 1980 with no specialization.

### **Tish – Key Informant**

One of the key informants for this study, Tish, was a long-standing member of the TL-DL community. For this reason, she was able to offer insights into how the program had evolved over the years. During her time with the program, Tish had roles as both instructor and coordinator. Tish has her PhD and is a former teacher. One of her interests is in preparing teacher-librarians to be leaders in their schools. She is passionate about continuing to improve the distance education model.

### **Violet – Key Informant**

At the time of the interview, PhD-prepared Violet has been involved with the TL-DL community for many years. This made her an ideal key informant as she had in-depth knowledge of the program, especially given that she had taught a number of the courses in the program. Her various roles within the program had included student, instructor, and coordinator. Violet is interested in the use of web 2.0 technologies in the classroom and creating leadership qualities in teacher-librarians. She has previous experience as a teacher.

### **Yolanda – Key Informant**

Key informant Yolanda was an instructor in the TL-DL program and offered excellent insight into the virtual classroom setting. In addition to her position as an instructor, Yolanda had taken courses in the program and as a result was also able to offer some perspective on the student role in this setting. Yolanda had a passion for library and web 2.0 technologies and shared this passion with her students. She had recently completed her PhD, though she had taught in the TL-DL program prior to that.

## Appendix 8 – Student Interview Questions

### INTERVIEW QUESTIONS – STUDENTS

\*\*When answering these questions, I'd like you to think about the last TL-DL course that you completed. If you did more than one at once, please think about the one in which you most recently handed in an assignment.

#### **Background Information (will help in informing RQ3: Can a theoretical model of students' motivational orientations (with respect to information behaviour) be developed?)**

1. How long have you been enrolled in the TL-DL program?
2. How many courses have you completed in the TL-DL program?
3. Are you in the diploma or Master's TL-DL program?
4. When did you finish your education degree? When completing your education degree, what was your major?
5. Can you tell me a little bit about the course(s) you are currently taking? What type of content does it cover?
6. Do you enjoy this course that you are taking? Why or why not?

#### **RQ1: What motivates students to engage (or not engage) in information behaviours in web-based classrooms?**

7. Thinking of your last assignment, where did you start your information search? Can you explain why?
8. What is your state of mind at the beginning of a search for information?

9. In what types of places do you typically look for materials for assignments in your online course?
10. Where do you typically find information for your online course and related assignments? Can you describe certain locations that you have found to be particularly valuable? If so, why has that been the case?

Have you encountered any frustrations in finding information for your online courses? Can you explain and provide some examples?

Can you think of any ways in which your location of information has been facilitated? Can you explain and provide some examples?

11. What do you think motivates you to look for information for that class? Can you elaborate on that point?
12. What drives you to continue seeking information for your class, even after an assignment is handed in?
13. Has your instructor done anything that you think influenced the way you look for information (or the type of information that you use)? Explain.
14. Have other students or other members of your online learning community influenced the way you look for information (or the type of information that you use)? Explain.

15. Has anyone outside of this online learning community influenced the way you look for information (or the type of information that you use)? Explain.
16. Can you tell me about the type of technical support that was available for your online course? How was it helpful (or not) to you in finding the information you needed/wanted?

**RQ2: Do students' perceptions of their instructor's teaching strategies and the classroom environment influence their motivation to engage in particular information behaviours in web-based classrooms?**

17. Can you describe how information is generally shared between classmates in your online class? This can refer to types of technology used, but also the type of information that is shared.
18. How have you personally shared information with others in your online class? As with the previous question, this can refer to types of technology used, but also the type of information that is shared.
19. Taking the last question in the other direction, how have others shared information with you in your online class?
20. Why would you be inclined to share information with your online classmates?
21. Has your instructor influenced whether you share information with your classmates and if so how?

22. Has anyone else in the classroom setting influenced whether you share information with classmates?
23. Has anyone outside the classroom setting influenced whether you share information with classmates?
24. In your opinion, is there a difference between how information is sought in the online classroom versus in the face-to-face classroom? Can you explain?
25. In your opinion, is there a difference between how information is shared in the online classroom versus in the face-to-face classroom? Can you explain?
26. Has the way that you look for information changed since you started the TL-DL program? Can you explain?
27. Has the way that you share information changed since you started the TL-DL program changed? Can you explain?
28. Is there anything else that you would like to tell me that I haven't already covered today, and that might help me understand how you find information for this online course, or how and why you share information (probing question)?

**\*\*Note: All of these questions will help inform RQ3:** Can a theoretical model of students' motivational orientations (with respect to information behaviour) be developed?

## Appendix 9 – Key Informant Interview Questions

### INTERVIEW QUESTIONS – INSTRUCTORS AND COORDINATORS

\*\*Instructors will be asked to reflect upon the particular course that they teach, while the coordinators will be asked to reflect upon the program as a whole. These questions will be used to guide the interview, but the instructors/coordinators will be encouraged to elaborate extensively on each of these points, as well as providing any additionally relevant information.

#### **Background Information (will help in informing RQ3: Can a theoretical model of students' motivational orientations (with respect to information behaviour) be developed?)**

1. How long have you been involved with the TL-DL program (as an instructor or coordinator)?
2. Can you tell me a little bit about the course you are currently or just finished teaching [or the TL-DL program generally]?
  - a. How did it develop? How long have you been teaching it?
  - b. What type of content do you try to include?

#### **RQ1: What motivates students to engage (or not engage) in information behaviours in web-based classrooms?**

3. In your opinion, where is the typical first place that students look for information when starting an assignment? Why do you think this might be the case?

4. In your experience, in what types of places do students typically seek information for your online course [or for the TL-DL program in general]? Has this changed over time?
5. In your opinion, where do students typically find information for their online courses [or TL-DL program in general]? Can you speculate as to why this might be the case?
  - a. Can you reflect on any particular challenges the students face while accessing information for their course(s)?
  - b. Are there any ways in which the students information access is facilitated?
6. What do you think typically motivates students to look for information for the course that you teach (or for the TL-DL program more generally)?
7. What do you think motivates students to continue pursuing information about a topic, even after an assignment has been handed in?
8. Have you personally (as an instructor) done anything that you think influenced the way students look for information? [In your opinion, has the nature of the TL-DL program as a whole influenced the way that students look for information?]
9. Can you tell me about the type of technical support that was available for your online course [in the program as a whole]? Do you think that this influences how the students engage in the course? Why or why not?

**RQ2: Do students' perceptions of their instructor's teaching strategies and the classroom environment influence their motivation to engage in particular information behaviours in web-based classrooms?**

10. Have you seen evidence that students in your class are sharing information? Can you give some examples?
11. How do you believe that information is typically shared between classmates in your online class [or in the TL-DL program in general]?  
This can refer to types of technology used, but also the type of information that is shared.
12. Why do you think that students in your classroom (or the TL-DL program generally) are inclined to share information with one another?
13. As an instructor [or program coordinator], do you think that you have influenced the students' propensity to share information with their classmates and if so how?
14. Do you think there is a difference between how students seek information in the online versus face-to-face context?
15. Do you think there is a difference between how students share information in the online versus face-to-face context?
16. Is there anything else that you would like to tell me that I haven't already covered today, and that might help me understand the information seeking and sharing patterns in a TL-DL online classroom?

**\*\*Note: All of these questions will help inform RQ3:** Can a theoretical model of students' motivational orientations (with respect to information behaviour) be developed?

## Appendix 10 – Open Codes

\*\*The concept of seek in the codes below is meant to encompass both active information seeking, as well as information encountering (see details on page 228).

<b>Name of Open Code</b>	<b>Description of Code</b>
IB_Seek_AcademicDatabases	Looking for materials in academic databases.
IB_Seek_Anxiety	Feeling anxious as you begin the search for information.
IB_Seek_Books	Getting information needed from books.
IB_Seek_Books_CampusLibrary	Using the books available from the University's library.
IB_Seek_CitationMining	Using the articles you have to find more references (generally from the reference list).
IB_Seek_Classmates	Trying to source the information that you need from classmates.
IB_Seek_CommunityResources	Seeking information from one's local environment (e.g., community library).
IB_Seek_CourseMaterials	Seeking and using materials that have been recommended by the instructor.
IB_Seek_Experts	Getting information from experts in the field (e.g., by emailing them).
IB_Seek_Focus	Learning to hone one's topic; this relates to information overload in that students are overcoming this overload as their program progresses.
IB_Seek_Forum	Using the archived forums to find information for self, but also finding out what others are interested in so that you can help them out.
IB_Seek_Frustration	Frustration when technology does not work properly and thus you can't find the requisite information.
IB_Seek_GetOnWithIt	Not intimidated with search

Name of Open Code	Description of Code
	process and just get on with it.
IB_Seek_Instructors	Location of information is facilitated or influenced by instructors (e.g., they answer questions, offer suggestions, etc.).
IB_Seek_InterlibraryLoan	Using interlibrary loan facilities to get article or book.
IB_Seek_Need_It	Seeking information because aware that they do not have all of the answers.
IB_Seek_NonJournalArticleWebSources	Finding information outside the scope of ordinary academic databases (e.g., through a Google search).
IB_Seek_Overload	Experiences information overload searching for materials.
IB_Seek_PersonalRelevance	Choose to look for materials that are personally relevant (e.g., they are of interest to other members of one's family).
IB_Seek_Planning	Knowing ahead what you'll be doing for other projects and building up resources as you go along.
IB_Seek_Practice	Learning to build information retrieval skills through own personal trial and error.
IB_Seek_ProfessionalExperience	Using professional experience as an information resource.
IB_Seek_ProfessionalMaterials	Seeking out information from materials of a professional nature, such as a quarterly publication from the LAA (Library Association of Alberta).
IB_Seek_ProfessionalRelevance	Seeking out and using information because it enhances professional role.
IB_Seek_Puzzle	Completing the search like a puzzle, fitting all of the pieces together.
IB_Seek_ResearchDeficit	Too little information out there

<b>Name of Open Code</b>	<b>Description of Code</b>
	on topic of interest.
IB_Seek_SearchStrategy	Related to how one approaches the formation of a search strategy.
IB_Seek_Technology	The technological capacity of databases, websites, etc. influences the information seeking process.
IB_Seek_Training	Taking training opportunities to improve one's search skills.
IB_Seek_Orienting	Orienting oneself to the topic before jumping full-fledged into the information search.
IB_Seek_OtherCourses	Using material from other courses to inform current coursework.
IB_Share_Articles	Sharing articles with others.
IB_Share_Book	Sharing books with others.
IB_Share_Classmates	Classmates sharing information with one another.
IB_Share_Colleagues	Sharing with and getting information from colleagues who are not part of the online learning community.
IB_Share_Community	Sharing with others makes online environment feel like a community.
IB_Share_Course_Material	Sharing material that is specifically related to the course.
IB_Share_CourseFeedback	Sharing information about the course with the instructor.
IB_Share_Edit	Opportunity to edit and perfect comments, so that you were more comfortable sharing. Able to be more thoughtful.
IB_Share_Electronic	Information shared comes in electronic form.
IB_Share_Email	Sharing information outside the classroom setting, through private emails.
IB_Share_Equality	Greater tendency for all to share than in face-to-face, where introverts tend to be less reflected in the classroom

<b>Name of Open Code</b>	<b>Description of Code</b>
	discussion.
IB_Share_F2F	Difference in information shared in the face-to-face versus online context.
IB_Share_Family	Family members sharing information for students' courses (and students sharing course materials with their family).
IB_Share_ImpressionMgmt	Being careful what you say because of how it looks to other members of the online learning community
IB_Share_Instructors	Instructors sharing information with the members of the class.
IB_Share_Logistics	Working out logistics so that you can facilitate sharing opportunities.
IB_Share_Messenger	Sharing information through instant messenger.
IB_Share_Opinions	People sharing their opinions and ideas with others. Can also include advice.
IB_Share_Overload	Students can be overwhelmed by the volume of information posted by other students.
IB_Share_Personal_Background	Sharing information about themselves that may not be related to their academic or professional role.
IB_Share_PersonalStudents	Sharing information from the program with the students that they teach.
IB_Share_Phone	Sharing information with others over the phone.
IB_Share_Privacy	Holding back on information sharing because of privacy concerns.
IB_Share_ProfessionalRole	Because these students are all teacher-librarians, they take the opportunity to share professional advice with one another (like a community of practice).

Name of Open Code	Description of Code
IB_Share_SocialTechnologies	Sharing information through social networking software, such as Facebook or MySpace.
IB_Share_Time	Share information to help save others time.
IB_Share_Training	The sharing of training materials.
IB_Share_Vulnerable	The sense of vulnerability felt when posting and sharing assignments with everyone else.
IB_Share_WebCT	Sharing information in the virtual classroom forum.
Mot_Seek_AcademicNeed	Motivated to seek information or training by an immediate academic need (e.g., course assignment).
Mot_Seek_Autonomy	Motivation to seek more information is based on having the autonomy to learn more about areas of personal interest.
Mot_Seek_Confidence	Motivated by confidence in one's skills to go out and find the information that one needs.
Mot_Seek_Convenience	Motivated to use resources that were convenient.
Mot_Seek_Currency	Motivated to look for information because of a desire to remain current.
Mot_Seek_Enjoyment	Motivated to seek out the materials that are of interest and enjoyable to read.
Mot_Seek_GradStudent	Motivated by one's belief about what is expected of a graduate student. Look for more and better information, as well as plan ahead because they are graduate students and that is what's expected.
Mot_Seek_Instructor_Expectations	Motivated to seek information from particular places and in particular ways because it is

<b>Name of Open Code</b>	<b>Description of Code</b>
	what the instructors expect.
Mot_Seek_Inter-RelatedCourses	Motivated to keep seeking information after assignment is due, because it may and often is relevant to other courses.
Mot_Seek_LifelongLearning	Motivated to seek information during and even after course is complete because of a view of one's self as a lifelong learner.
Mot_Seek_PersonalRelevance	Motivated to seek information because it has personal relevance.
Mot_Seek_ProfessionalRelevance	Motivated to seek information because of professional relevance (i.e. seek materials because doing so improves skills as a librarian).
Mot_Seek_Puzzle	Motivated to look many places for information as this enabled the location of pieces that would best solve the research problem.
Mot_Seek_Time	Motivated by influence that time has on the information seeking process.
Mot_Share_Assignment	Motivation to share is driven by the nature of the assignment; one shares if the assignment requires it.
Mot_Share_Comfort	Motivated to share by the degree of comfort that one has in sharing information.
Mot_Share_Convenience	Motivated to share because particular tools and technologies (e.g., Messenger) make it easy to do so.
Mot_Share_Culture	Motivated to share information with one another because it seemed part of the culture.
Mot_Share_Help	Motivated to share information because it may help someone else out.

<b>Name of Open Code</b>	<b>Description of Code</b>
Mot_Share_LookGood	Motivated to share information in order to make yourself look better.
Mot_Share_Marks	Motivated to share information because you hope it will help your grade.
Mot_Share_Open	Motivated to share because program coordinators/instructors are open to incorporating student ideas.
Mot_Share_Personality	Motivated to share because it's part of your personality. You are good with people and sharing comes from that desire for interpersonal contact.
Mot_Share_PersonalRelevance	Motivated to share information because it has personal relevance to you or others.
Mot_Share_ProfessionalIdentity	Motivated to share because of professional identity. As a librarian (and teacher), part of one's professional identity is wrapped up in the idea that one should be sharing information.
Mot_Share_ProfessionalNeed	Motivated to share by the opportunity to talk with other librarians and see what they're doing. This helps to inform own work.
Mot_Share_ProfessionalRelevance	Motivated to share material that is professionally relevant to self and others.
Mot_Share_Respect	Motivated to share because of a sense that your opinion is valued. Also, encourage others to share with you because you respect their opinion.
Mot_Share_Time	Motivated to share information because of time factors.