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Understanding Teachers' Information Needs, Perceived Competencies, and Information Seeking Behaviours for Special Education Information

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

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UNDERSTANDING TEACHERS' INFORMATION NEEDS,
PERCEIVED COMPETENCIES, AND INFORMATION SEEKING
BEHAVIOURS FOR SPECIAL EDUCATION INFORMATION

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ii

ABSTRACT

The focus of this research is to better understand teachers' information needs, perceived competencies, preferences for information sources, and information seeking behaviours related to special education by level of teaching experience. A mixed methods approach to research was employed using a combination of quantitative and qualitative methods. Eighty-five elementary and intermediate school teachers (J.K. through Grade 8) from Catholic and public school boards in southern Ontario, Canada, completed an online survey questionnaire. Semi-structured, follow-up interviews were then conducted with 11 teachers to further explore the issues. The participants were classified into three experience level groups (i.e., novice, intermediate, and expert teachers) based on 9 indicators of teaching and special education experience and expertise. The participants' special education information needs were coded to the Council for Exceptional Children's (CEC) 10 Professional Standards for Special Education (2009) to better understand how teachers with different levels of experience perceive their special education needs and to examine how their needs relate to the CEC's Professional Standards. The semi-structured interview data was used to provide further illumination on the results of the survey data. Overall, teachers' most frequently identified needs involved instructional strategies (including differentiated instruction) and how to create inclusive classrooms. More experienced teachers were better able to identify and articulate their special education needs. Distinct patterns of source preferences were found based on teachers' experience levels. Novice teachers most preferred face-to-face consultations with knowledgeable colleagues and least preferred sources of information that were passive, individual activities such as searching online; reading professional

books, magazines, and research resources; or watching videos. They reported being less successful at finding the specific information they needed from these sources. Expert teachers favoured research and professional literature and online sources. Teachers also indicated a preference for one source of online special education information and reported only using a few websites as their main point of access for special education information: school board websites, the Ontario Ministry of Education website, and a variety of disability association websites. The ultimate goal of this research is to provide information on how to better support and meet teachers' information needs related to special education.

DEDICATION

This work is dedicated to my parents, Larry and Dianne Tanner,
who always encouraged a strong work ethic,
and who continue to inspire me.

I also dedicate this work in memory of
Marie Herter and Clare Tanner,
who did not get a chance to see this project completed.
You are always in my thoughts.

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"At times our own light goes out and is rekindled by a spark from another person. Each of us has cause to think with deep gratitude of those who have lighted the flame within us."

Albert Schweitzer

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TABLE OF CONTENTS

CHAPTER 6: CONVERGENCE OF THE INTERVIEW DATA WITH THE SURVEY DATA

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

CHAPTER 1:

INTRODUCTION

We Need to Better Understand Teachers' Special Education Information Needs

Currently, an inclusive approach to education is the norm in classrooms in

Ontario, Canada. With inclusion, regular classroom teachers are educating more students

with diverse special education needs, and are dealing with more challenging, and more

complex students with exceptionalities in the regular classroom (Froese-Germain &

McGahey, 2012). Despite the increasing need for regular classroom teachers to practice

inclusion and provide special education, teachers do not feel well-prepared to do so

(Horne & Timmons, 2009). Teachers in Ontario receive little training about special

education during their teacher preparation (Bennett & Wynne, 2006). The research

literature consistently indicates that teachers desire more information on inclusion and

teaching children with special needs. But, precisely, what type of special education

information do teachers want? Research-based practices are critical for the success of

students in special education (Heward & Silvestri, 2005). Yet, a large gap exists between

the research information produced on best practices in special education and uptake of

these practices in classrooms. Landrum, Cook, Tankersley, and Fitzgerald (2002) noted

that there is very little research describing how and from where teachers obtain

information to guide their classroom practices. What are teachers' preferred sources of

information? Given the proliferation of information so readily available on the Internet,

including access to research information, are teachers using Internet sources to address

their information needs? The purpose of the present exploratory study was to gather

information that could be used to better understand teachers' information needs,

perceived competencies, preferences for information sources, and information seeking behaviours related to special education. This research will potentially inform of better ways that information can be provided to support and meet teachers' information needs for special education.

Relevance of This Research to Education

Currently there is a large gap between the amount of educational research information produced and the educational research information used in practice. "The inability to translate research knowledge into daily practice has become increasingly recognized as a crisis in education that has frustrated efforts to improve student outcomes" (Cook, Landrum, Tankersley, & Kauffman, 2003, p. 345). Research has consistently shown that educators rarely use research evidence to inform their educational practice (Hemsley-Brown & Sharp, 2003; St. Clair, 2004). Logan et al. (1999) reviewed the implementation of effective, research-based instructional strategies in typical classrooms and found that this research knowledge rarely translated directly into practice—a finding which they found consistent with the research literature for the past 25 years across both general education and special education. Logan et al. found that teachers were unaware of research-based instructional practices in both general and special education. They found that teachers did not value, nor rarely read formal research. Lang (2002) noted that for practitioners to apply research findings to practice, educators needed to see the relevance of the research to their practice, it needed to have immediate and direct applicability, practitioners needed to accept it, and it needed to be presented in a way that was understandable. Klingner, Ahwee, Pilonieta, and Menendez (2003) implemented a program using research-to-practice facilitators. They found that despite

a high level of support and resources devoted to promote implementation of new educational practices, getting teachers to implement these practices was very difficult. A barrier that continues to obstruct educators' use of research findings is the difficulty that educators have in applying research findings to practice. On visiting a number of classrooms in different schools, Cook and Cook (2004) found that teachers were using practices shown to be ineffective by research and failed to see teachers using evidence-based techniques.

Research-Based Practice is Critical for the Success of Students in Special Education

Cook and Cook (2004) noted that while many typically developing students may learn and succeed without educators' using the most effective instructional techniques, effective practices are absolutely necessary for students with learning disabilities to succeed. They concluded that without receiving instruction that has been shown to produce desired outcomes, students with learning disabilities will likely fail in school. Further, regular classroom teachers, who may be unaware of the research on best practices in special education, may unknowingly be using practices that are counterproductive to effectively educating students with special needs. Edmunds (2003) pointed out that as most students with special needs are found in the general classroom there is the need for regular classroom teachers to become skilful and knowledgeable in being able to modify and adapt programming for students with special needs. One aspect of special education is that it provides information on approaches that can be used with specific disabilities that will enable students with disabilities to thrive in the regular classroom. The National Dissemination Center for Children with Disabilities (2010)

promoted the use of using research to inform practice and decision making to improve both the educational and life outcomes of children who have disabilities.

Williams and Coles (2007b) noted a lack of engagement by the teaching profession in using evidence-based practices. This is echoed in the conclusion of Landrum, Cook, Tankersley, and Fitzgerald (2007), "The implications of this gap between research and practice for students with disabilities are both clear and ominous: the most effective instructional techniques currently available apparently are not routinely brought to bear on those students who require them the most to achieve their potential" (p. 28). To improve teachers' use of evidence based practices, researchers must "be keenly aware of the needs of teachers" (Cook et al., 2003, p. 351) and adapt research materials to the needs of teachers (Miller, Drill, & Berhstock, 2010). Understanding teachers' special education information needs and preferences may be the first step in bridging the research to practice gap in special education.

Thrust Towards Inclusive Education as a Best Practice

Educators are being encouraged to adopt an inclusive paradigm of educational practice as a best practice approach to educational service delivery for all students. Inclusive educational practices and policies are being encouraged by many governments and educational authorities around the world, reflected by the legislation being created around disability. In 1994, delegates at the World Conference on Special Needs Education, representing 92 governments, agreed on a number of statements that supported the policy of inclusion as the norm (referred to as the Salamanca Statement, named after the city where the Conference was held). These delegates agreed that:

Regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost effectiveness of the entire education system. (United Nations Educational, Scientific and Cultural Organization , 1994, p. ix)

Special Education law in the United States: the Individuals with Disabilities Education Act (IDEA, 1997), "…mandates that students with disabilities be educated with children without disabilities to the maximum extent appropriate in the least restrictive environment. For many children in special education, this is the general education classroom" (Patterson, 2005, p. 67).

In the Province of Ontario, Canada, the Ontario Human Rights Commission has not only written policy into the Ontario Human Rights Code about disability, inclusion, and education, but has published three reports espousing the value of inclusion: The Opportunity to Succeed: Achieving Barrier-Free Education for Students with Disabilities (2003), Education and Disability: Human Rights Issues in Ontario's Education System (2002), and Policy and Guidelines on Disability and the Duty to Accommodate (2000). One of the key messages coming from these documents is the recognition of the central importance of design by inclusion. Clearly, providing inclusive education for students with and without disabilities is considered a best practice model of educational service delivery.

Inclusive education is a philosophy and an approach to delivering educational services. The philosophy of inclusion is based on the social model of disability, which emphasizes that the source of problems related to a disability stem from the environment (i.e., problems that people with disabilities experience are not due to their disability, but are the result of social and environmental barriers). This is opposed to the classic medical model, which places the root of the problem with the individual (i.e., disability is explained in terms of dysfunction/impairment/what is wrong with one's body). For inclusion, using a social model of disability means changing/modifying/adapting the environment to reduce the barriers that a person with a disability experiences. Inclusion is not just placement of students with disabilities into the regular classroom, it is also a philosophy and an approach to service delivery. One underlying principle in inclusion is that all children will benefit from inclusive practices, not just children with special needs (Odom, Buysse, & Soukakou, 2011). Oremland, Flynn, and Kieff (2002) defined educational inclusion as occurring when, "children with disabilities are considered as fully participating members of the group, and they meaningfully take part in everyday classroom life…they receive the support and guidance needed to achieve their individual education and development goals" (p. 154). Oreland et al. concluded that inclusive educational practices promote the acceptance of diversity and maximize the potential of every child. There is not just one way to implement an inclusive approach to practice. Dymond (2001) pointed out that inclusion is not a uniformly defined construct. That is, inclusion consists of a variety of elements and methods of service delivery that can be very differently implemented across educational settings.

Inclusion is the Norm in Ontario Classrooms

Generally in classrooms in Ontario, Canada, inclusion is the model of practice—the majority of students with special needs are placed in the regular classroom, even students with more complex disabilities are being included into regular classroom settings. Bennett and Wynne (2006) noted that "Ontario ranked among the highest of any province or state in North America in terms of the reported incidence of students with acute or severe special needs" (p. 7). Furthermore, they reported that 81% of students receiving special education were placed in the regular classroom in Ontario school boards in 2003. Regular classroom teachers are being asked to develop programming for these students, often with little training about specific exceptionalities or how to modify/adapt curriculum, the classroom environment, or their teaching methods for these students. Even new teachers are expected to be able to address the learning needs of special education students.

Katsiyannis, Ellenburg, and Acton (2000) identified the importance of addressing teachers special education training needs to improve teachers' capacity to provide successful integration to students with disabilities: "Addressing preservice and inservice training needs to expand the capacity of general education teachers in facilitating success of students with disabilities in integrated settings is essential in implementing legal and best practices" (p. 120).

Teachers Are Not Well-Educated About Special Education

Regular classroom teachers are dealing with more students with diverse special education needs, yet teachers receive little special education training during their teacher preparation. In a report to the Ontario Ministry of Education, Bennett and Wynne (2006),

part of a working table on special education, called for major changes to transform special education in Ontario. They noted that educators needed more and ongoing professional development about best practices for students with special education needs. They recommended that a full annual professional development day be dedicated to special education, that a special education component be included in the Induction Year program (for teachers in their first year of teaching), that all professional development opportunities include effective practices that would benefit students with special needs, and that a minimum of a half-course on special education be completed before an Ontario teaching certificate was issued (teachers in Ontario could graduate without being required to have taken a special education course).

Practicing teachers are not receiving the professional development they say they need in special education and do not feel very well prepared to address these students' needs (Parasad, Lewis, Farris, & Greene, 2001). Chval, Avell, Pareja, Musikul, and Ritzka (2008) noted that studies have found that professional development programs fall short because they do not consider teachers' experience and needs. When teachers are not provided with professional development to meet their special education needs, they must search for the information themselves. Mardis (2009) analyzed the search strings that were entered into the Michigan Teacher Network's educational digital library from 2004 to 2006 and found that the term "special education" was in the top 10 most commonly searched terms.

Teachers believe that inclusion is important but need information on how to practice inclusion (Anderson, Klassen, & Georgiou, 2007). In surveys with 1492 Canadian educators, Bunch, Lupart, and Brown (1997) found that the majority of

educators considered inclusion to be positive (e.g., an educationally sound practice, within the competencies of supported regular classroom teachers, and beneficial to all students), but felt that regular classroom teachers were inadequately prepared for inclusion through pre-service and in-service experiences. Teacher preparation for inclusion was the highest issue of concern for educators, out of ten issues explored. The second highest area of concern was insufficient support for inclusion. McLeskey, Henry, and Hodges (1999) found that one of the biggest fears of pre-service teachers was working with special education children with severe disabilities. While educators share a strong belief in the fundamental value of inclusion (Smith & Smith, 2000), and hold positive beliefs about inclusion (Edmunds, 1999, 2003), teachers report that they feel inadequately prepared for inclusion and need specific inclusion training (Edmunds, 1999, 2000, 2003). Despite the emphasis on integration, teachers struggle with providing inclusive classrooms (Specht et al., 2001).

What Specific Special Education Information Do Teachers Require? Findings from the Research Literature

Teachers say they need more special education information, but precisely what type of information do they want? Further, does special education information needs differ depending on the characteristics of educators, such as teaching experience, or type of teacher? There are few studies specifically examining Canadian teachers' special education information needs. Where possible, Canadian studies have been reported. More studies are available on teachers' special education information needs outside of Canada. Dworet and Bennett (2002) noted that there are differences between American and Canadian teacher training requirements in special education, in the definitions of

exceptionalities, and how special education is funded. Therefore, differences in educational systems may influence teachers' special education information needs, and this needs to be taken into account in interpreting the following studies. This also indicates a need for more studies that examine Canadian educators' special education information needs.

Pre-Service teachers. Woloshyn, Bennett, and Berrill (2003) held focus groups with graduating teacher candidates from Ontario, Canada, on teacher candidates' beliefs about their preparedness to work with students who have learning disabilities. These teachers felt unprepared to meet the needs of children with learning disabilities, and uncertain in their abilities to identify these children and develop and implement effective lesson plans for these students. Focus group participants expressed a need for more instruction, practicum experience, and mentoring in special education.

Novice teachers. Whitaker (2003) found that first year special education teachers reported that they most needed assistance in: learning special education policies, procedures, and paperwork; receiving emotional support; learning system information related to the school; and learning about available materials and resources. To a lesser extent they reported needing assistance with curriculum and instruction, discipline, management issues, and interactions with others.

Experienced teachers. Seventy-one, experienced, Kindergarten to Grade 8, general school teachers (with an average of 19.7 years of teaching experience) from New Jersey and Pennsylvania were surveyed about their special education information needs. They reported that their main information need was for specific information about children with disabilities. When it came to their needs to successfully teach students with

disabilities, they most needed information on classification (characteristics of disabilities and how to identify different disabilities), information specific to the individual child, and information on strategies for adaptations and accommodations (Kamens, Loprete, & Slostad, 2003).

General versus special education teachers. Buell, Hallam, Gamel-McCormick, and Scheer (1999) conducted a professional development needs assessment with 289 general and special education teachers in a mid-Atlantic state in the U.S. and found that general education teachers rated their training needs higher than special education teachers in areas such as program modification, assessing academic progress, assessing social interaction, adapting curriculum, managing behaviour, developing Individual Education Plans, and using assistive technology. General education teachers also did not feel as confident as special educators in their ability to fulfill tasks needed to support inclusive education. Special education teachers rated their efficacy, ability, understanding, and access to resources higher than general educators in the following areas: perceptions of ability to positively affect students, understanding of inclusion, and self-efficacy in serving students in inclusive settings.

Dugman (2003) conducted a state-wide professional development needs assessment for 5,340 Kindergarten to Grade 12 general and special education teachers for the South Dakota Department of Education. The top two ranked themes emerging as teacher development needs involved more information on special education: 1) information on creating instructional opportunities that are adapted to diverse learner needs (including information on disabilities), and 2) information on a variety of instructional strategies to encourage students' development and performance (including

accommodations and modification in classroom instruction, and inclusive classroom strategies).

Primary versus post-primary teachers (intermediate and secondary school teachers). O'Gorman and Drudy (2010) surveyed 642 elementary and post-elementary teachers from Ireland about their most urgent professional development needs and the majority of their top five needs for both groups were special education information needs. The top need for both groups was information related to Individual Education Plans (IEPs), and the third most mentioned need was information on various disabilities. Primary teachers' fourth highest need was for information on testing, including diagnosis and assessment. Post-primary teachers' fifth highest need was for teaching methodologies relevant to special education.

What Should Teachers Know About Special Education?

Woloshyn et al. (2003) summarized some of the knowledge and skill areas that researchers and educators have documented as important for teachers to possess who are working with students with special needs—these included:

(a) having knowledge about the nature of learning disabilities and the

characteristics of students who possess them, (b) knowledge of a variety of

assessment tools and evaluation procedures in order to be able to program

effectively for students with unique learning needs, (c) competence in

considering these students' social and emotional development, (d) ability

to communicate and collaborate with a number of other vested individuals

including parents, colleagues, and other professionals and

paraprofessionals within the field, and (e) confidence in addressing

classroom management and motivation needs in areas such as adaptive behaviour, self-advocacy, and enhancement of self-concept. (p. 9)

Council for Exceptional Children's (CEC) Professional Standards for "What Every Special Educator Must Know" (2009)

The Council for Exceptional Children's (CEC) Professional Standards for *What Every Special Educator Must Know* (2009) provide a theoretical framework for what special education information teachers need to know and the skills that they need to meet the special education needs of students. The CEC Standards consist of specific Content, Knowledge, and Skill Standards for special education teachers in 10 different domain areas. Table 1 lists each of the CEC Standards and provides a brief example of the content of each of the Standards. The CEC describes the Standards as being research-based, pedagogically grounded and rigorously validated knowledge and skills that are essential for special educators (CEC, Board of Directors, 2004). Crutchfield (2003) described CEC as the "world's leader" in the development of teaching standards for special education.

Table 1

List of 10 CEC Special Education Standards with Content Examples of Each Standard

	Name of Standard	Example of Content of Standard
1	Foundations	Understand the philosophy, principles and theories, and history of special education; know the relevant special education laws and policies; understand the trends and issues in special education
2	Development and Characteristics of Learners	Understand similarities and differences in human development among children with and without exceptionalities
3	Individual Learning Differences	Understand how exceptionality affects learning; understand how language, culture, and family backgrounds interact with exceptionalities to impact academic and social abilities, attitudes, values, and interests
4	Instructional Strategies	Know a variety of instructional strategies to individualize instruction, appropriately modify learning environments
5	Learning Environments and Social Interactions	Create inclusive environments that foster understanding, safety, emotional well-being, positive social interactions, self-motivation, empowerment, and self-advocacy; engage students with exceptionalities in meaningful learning activities and interactions; know classroom management theories and strategies for students with exceptionalities
6	Language	Understand typical and atypical language development; understand how exceptionalities interact with student's experience and use of language; teach appropriate communication skills; know augmentative, alternative, and assistive technologies to enhance communication
7	Instructional Planning	Develop individualized, differentiated instructional plans for students with exceptionalities
8	Assessment	Use multiple types of assessment information; use assessment results to identify exceptional learning needs, identify supports and adaptations required, and to develop and implement individualized programs
9	Professional and Ethical Practice	Plan and engage in activities that foster professional growth, keep current with evidence-based best practices
10	Collaboration	Establish positive relationships with families; collaborate with families and other professionals; advocate for students with exceptionalities

The present research utilized the Council for Exceptional Children's (CEC) Professional Standards for *What Every Special Educator Must Know* (2009) as a framework to investigate teachers' information needs, preferences for information sources, and information seeking behaviours for special education information. The CEC recommended that regular classroom teachers use the Standards to evaluate their competence in various domains of special education and guide their professional development so that "All teachers ensure that their knowledge and skills are up-to-date and sufficient to meet the needs of their individuals with exceptional learning needs" (CEC, 2009, p. 38).

Have Teachers' Preferred Sources of Information Changed with Information so Readily Available on the Internet?

Since teachers special education information needs may not be being met through professional training, then how are teachers meeting these needs? The Internet seems to be an abundant source for special education information, but are teachers using the Internet to satisfy their special education information needs? Perrault (2007) noted that there are a lack of research studies that have specifically examined teachers' internet searching behaviours, including how teachers find, access, and use information. However, earlier studies have found that teachers have had difficulties finding information online. Small, Sutton, Miwa, Urfels, and Eisenberg (1998) examined teachers' search ease, success, and satisfaction with their searches for teachers who used AskERIC, a question and answer service of the Educational Resources Information Center (teachers who used AskERIC were considered as more proficient Internet-users at the time), and found that 54% (112) of the teachers interviewed reported that their

searches were somewhat difficult to very difficult. Laverty, Reed, and Lee (2008) examined the web searching skills of 247 Ontario teacher candidates and found that these teachers used relatively unsophisticated search methods. Further, in a review of teachers' online information seeking, Olsen and Diekema (2011) reported that findings from the literature consistently report that teachers find the search process overwhelming.

Williams and Coles (2007a) found that the purpose for teachers using the Internet had changed: in 1998 Scottish teachers reported using the Internet as a teaching tool rather than as a point of access to professional information (Williams, Wilson, Richardson, Tuson, & Coles, 1998), whereas teachers in the study reported in 2007 expressed a preference for using the Internet as a point of access to information and to support their professional development needs. However, teachers expressed that searching the Internet and sifting through information was seen as time-consuming. Further, teachers reported a lack of confidence in defining a search strategy.

More studies have been conducted on other professionals' Internet information seeking behaviours than on teachers'. These studies have found similar findings across professions. Studies focusing on other professionals' search for information related to complex tasks have reported that professionals found it difficult to satisfy their information needs through the Internet/computer/database searches, and found that professionals lawyers (Kuhlthau & Tama, 2001) and physicians (Bennett, Casebeer, Zheng, & Kristofco, 2006) found it best for general information, but less useful for answering a specific inquiry These professionals found databases useful when they searched for information they already knew about, but did not find it useful when their knowledge state was ambiguous, a problem ill-defined, and tasks complex. These

researchers identified the need for a filtering system for professionals to avoid being overwhelmed with the amount of information.

In a review of 19 research articles on the information seeking of physicians, Dawes and Sampson (2003) found that the most frequent sources of information was print sources (e.g., textbooks, books, and articles), and the second most frequent source was colleagues, and only one study found electronic databases to be the primary source. Bennett, Casebeer, Kristofco, and Strasser (2004) found an increase in physicians' use of the Internet to find professional information from 2001 to 2003: Their average time doubled. Physicians reported that critical to searching for clinical information on the Internet was the credibility of the source, the relevance of the information, and unlimited access to information. The top barriers to using the Internet as an information resource were: too much information to scan, lack of specific information, and navigation or searching difficulties.

Jenkins, Corritore, and Wiedenbeck (2003) examined nurses' web-information seeking and found that there were distinct differences in searching patterns related to expertise for both subject-domain experts and web experts. Domain experts used their pattern-matching ability to locate relevant results, they had a much clearer sense of what they were looking for, they had more domain-specific terminology, they showed more persistence in their searchers, were quicker at determining the value of information, more thoroughly evaluated information they encountered (experts were explicit about the criteria they used for evaluating information), and were more likely to use research databases. Both subject domain novices' and web novices' information searches were characterized as having more breadth than depth. These novices used more simple search

queries, tended to less critically evaluate the content of found information, and had more difficulties finding appropriate information for the task.

We Know Little About Teachers' Information Seeking Behaviours and Preferred Sources of Information

What do we know about teachers' information needs, information seeking behaviours, and preferred sources of information? While other professions, such as nursing and medicine, have a fairly large body of literature on information seeking behaviours, the research literature on teacher information seeking behaviours is scarce. Williams and Coles (2007a) noted that little is known about teachers' information strategies and the information support required to encourage uptake of evidence-based practices and recommended further investigation on understanding teachers as professional learners and information users.

In reviewing the research literature, Normore (2007) also noted that we know little about the information seeking behaviours of practicing teachers. While exploring the information needs of 13 Reading Recovery teachers, she found three major theme areas surfaced related to teachers' information needs: communication needs (e.g., how to communicate with policy makers), specific skill or resource-related needs (including information on how to help children with special needs), and professional development needs (e.g., ways to help struggling students).

The Importance of Comparing the Information Seeking Behaviours of Novice, Intermediate, and Expert Teachers

Wilson (2006) noted "before a generally applicable theory of information seeking behaviour can be evolved, the context of [information needs] research must be narrowed

so that crucial determining factors can be identified and analyzed" (p.666). Limberg (1999) suggested that the problem with most information seeking models is that they disregard variation in information seeking. Fourie (2006) reported that there is a need for more research examining information seeking from different perspectives. In a systematic review of the information seeking behaviour in physicians, Dawes and Sampson (2003) found a wide variation in information seeking behaviour and recommended that further research was needed on categorizing information need and information sources. Therefore in the present study, examining the information needs, perceived competencies, preferences for information sources, and information seeking behaviours of teachers with different levels of experience (novice, intermediate, and expert) will provide an opportunity to examine potential differences in teachers' information seeking.

Wilson (2000) summarized that research has indicated that the most important determinants of information behaviour are discipline, work role, and time spent in the subject field. There are some indicators in the literature that novice teachers may focus on different needs than experienced teachers. Whitaker (2001) summarized that novice teachers seem to focus on their own personal needs first before focusing on students' needs and found that novice special education teachers reported needing less information in areas directly impacting students, such as curriculum and instruction.

The research literature is rich with expert versus novice comparisons. In reviewing the research literature on expert-novice differences across domains, Bransford, Brown, and Cocking (2000) noted that in comparison to novices: (a) experts notice features and meaningful patterns of information that are not noticed by novices, (b) experts have acquired a great deal of content knowledge that is organized in ways that

reflect a deep understanding of their subject matter, (c) experts' knowledge cannot be reduced to sets of isolated facts or propositions but, instead, reflects contexts of applicability—knowledge is conditionalized on a set of circumstances, (d) experts are able to flexibly retrieve important aspects of their knowledge with little attentional effort, and (e) experts know their disciplines thoroughly.

In a review of the expertise literature King, Bartlett, et al. (2008) identified six main attributes of expertise that cut across professional fields—primary characteristics of expertise included: (a) knowledge (content, procedural, and self-knowledge), (b) personal qualities and characteristics (e.g., attitudes, values, and traits such as motivation and commitment), (c) skills and abilities (e.g., technical skills, interpersonal skills, self-regulation, cognitive, and meta-cognitive skills), (f) superior outcomes of performance, and (e) enhanced reputation/elevated status among peers.

Berliner (1986) specifically looked at teacher expertise and noted that expert teachers have more developed practical knowledge and internal schemata for teaching, expert teachers make more inferences while novices view problems more literally, expert teachers classify teaching problems based on deeper structures rather than surface features, experts are quicker to recognize and identify patterns, experts can represent problems and solve them using more sophisticated strategies, and experts have better planning and time management, meta-cognitive, and self-regulatory practices.

To conceptualize teacher expertise, Sternberg and Horvath (1995) developed the Prototype Model of an Expert Teacher which consisted of different clusters of features that expert teachers have been identified as exhibiting. This model distinguishes between experienced and expert teachers by identifying the three key features that an expert

teacher will possess: (1) Knowledge Base—experts have extensive domain-specific knowledge (which includes three different types of knowledge: content—knowledge of subject matter; pedagogical—knowledge of how to teach, and practical—knowledge of the social and political context in which teaching occurs). Sternberg and Horvath report that research indicates that expert and novice teachers differ in the organization of their domain-relevant knowledge; (2) Efficiency—experts solve problems more efficiently, do more in less time, and with less apparent effort than do novices (which includes three different efficiency processes: automatization—skills become automatic, executive control—metacognitive control of cognition, and reinvestment of cognitive resources— experts work on the leading edge of their own knowledge and skill level); and (3) Insight—experts are more likely to arrive at novel and appropriate solutions to problems than are novices (which includes three different insight processes: selective encoding— filtering relevant from irrelevant information; selective combination—combining information that seems to be irrelevant when considered separately, but when combined, is relevant to solving a problem; and selective comparison—applying all information acquired from another context to a problem at hand).

Expert teachers are likely to have well developed knowledge bases (e.g., self-, content, procedural, practical/craft, and pedagogical knowledge) and skills compared to novice teachers. How expert teachers organize and structure information, approach case problems, frame their inquiries, and what information they need and seek related to special education will likely be qualitatively different than novice teachers. In 136 interviews with Canadian educators, Bunch and Finnegan (2000) found that with more experience teaching children with challenges in the regular classroom, teachers concerns

about teacher preparation and inclusion faded. Landrum et al. (2007) presented 127 general and special educators with research information in two different formats—one based on research findings and one based on the personal experiences of a veteran teacher—and found that more experienced teachers felt that the information was less useable, regardless of format. Yet, in novice/expert studies in other professions, experts have been found to request more information than novices: O'Byrne and Goodyear (1997) found that expert psychologists requested more information and focused less on crisis aspects of a client situation than did novices. Ericsson and Lehmann (1996) noted that experts are able to distinguish and selectively use the most critical and relevant information.

One criticism of the current literature on expert and novice differences is that such research focuses only on the two extremes. King, Bartlett, et al. (2008) noted that many of the existing studies on expertise contrast between extremes on the novice—expert continuum and recommended capturing data on intermediates. Therefore, novice, intermediate, and expert teachers were invited to participate in this study in order to examine how level of expertise affected special education information seeking behaviours. Based on the research literature on teachers' information seeking, it is not clear whether special education information needs and source preferences maybe affected by level of teaching and special education expertise.

Identifying Teachers of Interest

The focus of this research is on exploring the special education information needs and information seeking preferences of novice, intermediate, and expert teachers in Ontario, Canada. When it came to views on inclusion of general education teachers,

Edmunds (2003) found no differences between males' or females', or elementary and secondary teachers' perceptions of inclusion on four major issues: (a) the effects of inclusion on the regular classroom teacher, (b) appropriateness of teacher workload, (c) teacher self-confidence in inclusion, and (d) adequacy of teacher preparedness for inclusion. Therefore, given that gender did not make a difference on the attitudes of teachers towards inclusion, gender will not be a focus of this study.

It was also necessary to focus on one group of teachers (elementary and intermediate school teachers) rather than combining these with secondary teachers to make the present study manageable. Early research on Canadian teachers confirm what other information studies have reported: characteristics of user groups, such as work role, affect information seeking behaviours. Summers, Conry, and Matheson (1984) surveyed 273 elementary and secondary principals and administrators, 265 secondary and district support personnel, 292 secondary teachers and department heads, and 304 elementary teachers and support personnel in British Columbia, Canada, and found that work role made a difference on the purpose for seeking information, the type of information sought, and the preferred sources of information. Differences were found comparing the teachers groups (elementary versus secondary) and administrative and support personnel versus teacher groups. The top five reasons (out of thirteen possible reasons) elementary teachers sought information was for 1) finding new materials, 2) students with problems, 3) developing new materials, 4) professional development, and 5) facts for the classroom. Williams and Coles (2007b) found that primary teachers reported being less confident in handling information than did secondary teachers. Furthermore, in secondary education, students are often streamed into different academic levels of courses whereas prior to

secondary school, students of all levels are grouped within the same classroom. Therefore, the present study specifically focused on elementary and intermediate school educators who are currently qualified to teach in Ontario in a regular, Junior Kindergarten through Grade 8 classroom.

In order to ensure that there were an adequate number of teachers at each experience level (i.e., novice, intermediate, and expert), both general and special education teachers were invited to participate in this study. There are some indicators in the research literature that type of teacher (i.e., general educator versus special educator) does not have an impact on teachers' perceptions of information sources (Landrum et al., 2002).

Ultimate Goal of this Research: Why is it Important to Identify and Meet Teachers' Special Education Information Needs

Knowledge utilization is a key goal in research dissemination. Recent models of information seeking suggest that information sources need to be developed for specific user groups (Loeber & Cristea, 2003). Not all information sources are accessible to all user groups. When it comes to special education and students with exceptionalities it is desirable for teachers to engage in evidence-based practice. To encourage such practice it is necessary to provide research information in ways that makes it accessible to teachers.

Fourie (2006) suggested that examining the information needs and information seeking behaviour of a specific target group is the first step in planning information literacy and empowerment programs, and recommended that ongoing research needs to learn more about specific user groups. Loeber and Cristea (2003) recommended examining why users are seeking information in order to improve the design of

information systems. Little is known about the information seeking needs and searching behaviours of pre-kindergarten through Grade-12 teachers. A better understanding of the information needs and exploration patterns of teachers could lead to the development of better designed information systems to meet those needs (Small et al., 1998)

Supporting special education information needs of teachers is critical for teachers to be able to provide appropriate education for students with exceptionalities. Kamens et al. (2003) studied experienced teachers' information needs and concluded that effective inclusion might be accomplished by focusing on meeting teachers' needs, which would facilitate teachers' ability to meet students' needs.

Having a better understanding of educators information needs, perceived competencies, preferences for information sources, and information seeking behaviours is the first step in being able to develop research-based information sources that will be utilized by educators. Improving teachers' knowledge utilization of special education research and information may result in better learning environments and educational success for all students.

Brief Overview of the Chapters

In Chapter 2, a further review of the literature on teachers' information seeking behaviours is presented. This includes information on teachers' source preferences, teachers' special education needs, and novice/expert differences in information seeking behaviours.

The purpose and the design of the study is presented in Chapter 3. This includes a description of the study objectives and hypotheses, the design of the study, and issues in operationally defining level of teacher expertise. A classification scale based on nine

indicators of special education and teacher expertise is presented as a means to differentiate three levels of expertise in teaching and special education (i.e., novice, intermediate, and expert).

Study methods are presented in Chapter 4. The focus of this chapter is on the procedures and data collection, the measures (including the development of the online survey and the follow-up interviews), and the demographic characteristics of the participants. *The 9 Indicators of Special Education and Teaching Expertise Classification Scale* is described in detail, and respondents' levels of expertise are classified based on their total scale ratings.

In Chapter 5, the results and analyses of the online survey data are reported. This chapter has been organized based on the research hypotheses and exploratory questions presented in Chapter 3.

In Chapter 6, the findings from the interview data are presented with the survey data, and are used to provide further clarification and illumination of the results of the online survey. This chapter has also been organized based on the research hypotheses and exploratory questions.

In the final chapter, Chapter 7, the findings of the current study are discussed and the implications of this research for practice are presented. This chapter also includes a discussion of the strengths and limitations of the present study, and suggestions for further research.

CHAPTER 2:

REVIEW OF THE LITERATURE ON TEACHERS' SPECIAL EDUCATION

INFORMATION SEEKING BEHAVIOURS

Definitions of Key Terms

Information Seeking Behaviour

The main focus of this study is on aspects of teachers' special education information seeking behaviours such as teachers' preferred sources of information and types of information being sought. Wilson (1999) described information seeking behaviour as a broad umbrella term that included such things as information searching and information retrieval behaviours. In his model of information seeking behaviour, the purpose for people seeking information was to solve a problem, specifically, "the variety of methods people employ to discover, and gain access to information resources" (p. 263). Wilson (2000) defined information seeking behaviours as "the purposive seeking for information as a consequence of a need to satisfy some goal" (p. 49). Case (2007) defined information seeking as "a conscious effort to acquire information in response to a need or gap in one's knowledge" (p. 5) in order to seek answers, reduce uncertainty, or make sense. Similarly, Ford's (2004) definition of information seeking refers to those activities in which one engages with the intention of acquiring information in relation to a problem or task.

Thus, information seeking involves a wide variety of behaviours used to decrease the gap(s) in one's knowledge. These behaviours include information-search behaviours such as being focused on searching, acquiring, processing, organizing, and presenting

information (Brand-Gruwel, Wopereis, &Vermetten, 2005). Nahl (2001) has described the complexity of information seeking behaviours:

> "As goal-directed sense-makers, users are seeking meaning, bridging information gaps, dealing with uncertainty and anomalous states of knowledge, translating their own ideas into system terms, actively updating personal frames of reference, filtering both information and feelings, and applying personal constructs in the information seeking process." (p. 12)

Kuhlthau (1999) recommended examining information seeking behaviours in specific contexts. Thus, this research specifically focuses on J.K. to Grade 8 teachers' special education information needs, preferred sources of information, and the specific types of information sought relating to special education and inclusion.

Information Needs

Information seeking activity is viewed as being contingent upon two major interacting factors: sources and awareness of need (Leckie, Pettigrew, & Sylvain, 1996). Therefore, one of the keys to understanding information seeking behaviour is to identify information needs. There are many different definitions of information needs, however. Most involve a gap in one's knowledge between what is known and what is not known. Dervin (1999) has defined information needs as four components of sense-making: situation, bridge, gap, and outcome. Case (2007) defined 'information need' as a recognition that one's knowledge is inadequate to satisfy a goal that one has.

Teachers' Information Seeking Behaviours

Despite the research findings that teachers say they need more information on teaching students with disabilities, teachers may not be actively seeking answers to their special education questions. Jenkins and Ornelles (2009) found that less than 45% of surveyed teachers (n = 372), from novice to experienced teachers, agreed or strongly agreed that they sought out information and research about how to educate students with disabilities. Even though teachers have Internet access to more research information, Williams and Coles (2007a) noted that little is known about the kinds of information support required to encourage research uptake by teachers.

As search strategies are well-established patterns of behaviour that influence one's approach to the use of all media (Bates, 2001), it might be difficult to change how teachers search for information. Therefore, we need to better understand what sources teachers prefer, and if this changes with varying levels of experience, so that information providers might adapt research information to formats and sources that teachers will use. For example, when it came to sources of intervention information, Landrum et al. (2002) found that pre-service teachers assessed their colleagues and workshops or in-service presentations as more accessible sources of information, and sources that provided more trustworthy and usable information than other sources (such as college or university coursework or professional journals). Landrum et al. suggested that to change teachers' skills concerted efforts must be made to ensure that the information teachers get from the sources they are most likely to access is reliable and empirically sound. Further, McLeskey and Waldron (2002) argued that professional development programs are critical to ensure that teachers support inclusive programs and are well prepared to meet

student needs. Teachers may also show differences in their information seeking based on their academic background: Whitmire (2002) found differences in information seeking patterns among various academic disciplines.

Barriers to Teachers' Information Seeking

One of the key barriers to teachers' information seeking reported across studies over the past 25 years is lack of time during the work day to look for information. Summers, Matheson, and Conry (1983) reported that of 10 possible problems to finding and using information, finding time to search for and use information was the top barrier reported by teachers. Further, teachers have reported that having access to available information is a priority for their information seeking, yet lack of access to information continues to be a main barrier to information seeking (Williams & Coles, 2003).

Another barrier to information seeking is that teachers report lacking confidence in their information literacy skills. Williams and Coles (2007b) defined information literacy as being able to find, critically evaluate, and use information in context. They found that teachers expressed a lack of confidence in their own ability to find and evaluate research information. Asselin and Lee (2002) also pointed out that teachers lack information literacy skills and promoted information literacy as part of the curriculum for pre-service teachers. However, teachers were more confident in their information literacy skills when it came to general information compared to research information. In another study, Williams and Coles (2007a) found that teachers reported feeling confident or very confident that they could identify and define their needs (92 %), locate general information (89 %), evaluate and select information (85 %), and organize and synthesize information (81%). However, teachers were less confident in their ability to do all of

these steps with research information compared to general information. Olsen and Diekema (2011) reported that the research literature indicated that teachers' information seeking is guided by what teachers learned in professional development activities and also by the way they were taught.

General Research Findings on Information Source Preferences

In a survey of the extensive research on information seeking behaviour, Case (2007) found that across a variety of contexts, there was a strong preference for information that came directly from other people. Stefl-Mabry (2003) noted that for a variety of professional groups (engineers, scientists, social scientists, physicians, and lawyers), oral advice from an expert was rated as the top preferred source for satisfying information needs. These professionals actually had lower levels of information satisfaction from information from the Internet. Furthermore, in a review of the literature on users' sources of information, Fourie (2006) found a preference for fewer information sources: users tended not to use a variety of information sources, but preferred a few familiar sources.

Case (2007) also found a preference for easily accessible sources of information: Accessibility included how accessible the information was, how easy the information was to use, and how cost-effective the information was in terms of time and money. Leckie et al. (1996) compared the literature on information seeking of 3 different professional groups: engineers, health care professionals, and lawyers. They noted that professional groups' information seeking choices tended to be determined by ease of access (convenience, availability, searchability, understandability, clinical applicability, usefulness), past successes with sources (familiarity with sources), trustworthiness (how

reliable and helpful), time constraints and cost-effectiveness (timeliness, obtaining information when needed), and the format and quality of the information. They concluded that when professionals seek information, quality was often sacrificed for efficiency and convenience, and accessibility seemed to be the dominant factor influencing information seeking for these groups. Case also found that information seekers would often settle for the first satisfactory solution rather than looking for the best solution.

Teachers' Preferred Sources of Information

It is noteworthy that while there is a wealth of studies on the preferred information sources of other professions, especially in regards to health care professionals, when it comes to the literature on teachers' preferred sources of information, there are fewer studies and the picture is less clear. In a review of the literature, Olsen and Diekema (2011) found that teachers information seeking behaviour is understudied and found few studies that focused on teachers' information seeking behaviour. They conducted the first review of the literature (consisting of 33 articles) on Kindergarten to Grade 12 teachers online information seeking behavior from 1983-2010. Some key findings about teachers' information seeking were that what teachers learn in professional development activities guides teachers' information seeking, and many teachers are self-taught when it comes to information seeking. Teachers tended to be strategic searchers (i.e., looking for specific information online). Barriers to information seeking online included the abundance of resources that made searching overwhelming, and lack of time to search. They concluded that teachers are unique information

consumers and users. This study confirms the need for more research on teachers'
information seeking behaviours.

Teachers Use a Few, Familiar Sources

Williams and Coles (2007a) found that teachers prefer a narrow range of sources
for both general and research information, readily available sources, and when there is a
need for new information, colleagues are usually the first source consulted as they are a
quick and accessible source of information. Blair, EuDaly, and Benson (1999) asked
teachers how they received information about students' hearing loss, and how they
preferred to receive it. They found deficiencies in teachers' level of awareness and
knowledge regarding their students' hearing loss across all grade levels. They found that
teachers generally preferred the information sources with which they were most familiar.
Williams and Cole (2007b) found that teachers were not confident users of information
and tended to restrict themselves to relatively few sources.

Teachers Prefer Colleagues As Trustworthy Sources of Information

The information source that teachers reported most frequently using was informal
discussions with colleagues (Williams & Coles, 2007a, 2007b). Colleagues are viewed as
reliable, easily accessible sources of information who supply useful and practical
information (Miller et al., 2010). Landrum et al. (2002) found the both special and
general education teachers, regardless of years of experience, rated professional journals
as a less trustworthy sources of information than information from other teachers or from
conferences or workshops. When it came to usability of information from sources and
accessibility of sources, teachers preferred (from most to least preferred): information

from colleagues, information from conferences/workshops, information from educational courses, and lastly, information from professional journals.

One of the few studies on information sources of teachers in Canada was conducted by Summers et al. (1984), who characterized elementary teachers most preferred sources of information as those close at hand and traditional sources (e.g., conversations with colleagues, files in personal office), then less accessible and print sources (e.g., local libraries), and finally organized interpersonal sources (e.g., workshops).

Teachers Prefer Research Information That Has Been Translated Into Practice

Miller et al. (2010) found that teachers reported using research information under very specific conditions: in response to an immediate, pressing concern; to address a specific content need, such as gathering information for a lesson; to review information encountered in the past; and to participate in groups that use research findings. When it comes to research information, teachers prefer pre-digested research information and informal sources that make overt links between research findings and practice (i.e., information that was clear, synthesized, relevant, explicit, and clearly applicable to practice) (Williams & Coles, 2007a, 2007b). Furthermore, teachers want a well-organized, single-point of access to research information (Williams & Coles, 2007a). When it comes to format, teachers prefer information that has been organized, is brief, and is easy to read. Teachers prefer shorter, less dense text. Landrum et al. (2007) found teachers preferred research-based intervention information presented as a personal account written by an experienced teacher rather than the writing style found in professional journals.

What is the Status of the Internet as a Preferred Source of Information?

Case, Johnson, Andrews, Allard, and Kelly (2004) noted that 30 years ago people had a preference for information gained in face-to-face exchanges, but, patterns of source preferences have shifted since the availability of the Internet. With the Internet, teachers now have answers to their special education questions, both easily accessible and abundant information, at their finger tips. Has the Internet had an effect on teachers information seeking behaviours and preferences? Perhaps a preference for readily accessible information makes the Internet a preferred source of information. Do younger teachers, who have grown up with computers and the Internet, feel more at ease with using this source?

We can look to other professions to predict what may be happening with teachers' website usage. Hughes, Joshi, Lemonde, and Warham (2009) found that junior physicians felt that they did not need training in search strategies. Yet, these physicians spent a significant amount of time to identify the most effective websites, either through Internet use or recommendations from colleagues. These physicians talked about the need for credible websites but used Wikipedia and Google for clinical practice questions three times more than official best evidence websites such as PubMed. Compared to previous studies, physicians did show an increase in their familiarity and overall use of the web for information.

Teachers' Information Needs

Dughman (2003) conducted a state-wide professional development needs assessment for 5 340 Kindergarten to Grade 12 general and special education teachers for the South Dakota Department of Education. The top two ranked themes emerging as

teacher development needs involved more information on special education:

1) information on creating instructional opportunities that are adapted to diverse learner needs (including information on disabilities), and 2) information on a variety of instructional strategies to encourage students' development and performance (including accommodations and modifications in classroom instruction, and inclusive classroom strategies).

Unfortunately, many of the studies on teachers' information needs reported in the literature do not examine the effect of differences between educators (such as level of expertise or type of teacher: elementary vs. secondary, or general vs. special educator) on teacher's information needs. Instead findings are reported based on all teachers grouped together. However, there are indications that different teacher populations have different information needs (e.g., elementary vs. secondary teachers).

O'Gorman and Drudy (2010) surveyed 642 elementary and post-elementary teachers (intermediate and secondary school teachers) from Ireland about their most urgent professional development needs and the majority of their top five needs for both groups were special education information needs. The top need for both groups was information related to IEPs, and the third most mentioned need was information on various disabilities. Primary teachers' fourth highest need was for information on testing, including diagnosis and assessment. Post-primary teachers' fifth highest need was for teaching methodologies relevant to special education.

Buell et al. (1999) conducted a professional development needs assessment with 289 general and special education teachers in a mid-Atlantic state in the U.S. and found that the top ranked priority for all teachers was information on technology use in the

classroom, followed by information on special education (e.g., accommodations, modifications, developmentally appropriate practices). However they also found differences in the rank order of teachers' information needs when they examined special versus general educators' information needs. General education teachers rated their training needs higher than special education teachers in areas such as program modification, assessing academic progress, assessing social interaction, adapting curriculum, managing behaviour, developing IEPs [Individual Education Plans], and using assistive technology.

Reid (2007) reported that in a national survey of public school teachers in the United States, teachers with fewer years of experience (3 or less) prioritized their learning needs as being about methods of teaching, student discipline strategies, and how to teach students with special needs, whereas teachers with more experience (19 or more years) prioritized their professional development needs as learning about how to integrate technology in instruction.

Gordon (1991) compared the priority needs of beginning teachers across various studies conducted from1980 through 1991 and created a list of the top 10 priority needs. Novice teachers' priority needs were: 1) managing the classroom, 2) acquiring information about the school system, 3) obtaining instructional resources and materials, 4) planning, organizing, and managing instruction and other professional responsibilities, 5) assessing students and evaluating student progress, 6) motivating students, 7) using effective teaching methods, 8) dealing with individual students' needs, interests, abilities, and problems, 9) communicating with colleagues, including administrators, supervisors, and other teachers, and 10) communicating with parents. Gordon noted that the same

items tended to appear at the top of the lists in all the studies, however, the order of the items were different.

Teachers' Special Education Information Needs

In a survey of elementary through secondary teachers priority needs in special education, Meyen, Ramp, Harrod, and Bui (2003) found that best practices on curriculum/instructional accommodation was ranked as the number one informational need. The Coalition for Psychology in Schools and Education (2006) surveyed 2334 educators from 49 States in the United States about their teaching needs, of which 60% of the sample taught Junior Kindergarten to Grade 8. When it came to instructional skills needs, teachers fourth highest (out of 11) was modifying instructional strategies to meet individual student needs, and their eighth highest interest was in working effectively with students who demonstrated special needs. Teachers top three classroom diversity skills needs, in order, were with groups of students of varying grade level readiness, gifted students, and special learning needs students.

Jenkins and Ornelles (2009) surveyed 557 general education teachers and 270 special education teachers in Hawaii on 86 questions about their confidence in knowledge and skills that all teachers need to teach students with disabilities (based on the 10 standards established by the Interstate New Teacher Assessment and Support Consortium (INTASC)). They found that all teachers, both general and special education teachers, rated their knowledge levels higher than their skills level across all 10 principles. However, there were differences between the groups based on teachers' roles: special educators' responses ranged from moderate to high confidence, with the majority of responses reflecting high confidence, whereas general educators' responses ranged

from high to low, with the fewest items rated reflecting high confidence. However, they did not find any differences in teachers' confidence across the 10 principles based on teachers' experience level (i.e., number of years of teaching). They also found that all general education teachers, no matter their experience level (based on number of years teaching), had high confidence in 6 items related to their knowledge and understanding of the basic principles of special education. Further, all general education teachers had low confidence in items related to their knowledge and application of skills to practice, such as: general characteristics of high occurring disabilities, program planning and developing IEPs for students with disabilities; appropriate teaching strategies for students with disabilities, including how to accommodate and modify teaching and the curriculum. Table 2 lists the 6 items that that all general education teachers, of all experience levels, had high confidence in and the 15 items they had low confidence in (as reported in Jenkins & Ornelles, 2009). For this study, these items have then been categorized using the specific Content, Knowledge, and Skill Standards in the 10 different areas identified by the Council for Exceptional Children's (CEC) Professional Standards for *What Every Special Educator Must Know* (2009).

Table 2

Specific Areas in Special Education that General Education Teachers, of All Experience Levels, Had High and Low Confidence In*, Categorized Into CEC's 10 Special Education Professional Standards

Specific Areas that Teachers Had High (H) and Low (L) Confidence In, Categorized into CEC's 10 Special Education Professional Standards	Confidence Level	
	High	Low
CEC Standard #1: Foundations[1]		
29a) I have knowledge of the IDEA, Section 504 and the ADA.		L
29b) I have knowledge of and understand key concepts such as special education and related services; disability definitions: FAPE; LRE and continuum of services; due process and parent participation and rights; and non-discriminatory assessment.		L
29c) I have knowledge of and understand the purpose and the requirements of IEPs including transition plans, and IFSPs, and Individual Accommodations Plans (IAPs), and my responsibility for implementing these plans.		L
CEC Standard #2: Development and Characteristics of Learners		
18a) I am familiar with the general characteristics of the most frequently occurring disabilities.		L
18b) I can recognize individual variations in learning and development that exceed the typical range.		L
CEC Standard #3: Individual Learning Differences		
3a) I understand and am sensitive to cultural, ethnic, gender, and linguistic differences that may be confused with or misinterpreted as manifestations of a disability.	H	
3b) I understand that lack of attention to these factors [cultural, ethnic, gender, and linguistic differences] can lead to inappropriate assessment of students, over and under identification of students for special education services, and inappropriate instruction of students.	H	
20a) I understand that a disability can be perceived differently across families, communities, and cultures based on differing values and belief systems.	H	

Table 2 (*continued*)

Specific Areas that Teachers Had High (H) and Low (L) Confidence In, Categorized into CEC's 10 Special Education Professional Standards	Confidence Level	
	High	Low

CEC Standard #4: Instructional Strategies

1a) I can help students with disabilities develop positive strategies for coping with frustrations in the learning situation that may be associated with their disability. — L

1b) I can motivate students with disabilities who have developed feelings of helplessness, and those who may display anger or aggression. — L

5a) I am knowledgeable about multiple theories of learning and research-based teaching practices (e.g., behavioural theory and behaviour analysis, socio-cultural theory of cognitive development) that support learning. — L

5b) I can use this knowledge to inform my decisions about the needs of individual students and to construct ways to promote student learning. — L

6b) I understand that it is particularly important to provide multiple ways for students with disabilities to participate in learning activities. — H

32) I can use research-based practices including explicit instruction and planned maintenance and generalization to support initial learning and generalization of concepts and skill for students with disabilities. — L

34a) I have knowledge of the general types of communication strategies and assistive technologies that can be incorporated as a regular part of my instruction. — L

41) I actively seek out current information and research about how to education the students with disabilities for whom I am responsible, including information that will help me understand the strengths and needs of students with disabilities as well as ways to more effectively promote their learning. — L

CEC Standard #5: Learning Environments and Social Interactions

(None in category)

CEC Standard #6: Language

(None in category)

Table 2 (*continued*)

Specific Areas that Teachers Had High (H) and Low (L) Confidence In, Categorized into CEC's 10 Special Education Professional Standards	Confidence Level	
	High	Low

CEC Standard #7: Instructional Planning

26c) I can use this information to consider eligibility for special education services, to construct and modify IEPs, IFSPs, and IAPs, and for making decisions about appropriate instruction.   **L**

42a) I understand that students with disabilities may need accommodations, modifications, and/or adaptations to the general curriculum depending on their learning strengths and needs.   **H**

42b) I recognize that some students may require an expanded curriculum with learning goals targeted in areas beyond the general curriculum.   **H**

CEC Standard #8: Assessment

44) I can monitor student progress and incorporate know of student performance across settings (e.g., home, after-school programs, neighbourhood) into the instructional planning process, using information provided by parents and others in those settings.   **L**

CEC Standard #9: Professional and Ethical Practice

(None in category)

CEC Standard #10: Collaboration

27) I understand the roles and responsibilities of paraeducators and other paraprofessionals, and can collaborate with these staff members to foster the safety, health, academic and/or social learning of students with disabilities.   **L**

Note: *As reported in Jenkins and Ornelles (2009, pp. 646-647). Confidence: 'H' indicates high confidence and 'L' indicates low confidence.

[1] The elements found in *CEC Standard #1: Foundations* section and reported in Jenkins and Ornelles are specific to the United States: IDEA is the acronym for Individuals with Disabilities Education Act (IDEA), Section 504 of the Rehabilitation Act of 1973 refers to a law that protects individuals with disabilities, ADA is the acronym for Americans with Disabilities Act, FAPE is the acronym for a Free and Appropriate Public Education, LRE is the acronym for Least Restrictive Environment, and IFSP is the acronym for Individualized Family Service Plan.

Novice/Expert Differences in Information Seeking Behaviours

Differences have also been found in how novices and experts search information retrieval systems (such as a database or the Internet). Hill (1999) described some of these key findings: 1) Experts are better able to define the search problem, use domain knowledge to define specific search statements to better match the context in which the information will be used, are more likely to recognize a relevant item in retrieved information, are better at evaluating found information, and begin to transform found information to meet their informational needs; 2) Novices tend to broadly define their search topic, frequently fail to refine their search statements, sometimes have difficulty understanding the items in their retrieved information, have difficulties connecting and integrating found information with their prior knowledge, and have difficulties evaluating the appropriateness of their found information—the limited knowledge base of domain novices inhibits novices' progress through the information search and retrieval process. Hill described the processing stage as one that distinguishes experts from novices: experts integrate and transform found information, whereas novices tend not to enter this stage— novices often are unable to take what is learned during the search and use it to inform their search decisions. The implications of this are that novice teachers may have difficulties satisfying their special education information needs.

When first encountering an information problem, Brand-Gruwel et al. (2005) found that experts spend more time on their search tasks: more time defining the problem, activating their prior knowledge, elaborating on the content, processing and organizing information, and regulating their processes, than did novices. Experts also judged the content of the information for quality and relevance and judged the reliability

of the sources more often than novices did. Since there are differences in how experts and novices search for information, there may also be differences in preferred sources of information.

Kuhlthau and Tama (2001) have found differences in how expert and novice lawyers responded to a complex search task: Experts acknowledged a sense of uncertainty, and then moved to feeling confident about a task, often expressing enthusiasm and heightened interest for more complex tasks, whereas novices interpreted uncertainty as indicating something was going wrong with the task, or their ability to proceed with the task, and expressed feelings of anxiety or frustration. Given these differences in the search processes between novice and experts, there may also be differences in their preferences for information sources.

In another study examining the differences in information seeking behaviours of novice and expert lawyers, Cole and Kuhlthau (2000) found experts used more cost-effective search strategies: they accessed a variety of information sources that had the potential to be useful, were able to identify what information was essential/critical, had better ways of organizing found information, and were able to construct new knowledge and understanding from the information, whereas, novices even had difficulties recognizing a problem, defining a problem, and formulating a solution.

Xu, Tan, and Yang (2006) noted that it is unclear in the literature how background knowledge/expertise affects source choice. More research is needed to examine the relationship between expertise and source choice.

CHAPTER 3:

PURPOSE AND DESIGN OF THE STUDY

Purpose of Study—Study Objectives and Hypotheses

The research literature consistently indicates that teachers need more information on teaching children with special needs. The purpose of the present study was to identify the specific kinds of special education information that teachers with different levels of experience require, their perceived competencies, their preferred sources of information, and their information seeking behaviours related to special education.

Study Objectives

The objective of the present study was to investigate Junior Kindergarten to Grade 8 teachers' teaching experiences, information needs and preferences, and competencies related to special education. It is important to note that this study has been specifically framed to investigate teachers' perceived information needs rather than their specific knowledge related to special education. Examining information need is the first step in understanding information seeking behaviours. Based on information seeking theory, teachers will seek information when they perceive a gap in their knowledge.

A.) A Priori, Confirmatory Hypotheses

Given the research on expert/novice differences, it was expected that there would be differences in teachers' perceptions of preparedness for special education, knowledge of special education, experience with special education, and perceptions of competence in special education between novice, intermediate, and expert teachers. The *9 Indicators of Special Education and Teaching Expertise Classification Scale* was used to classify teachers as novice, intermediate, or expert. This scale uses multiple criteria to rate level

of expertise and takes into account teachers' breadth and depth of special education and teaching experiences. The following three key topic areas guided this investigation:

A-i) Special education expertise: Teachers' perceptions of preparedness for, knowledge of, experience with, and competence in special education by level of expertise.

It was hypothesized that teachers classified with more expertise would (1) feel more prepared to teach special education, (2) rate themselves as having more knowledge of special education, (3) rate themselves as having more experience in special education, and (4) rate themselves as being more competent in special education than would teachers classified with less expertise (i.e., intermediate and novice teachers).

A-ii.1) Self- rating of special education expertise by level of expertise.

It was hypothesized that teachers classified as having more expertise would indicate that they have more special education expertise than intermediate and novice teachers, and intermediate teachers would indicate that they have more special education expertise than novice teachers.

A-ii.2) Self-rating of teaching expertise by level of expertise.

It was hypothesized that teachers classified as having more expertise would indicate that they have more teaching expertise than intermediate and novice teachers, and intermediate teachers would indicate that they have more teaching expertise than novice teachers.

A-iii) Special education information needs by level of expertise.

It was hypothesized that teachers classified as novice would indicate that they needed the most special education information, and teachers classified as intermediate

would indicate that they needed more special education information than would teachers classified as experts.

B.) Guiding Exploratory Research Questions

While the research literature does provide some guidance about the nature of teachers' information needs related to special education, there are many issues yet to be explored and better understood. Given the novice/expert teacher differences found in the literature, the quantity and type of information needed by novice teachers will likely be different than the quantity and type of information needed by teachers with more expertise. The following is a list of the areas of focus and some of the exploratory questions that guided this research:

B-i) Teachers' preferred information sources.

- What types of information do educators value?

- What sources/mediums of information do educators value/trust/prefer/find credible? What sources of information do educators use/access?

- Do teachers now prefer the Internet as a main information source?

- How specifically do teachers' preferred information sources differ by teachers' level of expertise (novice, intermediate, expert)?

B-i.1) Teachers' preferred online sources of information.

- Which online sources of information are teachers using?

- What type of information are teachers searching for online?

B-ii) Types of professional information sought by teachers. Purpose of information seeking.

- What types of information do educators seek?

B-iii) Teachers' special education information needs.

- What types of special education information do educators seek?

- How specifically do teachers' special education needs differ by teachers' level of expertise (novice, intermediate, expert)?

B-iv) Teachers' information seeking behaviours: Hindrances and supports.

- What difficulties do teachers encounter that hinders their information seeking?

- How can teachers information seeking behaviours be supported?

Study Design

The approach to this research was a mixed methods exploratory, concurrent triangulation design emphasizing a convergence model. This study employed both quantitative and qualitative methods.

The Purpose and Rationale for Using a Mixed Methods Approach

Key figures in information seeking research have recommended using a mixed methods design. Wilson (2006) recommended that when using self-completed questionnaires as the main data-collection instrument in studies of information needs that researchers should also use qualitative research methods to better understand the needs that exist which press users towards information seeking behaviours, and to better understand the users. Summers et al. (1984) also suggested that information user studies use qualitative methods, such as interviews, to complement quantitative methods. Jenkins and Ornelles (2009) recommended that future studies of teachers' special education information needs should include interview data to better understand the barriers to information seeking.

In the convergence model of concurrent triangulation mixed methods designs quantitative and qualitative data are collected and analyzed separately, and then integrated during the interpretation stage or are transformed during the analysis stage to facilitate integration (Creswell & Plano-Clark, 2007). In a mixed methods triangulation design the quantitative results can be expanded with the qualitative data in order to better understand the quantitative data (Creswell & Plano-Clark). In this study the qualitative results are used to make sense and provide meaning for the quantitative findings. The strength of the triangulation design is that it allows one to better understand a topic by gathering and comparing different but complementary data (Morse, 1991).

It was important to use both a survey tool and interview to access teachers' information needs. It was hoped that the survey measure would stimulate interview participants in thinking about their special education information needs. In attempting to identify teachers' professional development needs related to special education, a survey on teachers' information needs related to special education was developed. In pilot work with this survey, it was found that teachers had difficulties identifying their information needs. When it comes to what information is important to know in special education, some teachers may not know what questions to ask or what information they need. A survey tool does not necessarily engage teachers in reflection of what they know. An interview may be a better way of assisting teachers in identifying their needs. Survey questions may only stimulate teachers thinking about their information needs at a surface level, whereas asking teachers to reflect on and discuss their special education experiences may engage teachers' reflection on their information needs at a deeper level. During the interview session, to stimulate teachers' knowledge related to special

education, teacher interviewees were asked to think about a challenging situation, classroom experience, or critical incident that they previously had with a student who required special education. As opposed to a survey, the interview allowed teachers to spend time thinking about and focusing on what they know and do not know about special education. Self-reflection also stimulates critical thinking, which may help teachers to better examine what it is they need to know. By using a semi-structured interview guide, a researcher has a framework to guide discussion, but can also use probing questions to further explore issues that surface during the interviews (Patton, 1990).

The analysis of the interview data in this study involved the comparison of three different subgroups of teachers: novice, intermediate, and expert teachers, which requires a subgroup sampling design. Hanson, Creswell, Clark, Petska, and Creswell (2005) noted that this type of design works well for studying different groups or levels within a single study and is useful for gaining a broader perspective on a topic. Onwuegbuzie and Leech (2007) recommend that the minimum sample size for subgroup sampling is three cases per subgroup. Thus, to compare the themes generated by teachers with varying levels of experience a minimum of 9 participants would be required for this study (i.e., 3 novice, 3 intermediate, and 3 expert teachers).

Researcher's Framework or Theoretical Lens

In reports of their research, qualitative researchers identify and address the researchers' framework or theoretical lens that guides their research. However, in mixed methods triangulation designs, paradigm assumptions are not central (Caracelli & Greene, 1997). Tashakkori and Teddlie (2003) have described pragmatism as the best

underlying paradigm for mixed methods research. In the pragmatic viewpoint the research question is the primary importance–the researcher focuses on using the best techniques and procedures to obtain useful answers for a given research question, rather than focusing on a theoretical lens or paradigms that underlie the research methods. Johnson and Onwuegbuzie (2004) described mixed methods research in education as a research paradigm that is eclectic: it is based on a philosophy of pragmatism that attempts to fit together the insights and procedures provided by both qualitative and quantitative research to produce a superior product. Blosch (2001) described the pragmatist's interpretive framework as an approach that establishes a clear linkage between knowledge, context, and practice and suggested the use of cognitive maps to represent and better understand an individual's knowledge. My approach to this research study fits well with the pragmatist perspective—practical quantitative and qualitative methods have been chosen to answer the research questions.

Researcher's Background Qualifications

As a researcher engaged in a mixed methods study, it is important to note my background research experiences and knowledge of the subject matter. I am a qualified as an elementary school teacher, and have experience as both an elementary school teacher and a special education teacher. My educational background is in special education and educational psychology, and I have previously been an instructor for these core courses for pre-service teachers at the Faculty of Education at the University of Western Ontario. I currently work as a researcher in the area of childhood disability, working with clinicians on program evaluation and developing their professional practices and expertise.

Potential Benefits of this Research

In the research literature teachers indicate that they need more information on inclusion and children with special needs. The results of this study may be valuable in determining better ways that information can be provided to support and meet teachers' special education information needs. Further, by participating in this research, teachers may benefit from examining their professional development needs. Findings from this study could support school boards by identifying teachers' special education informational needs and preferences for support for those needs.

Issues In Operationally Defining Level of Expertise

One issue that has arisen in the expertise literature is how the "expert" teacher is operationally defined. In older studies, an expert was defined by the number of years that one had worked in an area. In the late eighties, Berliner (see Berliner 1994, 1986) conceptualized the development of teacher expertise as a series of five stages or levels: Berliner adapted the developmental model of expertise from Dreyfus and Dreyfus (1986) as the model fit with the data that he had collected on the acquisition of pedagogical expertise. Berliner (1994) defined (1) the novice level as student and first year teachers (this level has been characterized as deliberate and full of learning), (2) the advanced beginner level as teachers in their second or third year of teaching (characterized as insightful), (3) the competent level as teachers who have reached their third or forth year of teaching (characterized as rational and responsible), (4) the proficiency level may be achieved by the fifth year of teaching (characterized as intuitive), and (5) the expert level may be reached by some proficient teachers (characterized as fluid performance). Other studies have used variations of these different levels of mastery in conceptualizing the

definition of an expert (e.g., novice/beginner, advanced/beginner, experienced non-expert, expert).

Berliner (2004) has examined the research in the field of education to answer the question about how long it takes to develop teaching expertise, and has found that it takes 5 to 7 years to acquire high levels of skill as a teacher. However, other researchers have noted that it is not just experience that contributes to expertise, but deliberate practice is necessary for the development of expertise: In terms of the time it takes to develop expertise, studies have estimated that 10 000 hours or 10 years of experience is required in a domain, in addition to deliberate practice in that domain (Ericsson & Lehmann, 1996; Palmer, Stough, Burdenski, Jr., & Gonzales, 2005). Tan (1997) noted that experts invest a significant amount of time learning in their field. In fact, teachers who have been identified as expert teachers tended to have both these things in common: having at least 10 years of experience teaching and having earned additional credits or degrees in education (Varella, 2000).

However, only using years of teaching experience to classify teacher expertise or teacher career stage may be an insufficient measure of expertise (Reid, 2007). Someone may be experienced in their field, but may not be considered to be an expert. King, Currie, et al. (2008) noted that years of experience do not guarantee expertise and emphasized the importance of using multiple indicators to classify expertise rather than just classifying expertise on years of experience or peer nomination of expertise. Currently in the research literature, expert teachers are usually identified by using a combination of factors which include: length of time teaching; peer's and/or principal's/superior's nominations; and teaching proficiency based on observations,

interviews, or written reflections. Palmer et al. (2005) recommended that when classifying expert teachers, as a minimum, researchers should consider the following two criteria: three to five years experience in a content area or working with a particular population of students, and relevant certification and degrees in that field.

Importance of Differentiating Years of Experience and Content Area Expertise When Classifying Teacher Expertise

In classifying level of teacher expertise for this study, it was important to consider both teachers general teaching expertise (e.g., based on number of years teaching and self- ratings of teaching expertise) and expertise in special education. Other studies have found differences in results based on using only years of experience versus content area or domain expertise. Jenkins and Ornelles (2009) surveyed 557 general education teachers and 270 special education teachers in Hawaii about their confidence in knowledge and skills that all teachers need to teach students with disabilities: (1) understanding central concepts, (2) understanding learning, (3) understanding diversity, (4) using a variety of instructional strategies, (5) understanding motivation, (6) knowing technologies, (7) planning instruction, (8) understanding assessment (9) being a reflective practitioner, and (10) fostering relationships. They found no differences in teachers' confidence ratings across the 10 principles based on teachers' experience levels. However, they did find differences in teachers' confidence ratings across the 10 principles based on teachers' expertise levels in special education, with special education teachers scoring themselves significantly higher than general education teachers.

Classifying Levels of Teacher Expertise

Given the recommendations in the research literature it was necessary to consider multiple criteria when classifying different levels of teacher expertise. For this study, a classification system was needed that considered both general teaching expertise and special education expertise. Such a measure was not found in the teacher expertise literature. However, King, Bartlett, et al. (2008) developed and tested a system to classify levels of therapists' expertise based on multiple criteria including self-nomination ratings of expertise, and breadth, depth, and complexity of experience. This classification system was found to effectively differentiate levels of therapist expertise (King, Bartlett, et al., 2008; King, Currie, et al., 2008; King, Servais, Bolack, Shepherd, & Willoughby, 2012). Based on this system of expertise classification and the recommendations from the research literature for criteria to use when classifying teacher expertise, *The 9 Indicators of Special Education and Teaching Expertise Classification Scale* was created to discriminate among respondents' levels of expertise to classify teachers as novice, intermediate, or expert. This scale was based on nine indicators: (1) a self-rating of general expertise level, (2) a self-rating of expertise in special education, (3) years of teaching experience, (4) breadth of teaching experience (based on the number of different grade levels taught over the teaching career), (5) experience in special education (based on the number of students with exceptionalities taught over the teaching career, (6) breadth of special education experience (based on the number of different types of exceptionalities taught over the teaching career), (7) depth of experience in special education (length of teaching experiences with different exceptionalities), (8) additional

qualifications in special education, and (9) experience teaching special education for at least one year.

Thus, for this study, expertise ratings are based on nine different indicators which include a self-rating of teaching expertise, a self-rating of special education expertise, length of time teaching, breadth and depth of teaching experiences, and additional qualifications in special education. These expertise ratings reflect both teaching experience and special education experience. However, it should be noted that this is not an objective measure of expertise. The special education and teaching classification scale used for this study does not include any external ratings of expertise such as peer nomination or performance-based criteria such as observations of classroom teaching. Teacher federation rules make it extremely difficult to collect peer nominations of expertise. Further, observing teachers in the classroom can be costly in terms of time and money. Therefore, in this study, expert teachers are classified based on having higher scale scores which reflect meeting more criteria based on teaching and special education experiences.

Using multiple criteria to rate level of expertise is more accurate than only using years of experience (King, Currie, et al., 2008; Palmer et al., 2005). Thus, the *9 Indicators of Special Education and Teaching Expertise Classification Scale* may provide a better measure of level of expertise rather than rating expertise on only one indicator such as total number of years teaching experience or teachers' self-ratings of expertise, because this rating scale takes into account teachers' breadth and depth of special education and teaching experiences. One of the limits of self-assessment measures of expertise is that self-ratings may be inaccurate. For example, some teachers may rate

themselves inaccurately because they are less self-aware or they may be new to the area of expertise. As well, teachers with more experience may humbly underestimate their level of expertise. Basing expertise on multiple indicators may help to overcome these limitations.

CHAPTER 4:

METHODS

Procedures: Overview of Data Collection

This study involved a convenience sample of teachers who were currently eligible to teach Junior Kindergarten to Grade 8 from different school boards in Southern Ontario, Canada. Teachers completed an online survey about their information needs, perceived competencies, preferences for information sources, and information seeking behaviours related to special education, and their teaching experiences. Upon completion of the online survey, teachers could sign-up to participate in a follow-up semi-structured interview. A smaller group of key informant teachers, including novice, intermediate, and expert teachers participated in a semi-structured follow-up interview.

Participating School Board Profiles

Research ethics approval for this study was obtained from the Research Ethics Board at the University of Western Ontario (see Appendix A) and from each of the participating school boards. Five publicly-funded school boards in Southern Ontario, one public and 4 Catholic school boards, agreed to participate in this study. As current comparable data was not available for all of the participating school boards, government statistical data from 2006 is reported in the school board Profiles.

School Board 1 is a very large public school board with 148 elementary schools in 2009-2010. The Board provides services for 3 counties, 1 large-sized city, and a number of smaller cities and towns. The Ministry of Education of Ontario (2006) reported that the Board served approximately 50 000 elementary students (rounded off to protect anonymity), and that 13% of these students received special education programs and/or

services. The number of full-time equivalent elementary teachers in 2006 was approximately 3 000.

School Board 2 is a medium-sized Catholic school board with approximately 50 elementary schools in 2009-2010. The Board provides services for 3 counties, 1 large-sized city and a number of small cities and towns. The Ministry of Education of Ontario (2006) reported that the Board served approximately 14 000 elementary students, and that 8% of these students received special education programs and/or services. The number of full-time equivalent elementary teachers in 2006 was approximately 700.

School Board 3 is a small Catholic school board with 16 elementary schools in 2009-2010. The Board provides services for 1 county, 1 smaller-sized city and 5 smaller towns. The Ministry of Education of Ontario (2006) reported that the Board served approximately 6000 elementary students, and that 7% of these students received special education programs and/or services. The number of full-time equivalent elementary teachers in 2006 was approximately 300.

School Board 4 is a small rural Catholic school board, and the most rural of the school boards in this study, with 16 elementary schools in 2009-2010. The Board provides services for 2 counties, 1 large-sized and several small rural communities. The Ministry of Education of Ontario (2006) reported that the Board served approximately 3 000 elementary students, and that 15% of these students received special education programs and/or services. The number of full-time equivalent elementary teachers in 2006 was approximately 200.

School Board 5 is a medium-sized Catholic school board with 41 elementary schools in 2009-2010. The Board provides services for 1 county and 1 medium-sized city

and a number of municipalities. The Ministry of Education of Ontario (2006) reported that the Board served approximately 18 000 elementary students, and that 16% of these students received special education programs and/or services. The number of full-time equivalent elementary teachers in 2006 was approximately 900.

School Board and Participant Recruitment Phase 1

In Phase 1 of the recruitment process, one large size public school board (School Board 1) and the Catholic school board (School Board 2) located in the same geographical region were approached to participate in the study. In October 2009, both Boards approved the research study. The researcher followed the procedures determined by the school boards to contact potential teachers to participate in the online survey. The requirement was that teachers were not to be directly approached. Rather, the school boards' Research Office would contact principals on behalf of the researcher to request participation in the study. Principals would then decide whether or not to forward a recruitment invitation email to teachers (see Appendix D) and post a recruitment invitational poster (see Appendix E) in their school. Over the next few months, participation in the online survey was very low. The researcher discussed the low response rate with the school boards' research departments. Both school boards had sent out the request to participate in a research study with a number of other research requests from student researchers. After this consultation, School Board 1 agreed to send out the request to participate a second time. School Board 2 agreed to allow the researcher to contact principals by phone to inquire whether or not they had forwarded the request on to their teachers. Thirty percent of the principals were contacted. Only 10% of these principals had forwarded the request to participate onto their teachers. Principals

provided a number of reasons why they did not forward the request on to their teachers: some principals felt that their teachers were too busy, some principals were focused on other priorities for their school for that school year, some schools were already participating in other research initiatives, and some principals reported that they had a high number of emails and did not have enough time to open the email and review the request. Given this feedback by principals, to make it easier for principals to pass on the invitation to participate, both school boards agreed to let the researcher send a letter of information about the study, and an invitational poster by mail to the principals.

School Board and Participant Recruitment Phase 2

In January 2010, approval was received from the University's Research Ethics Board to approach more school boards in Southern Ontario to request their participation in the study in order to increase the number of participants in the study (see Appendix B). Three Catholic school boards agreed to participate. School Board 3 agreed to send the research request to principals in 4 schools to forward onto their teachers. School Boards 4 and 5 agreed to send the request to all of their principals. School Board 5 also agreed to permit the researcher to send a follow-up letter of information and a letter of information about the study, and an invitational poster by mail to the principals.

Participant Recruitment Phase 3

Participation of novice teachers in the study was low. It was suspected that novice teachers were not being invited to participate in the study as many novice teachers were not a part of a school staff, rather they were often occasional (substitute) teachers, and therefore would not have received an invitation email to participate in the study from school principals. In Phase 3 of the recruitment for participants, to increase the number of

novice teachers to participate in the study, permission was sought at a Faculty of Education for pre-service teachers to participate in the study. In March 2010, approval was received from the University's Research Ethics Board (see Appendix C) to approach pre-service teachers at a Faculty of Education to participate in the study once these teachers had finished their last practicum placement. Also, teachers attending an Additional Qualification Course in Special Education Part 1 at the same Faculty were invited to participate. An email was sent out to these teachers and invitational recruitment posters were posted at the Faculty.

Study Procedures

To be included in this study, participants had to meet the following eligibility criteria: they had to be an elementary or intermediate school teacher (this included Junior-Kindergarten through Grade 8 teachers) eligible to teach in a school board in Ontario. Teachers who were interested in participating in the study completed the survey online.

Details of the Online Survey Data Collection

When teachers typed in the survey's website address in their browser, they arrived at an introduction page which briefly described the study and had button options to find out further, more detailed information about the survey or the online interview, and to contact the researcher with any questions. Also, there was a button to click to start the survey. The survey was located on a secured website. Once the start survey button was clicked, teachers had to type in their user identification and password information to access the survey (this information was available from the recruitment email [see Appendix D] and poster [see Appendix E]). The next page of the website contained the

Letter of Information (see Appendix F), and by clicking on the start survey button teachers consented to participate in the study. On average, the online survey took approximately 21 minutes to complete.

Details of the Key Informant Interview

At the end of the survey, teachers were given the opportunity to further discuss their special education information needs, preferences, and information seeking behaviours in a follow-up, one-to-one interview.

Once the potential participants for the qualitative interviews had been identified (that is, these teachers had indicated on their online survey that they would like to participate in an interview), the study investigator contacted these potential participants by telephone or email to arrange an interview. Prior to the interview, participants were sent a package containing a Letter of Information and Consent form to participate in the interview (see Appendix H). Interview sessions were held in a location convenient to the participants, including meeting in a room or classroom at the university or at a teacher's school/workplace, or in teachers' homes. Each interview session lasted approximately 60 minutes.

Semi-structured interviews were used to engage teachers in thinking about their information needs related to special education. At the beginning of each interview session the researcher introduced the plan for the session, reviewed the letter of information, and ensured the consent form was signed. The interviewees were asked questions about what their information needs were in special education, what their preferred information sources were, and how they went about finding answers to their questions (i.e., their information seeking behaviour). The complete semi-structured interview guide and

questions can be found in Appendix K. These interview questions were piloted with two individuals who provided feedback about the wording of the questions and their understanding of the questions.

During the interview, when the interviewees provided answers to the questions, the researcher typed key points from their answers into a mind map on a laptop computer. Mind, concept, or knowledge mapping, is a technique to visualize or graphically represent one's knowledge about a topic. Mind mapping software (such as FreeMind, MindJet, or Inspiration) allows one to capture and visually organize information on a computer screen; mind mapping is a computerized method of concept mapping. In studies with pre-service teachers, Beyerbach and Smith (1990) and Beyerbach (1988) found that concept mapping tasks helped to promote teacher reflection and were useful in accessing teachers' constructions of knowledge in a particular subject area. Eppler and Burkhard (2006) recommended the use of mind maps for knowledge identification—the mind maps will help teachers to make what they know about special education visible and accessible to themselves so that they can then identify gaps in their knowledge and reflect on what special education information they need. The mind maps provided interview participants with another view of their data.

The interview sessions were also digitally recorded and the digital recordings transcribed. Interviewees were sent a copy of their transcribed interviews and mind maps to review and verify transcription accuracy and to suggest any changes or additions. It was hoped that providing interviewees with both the full transcript and the graphic, point-form mind map of their interview would allow interviewees to better review what they had shared and to identify any gaps.

Confidentiality and Anonymity

All information that participants provided during this study has been kept anonymous. The online website was password protected so that only invited teachers would have access: the participants had to use a username and password, which they obtained from the email invitation or poster, to access to the online survey. Only the researcher had access to the responses (as owner of the website, only the researcher could login to the site to access the data). A participant ID number was used on all questionnaires and interview transcripts and only the researcher knew the names associated with each ID number. The interview discussions were digitally-recorded for transcription purposes. Only the researcher had access to the recordings. To ensure confidentiality, any identifiable data, such as teachers' or students' names, school names and city names, were removed from the transcriptions.

In reporting findings from this study, all questionnaire information was collated and any references that might reveal the identity of participants were removed or altered.

Trustworthiness of the Data

When qualitative methods are used, it is important to establish evidence of the trustworthiness of the data. One way to establish trustworthiness of qualitative data is for the interviewer to periodically check with the interviewee to ensure the accuracy of the interviewer's interpretations (Lincoln & Guba, 1985). During the interview, the interviewer engaged in a member-checking process by reviewing and clarifying with the interviewee the interviewer's interpretations of what had been said. Further, after all interviews had been completed, to verify the accuracy of the interviews and mind maps, completed interview transcripts and mind maps were sent to the interviewees to review

and provide feedback about any changes, corrections, or additions of any missing information. The interviewer then followed-up with a phone call or email with each interviewee (depending on the interviewees' preference) to gather this feedback. Teachers reported that they were pleased to receive their transcripts and mind maps, and that both were very accurate. Only one intermediate-level teacher had one addition to add to her transcript involving a recent professional development experience that she had attended about special education.

Measures

The online survey, consisting of two measures, contained items that were best answered through questionnaire format. These measures asked specific details about teachers' background teaching experiences; experiences with, competencies, and attitudes towards students with exceptionalities and inclusion; special education information needs, preferences for information sources, and information seeking behaviours; and teachers' self-ratings of expertise level. The following measures were used in the online portion of this study: (a) *Teaching Experiences, Preferences, and Information Needs Questionnaire—Special Education Focus* (TEPINQ-SEF; Servais, 2009; see Appendix I), and (b) *Self Nomination Scale of Expertise in the Educational Profession* (Gilpin et al., 2009: see Appendix J).

Online Survey Development and Refinement

Teaching Experiences, Preferences, and Information Needs Questionnaire— Special Education Focus (TEPINQ-SEF; Servais, 2009): The TEPINQ-SEF was specifically created for this study to capture respondent demographic information (such as age, education) and data about teachers' level of teaching experience (teacher

qualifications, special education qualifications, training and in-services, number of years teaching, and variety, breadth, and depth of experiences—including grades and subjects taught and experiences teaching students with special needs), familiarity with educating students with special needs, teachers' informational needs, perceived competencies, and preferred sources for special education information. On the questionnaire teachers indicated the areas in which they required more information and the degree to which they required this information by selecting response options from a Likert scale. Further, teachers rated their perceived level of competence in the area of special education. The purpose of this questionnaire was to collect details of teachers' teaching experiences and information needs related to special education. It was also meant to act as a primer before the interview so that teachers would begin thinking about and reflecting on their special education needs. See Appendix I for a copy of this measure.

For the survey, students with exceptionalities were defined as any student that had any sort of exceptionality or special need (e.g., any learning need, including students who were gifted; or had a learning disability, physical disability, behavioural need). For the purpose of the questionnaire, students with exceptionalities did not need to be officially identified as having an exceptionality, and they may or may not have an individual education plan (IEP).

Prior to survey administration, the online survey was pilot-tested with 8 volunteer teachers and 4 people experienced in questionnaire development in order to refine the measure, to check for clarity and readability of the survey items, and determine the time required to complete the survey. The average time for these testers to complete the survey was 18 minutes. Teachers who tested the site mentioned that they enjoyed thinking about

their information needs. Some of the interviewees also provided feedback about the online survey and the interview process after their interviews. Interviewees expressed that they found the survey easy to complete, and found it valuable to reflect on their special education information needs.

Web survey design guidelines based on findings from the research literature (see reviews by Gonzalez-Banales & Adam, 2007; and Andrews, Nonnecke, & Preece, 2003) were used to inform the development of this online survey. The online survey was designed with a number of features to make it easy for respondents to complete. The survey was designed to work properly in multiple browsers (i.e., Internet Explorer, Firefox, Chrome, Safari, Opera). When potential participants arrived at the site, an automatic check was done to ensure that participants had scripting and cookies turned on in their browser to ensure the optimal functioning of the website. If these were not turned on, then instructions appeared on how to turn these on, and these instructions were accompanied by screen shots. Otherwise, potential participants arrived at the introduction page. The introduction page provided participants with a brief introduction to the study. Participants could click options to find out more about the online survey, about the interview, to contact the researcher, or to start the survey. The survey was designed with short pages and easy to click response options so respondents could move quickly through the survey. Respondents could easily manoeuvre through the survey: they could go back and change their answers, skip ahead to preview the survey, or choose to not answer questions—just as they would have been able to in a paper survey. A progress bar was displayed at the top of each page so that teachers could see how much of the survey they had completed. The survey was designed to be completed in less than 25 minutes.

If respondents were disconnected, or did not want to complete the survey in one sitting, they could come back at a later date and time to complete the survey. Participants' survey data was stored in cookies on participants' computers. An example of one of the page views from the online survey is depicted in Figure 1.

Information Needs & Preferences Survey
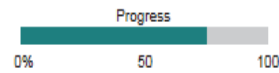
Progress

0%   50   100

Previous   Next

Your Level of *Interest* in Special Education						
Please check the option that most accurately reflects your response	A Great Deal 5	A Fair Amount 4	Some 3	A Little 2	Not At All 1	No Response
44. How much does the topic of special education fit with *your* **personal** interests?	5	4	3	2	1	
45. How much does the topic of special education fit with *your* **professional** interests?	5	4	3	2	1	
46. Overall, how much **special education information** do you feel that **you require**?	5	4	3	2	1	

47. Please rate your **overall level of expertise in special education?**

Novice   Intermediate   Expert

1   2   3   4   5   6   7   8   9   10   No Response

48. Is there **anything** that you would like to add **that would help us to understand your teaching experiences** or qualifications related to special education?

Previous   Next

This is a multi-page questionnaire. Your responses will not be sent until you click on the **SUBMIT** button on the last page.

Figure 1. An example of one of the page views from the online survey. Note that this picture is not exactly as it would appear on a computer screen (for example, the size of the picture has been altered to fit this page and thus the text is smaller and slightly distorted).

The online site had a number of security features. The online survey was password protected. The website was owned by the researcher, so only the researcher had access to participants' data. The survey was completely anonymous. Participants' results could not be tied in any way to a teacher's name. Once a teacher clicked on the submit survey button, the teacher was automatically redirected to a new website page where the teacher had a choice to submit her/his name or email address to be entered into a draw, and sign-up to receive an email summary of the final study results. At this point, participants could also then choose to sign-up to participate in a follow-up interview. Once participants clicked the submit button on this page, any survey-related cookies were removed from participants' computers. Consent was obtained from interviewees to access their survey data and interviewees provided specific information so their survey data could be identified.

Measure of Expertise

Self Nomination Scale of Expertise in the Educational Profession (SNS-E; Gilpin et al., 2009): The SNS-E is a one page form that offers a broad, multi-dimensional, illustrated definition of teaching expertise. Based on this definition, a teacher rates oneself as a novice, intermediate, or expert teacher and then rates one's confidence in this rating on a 7-point Likert scale. See Appendix J for a copy of this measure. The Self Nomination Scale of Expertise (SNS) was originally created as a tool to categorize expertise in therapists (King, Bartlett, et al., 2008). It is based on a conceptual definition derived from a comprehensive review of the expertise literature across professions in the fields of education, psychology, counselling, psychotherapy, medicine, nursing, physical therapy, and occupational therapy (see King, Currie, et al., 2008) and includes key

expertise attributes (including knowledge, personal qualities, skills and abilities, superior outcomes, and reputation). As part of a multifaceted assessment battery, the SNS was found to be a key indicator in distinguishing level of expertise—differentiating novice, intermediate, and expert therapists (King, Bartlett, et al., 2008; King, Tam, Fay, Pilkington, Servais, & Petrosian, 2011; King, Servais, Bolack, Shepherd, & Willoughby, 2011). The SNS-E has been adapted for use by educators.

Participants

Survey Participants' Demographics

In total, 85 elementary to junior-intermediate teachers between the ages of 22 to 63 years old completed the online survey. Respondents had from 0 to 34 years of teaching experience. The majority of respondents were regular classroom teachers (82.4%). Most of the teachers taught more than one grade level (74.1%). Demographic characteristics of the survey respondents can be found in Table 3.

All respondents chose to complete the online survey, no teachers requested a paper copy. The eligibility criteria for participating in the study was located at the beginning of the online survey. Respondents checked a box to indicate that they met the eligibility criteria: respondents were required to be eligible to teach elementary to junior-intermediate grades (Junior Kindergarten to Grade 8) in a school in Ontario . Then, participants had the option of identifying which participating school board they were from: 28 respondents indicated that they were from the public school board, 17 respondents were from one of the participating Catholic school boards, 27 respondents were pre-service teachers, and 13 respondents chose to not identify their school board.

If teachers were categorized into expertise levels based only on total number of years teaching experience, 31 teachers could be categorized as *New Novices* (having 1 year or less of teaching experience), 23 teachers could be categorized as *Experienced Novices* (having 1.5 to 4.5 years of teaching experience), 11 teachers could be categorized as *Intermediates* (having 5 to 9.5 years of teaching experience), and 20 teachers could be categorized as *Experts* (having 10 or more years of experience).

Table 3

Demographic Characteristics of Survey Respondents

About Boards and Schools	Total Respondents ($N = 85$)	
	Number	*Percent*
Affiliation		
Public School Board	28	32.9
Catholic School Boards	17	20.0
Pre-Service Teacher Candidates	27	31.8
Other (e.g., did not identify)	13	15.3
Size of Community Where School is Located		
Large Urban (100,000 people or more)	38	44.7
Medium Urban (50,000 to 99,999)	12	14.1
Small Urban (15,000 to 49,999)	13	15.3
Town (3,000 to 14,999)	9	10.6
Rural Area (Less than 3,000)	13	15.3
Where School is Located In Community		
Central City	38	44.7
Suburb	20	23.5
Small Town	16	18.8
Rural Area	11	12.9

About Respondents	*Number*	*Percent*	*M*	*SD*	*Range*
Age of Participants	85	100.0	33.3	10.5	22 - 63
22 - 29 years old	38	44.7			
30 - 39 years old	28	32.9			
40 - 49 years old	9	10.6			
50 - 63 years old	10	11.8			
Total Years Teaching Experience (to the nearest 0.5 year)	85	100.0	5.97	8.02	0 - 34.0
Up to 1 year	31	36.5	0.03	0.18	0 - 1.0
1.5 to 4.5 years	23	27.1	2.93	0.95	1.5 - 4.5
5 years to 9.5 years	11	12.9	6.68	1.85	5.0 - 9.0
10 years or more	20	23.5	18.3	7.27	10.0 - 34.0

Table 3 *(continued)*

About Respondents (continued)	Number	Percent
Highest Level of Education Completed		
College or Technical Training	1	1.2
Bachelor's Degree	75	87.1
Master's Degree	9	10.6
Type of Teacher		
Regular Classroom Teachers [a]	68	80.0
Other Teachers [b]	17	20.0
Grade(s) Currently Taught	79	92.9
Missing (did not specify)	6	7.1
Junior Kindergarten	11	12.9
Senior Kindergarten	11	12.9
Grade 1	15	17.6
Grade 2	17	20.0
Grade 3	21	24.7
Grade 4	22	25.9
Grade 5	29	34.1
Grade 6	18	21.2
Grade 7	16	18.8
Grade 8	15	17.6
Other (i.e., special class, resource class, learning support)	22	25.9
Currently Teaching One Grade Only	22	25.9

Note. N = Number, M = Mean, SD = Standard Deviation

[a] Includes subject specialists: Music, Art, French, ESL; and pre-service teacher candidates

[b] Includes Special Education, Learning Support, Itinerant, and Resource teachers; Teacher librarians, and teachers with multiple roles

Classifying Special Education and Teacher Expertise

The 9 Indicators of Special Education and Teaching Expertise Classification Scale was created for this study to classify teachers' level of expertise in teaching and special education as Novice, Intermediate, or Expert. The 9 indicators were selected from the literature as important criteria for establishing teacher expertise. The 9 indicators were all items measured in the online survey questionnaires (TEPINQ-SEF and SNS-E). This classification scale was modeled after the classification scale of expertise of paediatric rehabilitation therapists (King, Bartlett, et al., 2008), so a similar method was used to calculate the rating scale score. For each indicator, a teacher received 1-point if their score was greater than the overall group mean or specific score on an item. For only one of the indicators it was possible to get 2-points: For the self-rating of expertise (SNS-E), self-rated experts received 2-points, intermediates 1-point, and novices 0-points. This resulted in a 10-point scale of special education and teacher expertise.

The first indicator was the participants' self-rating of teaching expertise on the SNS-E where those who had rated themselves as experts were given 2-points, intermediate ratings were given 1-point, and novice ratings were given 0-points.

Indicator 2 was based on participants' self-ratings of their overall expertise in special education on a 10-point scale (where 1 indicated novice, 5.5 indicated intermediate, and 10 indicated expert). The overall group mean for this rating scale was 4.84 (out of 10). Teachers rating themselves above the mean of 4.84 received 1-point and all others received 0-points.

Indicator 3 was based on teachers' total number of years of teaching experience (reported to the nearest half year, personal leaves were not included in total year counts).

To be consistent with the literature on expertise, a minimum of 10 years of teaching practice was used as the cut-off to distinguish expert teachers. Teachers who had 10 or more years of teaching experienced were given 1-point and all others received 0-points.

Indicator 4 looked at breadth of teaching experience and was based on the number of grades taught for at least 1 year. Teachers who taught more than the group mean of 3.97 grades received 1-point, and all others received 0-points.

Indicator 5 focused on special education experience and was based on the total number of students with exceptionalities taught during the teaching career. Teachers who taught more than the group mean of 53.1 received 1-point, and all others received 0-points.

Indicator 6 looked at teachers' breadth of experience with different types of exceptionalities. Teachers who had taught more than the group mean of 6.91 different exceptionalities (out of 12 listed exceptionalities) during their teaching career received 1-point and all others received 0-points.

Indicator 7 looked at the depth of teaching experience with 12 different exceptionalities during their teaching career (based on the average number of years of experience out of 5 levels: no experience, less than 1 year experience, more than 1 but less than 5 years experience, more than 5 years but less than 10 years experience, and more than 10 years). Teachers who had taught more than the group mean of 2.3 (out of 5 levels based on the average number of years teaching 12 different exceptionalities) received 1-point and all others received 0-points.

Indicator 8 was based on teachers' additional qualifications in special education. Those teachers who had completed one or more additional qualification(s) courses in

special education (this is a specific course in special education that has been accredited by the Ontario College of Teachers) were given 1-point and all others received 0-points.

The last indicator looked at teachers' experience teaching special education. Teachers who had indicated that they specifically taught special education for at least 1 year were given 1-point and all others were given 0-points.

Respondents' points were totalled to provide an overall expertise scale-score which was used to classify study participants into one of three expertise level groups. Participants with the fewest points were classified as novice teachers, participants scoring in the mid-range were classified as intermediate teachers, and participants with the highest scores were classified as expert teachers: There were 34 participants scoring from 0 to 1 points who were classified as novice teachers, 27 participants scoring 2 to 5 points who were classified as intermediate teachers, and 24 participants scoring 6 to 10 points who were classified as expert teachers. The mean experience rating points received on the 10-point classification scale was 0.41 for the novice teachers, 3.33 for the intermediate teachers and 7.21 for the expert teachers. There were significant differences found among these expertise groups on mean experience rating points received, $F(2, 82) = 316.59$, $p < .001$, $n^2 = 0.89$. Post hoc comparisons were done using Gabriel's procedure which indicated significant differences between all groups at $p < .001$, which indicates that experts received the highest rating, followed by intermediates, and then novices. Table 4 provides a break down of the total number of teachers and the number of teachers at each level of expertise (novice, intermediate, and expert) that received points for each of the nine indicators.

Table 4

Number (and Percentage) of Total Teachers, By Experience Level, Receiving Expertise
Rating Points for each of the 9 Teaching and Special Education Expertise Indicators

Expertise Indicators n (%)	Level of Expertise			All Teachers $N = 85$
	Novice Teachers $n = 34$	Inter-mediate Teachers $n = 27$	Expert Teachers $n = 24$	
Indicator 1: Rating on Self Nomination Scale of Expertise in the Education Profession				
2-points (self-rating as Expert)	0	1 (1.2)	7 (8.2)	8 (9.4)
1-point (…as Intermediate)	3 (3.5)	14 (16.5)	15 (17.6)	32 (37.6)
0-points (…as Novice)	31 (36.5)	12 (14.1)	2 (2.4)	45 (52.9)
Indicator 2: Self-Rating of Expertise in Special Education (out of 10)				
1-point (> Mean of 4.84)	5 (5.9)	18 (21.2)	22 (25.9)	45 (52.9)
0-points (≤ Mean of 4.84)	29 (34.1)	9 (10.6)	2 (2.4)	40 (47.1)
Indicator 3: Years of Teaching Experience				
1-point (10 or more years)	0	4 (4.7)	16 (18.8)	20 (23.5)
0-points (less than 10 years)	34 (40.0)	23 (27.1)	8 (9.4)	65 (76.5)
Indicator 4: Number of Grades Taught for at Least 1 Year				
1-point (> Mean of 3.97)	0	6 (7.1)	12 (14.1)	18 (21.2)
0-points (≤ Mean of 3.97)	34 (40.0)	21 (24.7)	12 (14.1)	67 (78.8)
Indicator 5: Total Number of Students with Exceptionalities Taught During Teaching Career				
1-point (> Mean of 53.1)	0	4 (4.7)	16 (18.8)	20 (23.5)
0-points (≤ Mean of 53.1)	34 (40.0)	23 (27.1)	8 (9.4)	65 (76.5)

Table 4 *(continued)*

Expertise Indicators n (%)	Level of Expertise			
	Novice Teachers *n* = 34	Inter-mediate Teachers *n* = 27	Expert Teachers *n* = 24	All Teachers *N* = 85
Indicator 6: Number of Different Types of Exceptionalities Taught During Teaching Career (out of 12)				
1-point (> Mean of 6.91)	4 (4.7)	16 (8.8)	21 (24.7)	41 (48.2)
0-points (≤ Mean of 6.91)	30 (35.3)	11 (12.9)	3 (3.5)	44 (51.8)
Indicator 7: Amount of Experience Teaching Different Exceptionalities During Teaching Career(out of 5 levels)				
1-point (> Mean of 2.3)	1 (1.2)	10 (11.8)	24 (28.2)	35 (41.2)
0-points (≤ Mean of 2.3)	33 (38.8)	17 (20.0)	0	50 (58.8)
Indicator 8: Additional Qualification Course in Special Education				
1-point (AQ Course: Special Education Part 1 or above)	1 (1.2)	12 (14.1)	22 (25.9)	35 (41.2)
0 points (no qualifications)	33 (38.8)	15 (17.6)	2 (2.4)	50 (58.8)
Indicator 9: Primary Teaching Assignment in Special Education for at Least 1 Year				
1-point (Yes)	0	4 (4.7)	11 (12.9)	15 (17.6)
0-points (No)	34 (40.0)	23 (27.1)	13 (15.3)	70 (82.4)
Mean Experience Rating Points Received Out of 10 Possible Total Points (*Standard Deviation*)	0.41^{a***b} (0.5)	3.33^{ac***} (1.3)	7.21^{b***c} (1.2)	3.26* (3.0)

Note. * indicates significant differences were found among expertise groups on mean experience rating points received, $F(2, 82) = 316.59$, $p \le .001$, $n^2 = 0.89$.

abc Post Hoc Comparisons: Means with matching superscript letters ([a, b, c]) were all significantly different (using Gabriel's procedure). *** indicates significance at $p < .001$.

Sixty percent of the expertise ratings did not change from teachers' original self-nominated level of expertise to their final level based on the 9 indicators. However, 32.9% of the respondents advanced one level, 2.4% of respondents advanced two levels, and 4.7% of respondents were demoted one level. Originally 45 respondents had rated themselves as novices, 33 as intermediates, and 7 as experts. However, the expertise classification rating-scale based on the 9 indicators resulted in 35 respondents being classified as novices, 27 as intermediates, and 24 as experts. The changes to participants' expertise classification levels are presented in Table 5.

A Spearman's Rank Order correlation was used to determine the relationship between teachers' original self-ratings of expertise on the SNS-E and their new expertise level ratings on the *9 Indicators of Teaching and Special Education Expertise Classification Scale*. These two expertise ratings were significantly correlated, $r_S(85) = .698, p < .001$. There was also a positive correlation that was statistically significant between the SNS-E and teacher's total number of years teaching, $r_S(85) = .687, p < .001$.

A Spearman's Rank Order correlation was also used to determine the relationship between teachers' total number of years teaching and their expertise level ratings on the *9 Indicators of Teaching and Special Education Expertise Classification Scale*. Teachers' total number of years teaching were significantly correlated to the expertise classification rating, $r_S(85) = .750, p < .001$.

Table 5

Changes in the Ratings of Expertise Level from Respondents' Original Ratings, Based on the "Self Nomination Scale of Expertise in the Education Profession," to Respondents' New Ratings, Based on the "9 Indicators of Teaching and Special Education Expertise Classification Scale" (Number and Percentage of Total Respondents)

Level of Expertise	Original Rating	Changes in Ratings				New Rating
	Self-Nominated Expertise Level n (%)	Stayed the Same n (%)	Advanced One Level n (%)	Advanced Two Levels n (%)	Demoted One Level n (%)	Expertise Level Based On 9 Criteria n (%)
Novice	45 (52.9)	31 (36.4)	12 [a] (14.1)	2 [c] (2.4)		35 (41.2)
Intermediate	33 (38.8)	14 (16.5)	16 [b] (18.8)		3 [d] (3.5)	27 (31.8)
Expert	7 (8.2)	6 (7.1)			1 [e] (1.2)	24 (28.2)
Total Respondents	85 (100.0)	51 (60.0)	28 (32.9)	2 (2.4)	4 (4.7)	85 (100.0)

Note. [a] Moved from Novice to Intermediate Rating

[b] Moved from Intermediate to Expert Rating

[c] Moved from Novice to Expert Rating

[d] Moved from Intermediate to Novice Rating

[e] Moved from Expert to Intermediate Rating

Demographic Characteristics of Respondents by Expertise Levels

Demographic characteristics of the respondents by their level of expertise (based on their *9 Indicators of Teaching and Special Education Expertise Classification Scale*) can be found in Table 6. Overall, 41.2% of the teachers in this study had professional qualifications in special education (that is, they had taken the Ontario additional qualification course: Special Education Part 1). Expert teachers were the oldest group with a mean age of 42.9 years, intermediate teachers had a mean age of 32.4 years, and novice teachers were the youngest, with a mean age of 27.3 years. Expert teachers also had the highest total years of teaching experience, with an average of 14.4 years, compared with 4.9 years for intermediate teachers, and 0.9 years for novice teachers. Of the 35 participants that were classified as novice teachers, 27 of these respondents had indicated that they were pre-service teachers.

It should be noted that the 3 expertise level groups similarly rated that special education fit with both their personal (question 44) and professional interests (question 45). That is, none of the expertise groups were more interested in special education than any of the other expertise groups. A Kruskal-Wallis test revealed that the 3 expertise level groups did not differ significantly on how much they rated special education as fitting with their personal interests [$H(2) = 2.18$, $p = .37$] or professional interests [$H(2) = 3.56$, $p = .17$]. On a scale from 1 to 5, where 1 represented "Not at All" and 5 represented "A Great Deal", the median score on special education fitting with personal interests for the novice teacher group was 4 ($M = 3.85$, $SD = .96$), for the intermediate teacher group was 4 ($M = 4.04$, $SD = .81$), and for the expert group was 5 ($M = 4.17$, $SD = 1.09$). On the scale rating how much special education fit with their professional

interests, the median for the novice group was 4 ($M = 4.00$, $SD = 1.02$), for the

intermediate group was 5 ($M = 4.37$, $SD = .74$), and for the expert groups was

5 ($M =4.42$, $SD = .88$). Teachers participating in the survey felt that special education

fit with their personal and professional interests to "A Fair Amount".

Table 6

Demographic Characteristics of Respondents by Expertise Levels (Based on the "9 Indicators of Teaching and Special Education Expertise Classification Scale")

Demographic Characteristics	Novice Teachers *n* = 34		Intermediate Teachers *n* = 27		Expert Teachers *n* = 24		All Teachers *N* = 85	
	n (%)	*M* (SD)	*n* (%)	*M* (SD)	*n* (%)	*M* (SD)	*n* (%)	*M* (SD)
Age of Respondents		27.3 (5.2)		32.4 (8.8)		42.9 (11.0)		33.3 (10.5)
Total Years Teaching Experience		0.9 (1.5)		4.9 (5.6)		14.4 (9.1)		6.0 (8.0)
Regular Classroom Teachers[a]	34 (40.0)		21 (24.7)		13 (15.3)		68 (80)	
Other Teachers[b]	0		6 (7.1)		11 (12.9)		17 (20.0)	
Self-Rating of Expertise *in Special Education* (out of 10)		3.1 (1.8)		5.4 (1.8)		6.8 (1.6)		4.8 (2.3)
Self-Rating of Expertise *in Education* (SNS_E)								
Novice	31 (36.5)		12 (14.1)		2 (2.4)		45 (52.9)	
Intermediate	3 (3.5)		14 (16.5)		16 (18.8)		33 (38.8)	
Expert	0		1 (1.2)		6 (7.1)		7 (8.2)	
Qualifications in Special Education	1 (1.2)		12 (14.1)		22 (25.9)		35 (41.2)	

Note. n = Number, *M* = Mean, *SD* = Standard Deviation.

[a] Includes subject specialists: Music, Art, French, ESL; and pre-service teacher candidates.
[b] Includes Special Education, Learning Support, Itinerant, and Resource teachers; teacher librarians, and teachers with multiple roles.

Demographic Characteristics of Interview Participants

Eleven survey participants agreed to participate in a follow-up interview. Based on their *9 Indicators of Teaching and Special Education Expertise Classification Scale* scores, 4 participants were rated as novice teachers, 3 participants were rated as intermediate teachers, and 4 teachers were rated as expert teachers. Seven of the interview participants were regular classroom teachers, 2 participants were pre-service teachers, and 2 participants were special education specialist teachers. Eight teachers were from the public school board, and 3 teachers were from one of the Catholic school boards. Demographic characteristics of interview participants can be found in Table 7. Interview participants have been grouped based on their expertise rating scale score (novice, intermediate, and expert) so that comparisons could be made of the similarities and the differences amongst these groups. Each of these groups were similar in that they contain both elementary and intermediate teachers, teachers that teach for both public and catholic school boards, and teachers from both large and small communities and from urban and rural settings. These group similarities provided evidence that the three expertise level groups had similar demographic characteristics and that a variety of teachers were represented in each category. These groups were different in that teachers categorized as having more teaching and special education experience and expertise were older and had higher self-ratings of special education expertise than did teachers categorized in the lower expertise groups. These group differences reflect what would be expected from these three levels of expertise.

The interview data was used to provide further information about, and illuminate the online survey results. First of all, steps were taken to verify the findings. Survey

findings were compared to interview findings to ensure that a similar pattern of results were found for novice, intermediate, and expert teachers. Then, the interview data was used to provide possible explanations for the survey results.

Table 7

Demographic Characteristics of Interviewees (N = 11)

Variables	Novice Teachers n = 4				Intermediate Teachers n = 3			Expert Teachers n = 4			
	1	2	3	4	5	6	7	8	9	10	11
Type of teacher											
Regular classroom teachers	●	●			●	●	●	●	●		
Pre-service teachers			●	●							
Specialists: special education										●	●
Grades currently taught											
Kindergarten to Grade 6				●		●					
Kindergarten to Grade 3											●
Grade 5							●				
Grades 4 and 5	●										
Grades 5 and 6					●						
Grades 7 and 8		●	●					●	●		
School Board											
Public (P) or Catholic (C)	P	P	C	P	P	C	P	P	P	C	P
Size of community where school is located											
Large urban (100,000 or more)	●					●		●			
Medium urban (50,000-99,999)		●									
Small urban (15,000-49,999)											●
Town (3,000-14,999)							●		●	●	
Rural area (Less than 3,000)			●	●	●						
Location of school in the community											
Central city	●	●				●					●
Suburb								●			
Small town					●		●		●	●	
Rural area			●	●							
Average age in years	28.3 (SD=6.3)				35.0 (SD=11.4)			40.5 (SD=7.8)			
Mean self-rating of special education expertise (out of 10)*	2.25 (SD=1.0)				5.33 (SD=2.3)			7.00 (SD=1.4)			

Table 7 (*continued*)

Variables	Novice Teachers n = 4				Intermediate Teachers n = 3			Expert Teachers n = 4			
	1	2	3	4	5	6	7	8	9	10	11
Mean rating of how much the topic of special education fits with *personal* interests (out of 5)*	4.25 (SD=1.5)				4.33 (SD=0.6)			5.00 (SD=0.0)			
Mean rating of how much the topic of special education fits with *professional* interests (out of 5)*	4.25 (SD=1.5)				4.67 (SD=0.6)			5.00 (SD=0.0)			
Is a parent of a child with special needs							●	●			
Had special education needs as a child		●							●		

Note: * The higher the score, the higher the rating.

CHAPTER 5:

RESULTS AND ANALYSES

Analysis of the Quantitative Data

Quantitative data from the survey were analyzed using the IBM Statistical

Package for the Social Sciences (SPSS) software, version 19.0 for windows (IBM SPSS

Inc., Chicago, IL, USA).

Descriptive statistics (e.g., frequencies, means, standard deviations) were

calculated and used to describe respondents and to examine demographic information.

For reporting the results of the comparisons made between the 3 expertise groups, it was

important to have a consistent number of participants per level for each item. Therefore,

if data was missing, an overall group mean for that item was substituted (Burke, 2001).

In self-report measures, sample mean substitution is appropriate in situations where the

extent of missing data is very small (Fox-Wasylyshyn & El-Masri, 2005). There was little

missing data overall (less than 0.39 %). For example, on survey question 49, 85

participants were asked to respond to 15 questions, for a total of 1275 total responses.

Of these, only 5 responses were missing and had to have a group mean substituted.

The missing data appeared to be random, there was no discernable pattern to the missing

data. It appeared that some people just missed filling in a response option. Response

options were most likely to be missed when there was a long list of items, and usually

occurred in the middle section of the list of items rather than at the beginning or the end

section of a list of items.

Analysis of the Qualitative Data

Qualitative data from the open-ended survey questions and the interview transcripts were analyzed using QSR International's NVivo Qualitative Analysis software, version 8.0 for windows (QSR International, Doncaster, Victoria, Australia).

The approach used to analyze the qualitative data (i.e., both the open-ended questions from the survey and the interview transcripts) was a directed qualitative content analysis (as described in Hsieh & Shannon, 2005). For the development of the initial coding scheme a list of explicit codes was developed based on the research questions and these codes were grouped into meaningful content categories (e.g., specific concepts related to information needs, source preferences, information seeking behaviours, and the 10 CEC Special Education Standards). All the transcripts were then read, and when new relevant codes or categories were encountered, these were added to the initial coding scheme. This revised coding scheme was then used to code the interview transcripts and qualitative survey data. This involved coding chunks of text representing key concepts to the codes and categories. Once all of the transcripts had been coded, further analysis involved examining the content of categories to identify emerging themes. Finally, the themes were revised and refined. To check on the trustworthiness of the data, findings were discussed with two expert teachers. Based on these discussions, themes remained the same.

In this Chapter, both the quantitative and qualitative results of the survey are presented. The results of the interview data are used in Chapter 6 to provide explanations and elaborate on the survey data.

A.) A Priori, Confirmatory Hypotheses

A-i) Special Education Expertise: Teachers' Perceptions of Preparedness for, Knowledge of, Experience with, and Competence in Special Education by Level of Expertise

Teachers rated their feelings of preparedness to teach special education, their level of knowledge in special education, their experience in special education, and their level of competence in special education using a 5-point Likert scale, where 1 represented "Not at all prepared/knowledgeable/experienced/competent" and 5 represented "Extremely prepared/knowledgeable/experienced/competent." It was hypothesized that teachers classified as having more expertise would (1) rate themselves as feeling more prepared to teach special education (questions 27 through 30), (2) rate themselves as having more knowledge of special education (questions 31 through 34), (3) rate themselves as having more experience in special education (questions 35 through 38), and (4) rate themselves as being more competent in special education (questions 39 through 42) than would less experienced intermediate and novice teachers. The questions for each of these four areas are displayed in Table 8 along with descriptive statistics (median, mean, standard deviation, and range) for each question for all teachers. Teachers overall means (based on the four questions per category) for: (1) feelings of preparedness to teach special education was 3.35 ($SD = 1.07$), (2) level of knowledge of special education was 3.33 ($SD = 0.95$), (3) level of experience in special education was 2.92 ($SD = 1.18$), and (4) perceived level of competence in special education was 3.20 ($SD = 0.97$).

Table 8

Descriptive Statistics (Medians, Means, Standard Deviations, and Range) for Teachers' Perceptions of Feelings of Preparedness, Knowledge, Experience, and Competence in Special Education (Questions 27 Through 42)

Questionnaire Items	All Teachers ($N = 85$)			
	Mdn	*M*	*SD*	*Range*
How well prepared do you feel...				
27. …to teach individuals with exceptionalities?	3	3.25	1.1	1–5
28. …in adapting/modifying curriculum for individuals with exceptionalities?	3	3.38	1.0	1–5
29. …adapting/modifying the environment for individuals with exceptionalities?	3	3.36	1.0	1–5
30. …adapting/modifying your teaching for individuals with exceptionalities?	3	3.39	1.1	1–5
What is your level of knowledge in…				
31. …best teaching practices for individuals with exceptionalities?	3	3.24	1.0	1–5
32. …adapting/modifying curriculum for individuals with exceptionalities?	3	3.40	1.0	1–5
33. …adapting/modifying the environment for individuals with exceptionalities?	3	3.34	0.9	1–5
34. …adapting/modifying your teaching for individuals with exceptionalities?	3	3.35	1.0	1–5

Table 8 (*continued*)

Questionnaire Items	All Teachers (*N* = 85)			
	Mdn	*M*	*SD*	*Range*
What is your level of experience in…				
35. …teaching individuals with exceptionalities?	3	2.98	1.2	1–5
36. …adapting/modifying curriculum for individuals with exceptionalities?	3	2.94	1.1	1–5
37. …adapting/modifying the environment for individuals with exceptionalities?	3	2.81	1.2	1–5
38. …adapting/modifying your teaching for individuals with exceptionalities?	3	2.96	1.2	1–5
What is your perceived level of competence in…				
39. …teaching individuals with exceptionalities?	3	3.16	0.9	1–5
40. …adapting/modifying curriculum for individuals with exceptionalities?	3	3.20	1.0	1–5
41. …adapting/modifying the environment for individuals with exceptionalities?	3	3.18	1.0	1–5
42. …adapting/modifying your teaching for individuals with exceptionalities?	3	3.24	1.0	1–5

Note. Items were scored on a scale from 1 to 5, with 5 representing the greatest perceptions of feelings of preparedness, knowledge, experience, and competence. *N* = Number of Survey Respondents, *Mdn* = Median, *M* = Mean, *SD* = Standard Deviation.

A series of Kruskal-Wallis tests were conducted comparing the 3 levels of teaching expertise groups (novice, intermediate, and expert teachers) on each the four items related to: (1) Preparedness, (2) Knowledge, (3) Experience, and (4) Competence. Figure 2 displays a graph containing each of the expertise groups' mean rank scores on each of the 16 items. All of the Kruskal-Wallis tests were significant at the $p < .001$ level for all 16 questions, indicating that the three expertise groups did rate themselves significantly different on feelings of preparedness, knowledge, experience, and competence in special education. Follow-up tests using the Mann-Whitney statistic were then conducted to evaluate pairwise comparisons between groups. The Bonferroni approach was used to control for Type 1 error resulting in using a criterion level of $p < .02$ level to test for significant differences between groups. For post-hoc comparisons for the Kruskal Wallis test, adjustments using the Bonferroni method are normally used (Chan, 2003; Field, 2009). The results of the Kruskal-Wallis tests and paired comparisons are displayed in Table 9, and includes mean ranks and median scores for each item.

Perceptions of Preparedness, Knowledge, Experience, and Competence in Special Education
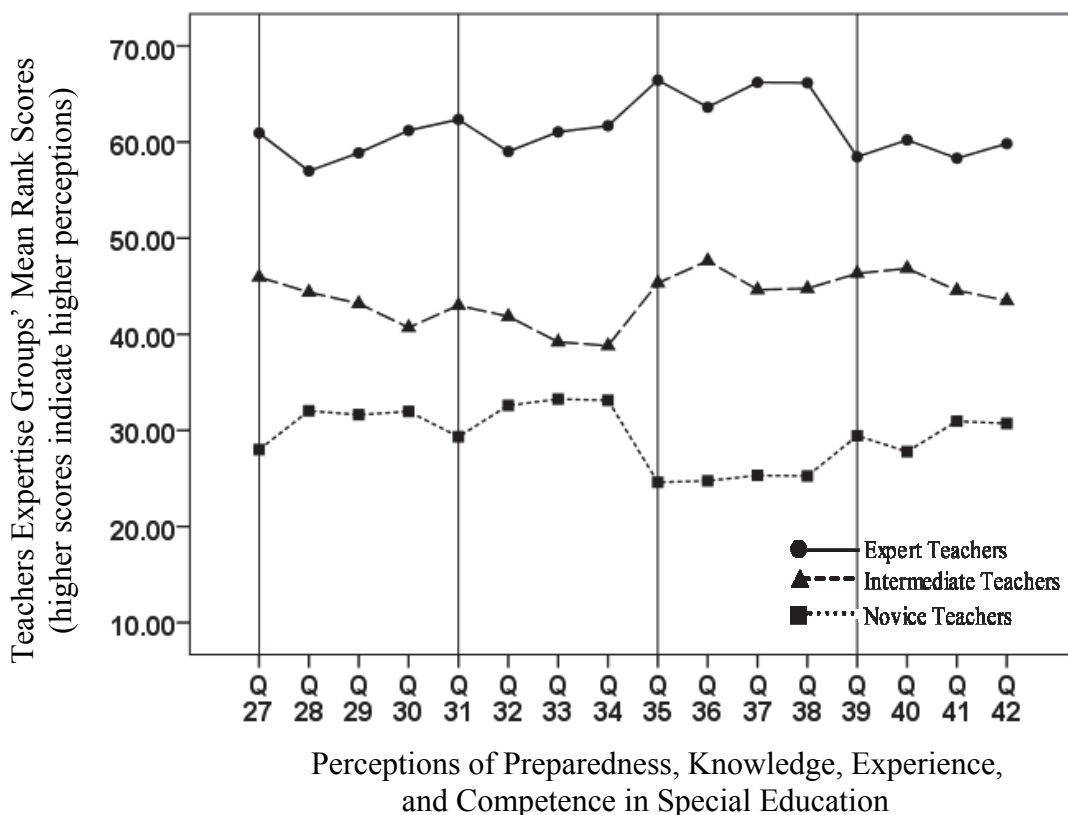
Preparedness Questions	Knowledge Questions	Experience Questions	Competence Questions
How well prepared do you feel...	*What is your level of knowledge...*	*What is your level of experience...*	*What is your perceived level of competence...*
27) to teach students with exceptionalities	31) of best teaching practices for students with exceptionalities	35) in teaching students with exceptionalities	39) in teaching students with exceptionalities
28) in adapting/ modifying the curriculum	32) in adapting/ modifying the curriculum	36) in adapting/ modifying the curriculum	40) in adapting/ modifying the curriculum
29) in adapting/ modifying the environment	33) in adapting/ modifying the environment	37) in adapting/ modifying the environment	41) in adapting/ modifying the environment
30) in adapting/ modifying your teaching	34) in adapting/ modifying your teaching	38) in adapting/ modifying your teaching	42) in adapting/ modifying your teaching

Figure 2. Expertise groups' (i.e., novice, intermediate, and expert teachers) mean rank scores on perceptions of preparedness to teach special education (questions 27 to 30), knowledge of special education (questions 31 to 34), experience with special education (questions 35 to 38), and perceived competence in special education (questions 39 to 42).

Table 9

Kruskal-Wallis Test of Significant Difference for Feelings of Preparedness, Knowledge,
Experience, and Competence in Special Education by Level of Teacher Expertise
(Mean Ranks, Medians)

Items (Questions 27 – 42)	Novice Teachers ($n = 34$)	Inter-mediate Teachers ($n = 27$)	Expert Teachers ($n = 24$)	*H*-Values
Feelings of Preparedness For Special Education				
How well prepared do you feel…				
27. …to teach individuals with exceptionalities?	28.00^{a***b} 2	45.94^{ac**} 4	60.94^{b***c} 4	$H(2)=$ 27.44^{***}
28. …in adapting/modifying curriculum for individuals with exceptionalities?	32.04^{b} 3	44.37 4	56.98^{b***} 4	$H(2)=$ 15.68^{***}
29. …adapting/modifying the environment for individuals with exceptionalities?	31.63^{b} 3	43.20^{c**} 4	58.88^{b***c} 4	$H(2)=$ 18.48^{***}
30. …adapting/modifying your teaching for individuals with exceptionalities?	31.97^{b} 3	40.70^{c***} 3	61.21^{b***c} 4	$H(2)=$ 21.59^{***}
Knowledge of Special Education				
What is your level of knowledge in…				
31. …best teaching practices for individuals with exceptionalities?	29.34^{a**b} 3	43.00^{ac***} 3	62.35^{b***c} 4	$H(2)=$ 27.58^{***}
32. … adapting/modifying curriculum for individuals with exceptionalities?	32.60^{b} 3	41.85^{c***} 3	59.02^{b***c} 4	$H(2)=$ 17.94^{***}
33. …adapting/modifying the environment for individuals with exceptionalities?	33.26^{b} 3	39.20^{c***} 3	61.06^{b***c} 4	$H(2)=$ 21.08^{***}
34. …adapting/modifying your teaching for individuals with exceptionalities?	33.13^{b} 3	38.81^{c***} 3	61.69^{b***c} 4	$H(2)=$ 21.91^{***}

Table 9 *(continued)*

Items (Questions 27 – 42)	Novice Teachers (n = 34)	Inter-mediate Teachers (n = 27)	Expert Teachers (n = 24)	H-Values
Experience in Special Education				
What is your level of experience in…				
35. …teaching individuals with exceptionalities?	24.60^{a***b} 2	45.33^{ac***} 3	66.44^{b***c} 4	$H(2)=$ 43.37^{***}
36. …adapting/modifying curriculum for individuals with exceptionalities?	24.75^{a***b} 2	47.65^{ac***} 3	63.63^{b***c} 4	$H(2)=$ 38.73^{***}
37. …adapting/modifying the environment for individuals with exceptionalities?	25.32^{a***b} 2	44.63^{ac***} 3	66.21^{b***c} 4	$H(2)=$ 41.49^{***}
38. …adapting/modifying your teaching for individuals with exceptionalities?	25.25^{a***b} 2	44.76^{ac***} 3	66.17^{b***c} 4	$H(2)=$ 41.77^{***}
Perceived Level of Competence in Special Education				
What is your perceived level of competence in…				
39. …teaching individuals with exceptionalities?	29.44^{a***b} 2	46.33^{ac***} 3	66.21^{b***c} 4	$H(2)=$ 22.30^{***}
40. …adapting/modifying curriculum for individuals with exceptionalities?	27.79^{a***b} 3	46.85^{ac***} 3	60.21^{b***c} 4	$H(2)=$ 27.58^{***}
41. …adapting/modifying the environment for individuals with exceptionalities?	30.96^{a*b} 3	44.56^{ac***} 3	58.31^{b***c} 4	$H(2)=$ 19.00^{***}
42. …adapting/modifying your teaching for individuals with exceptionalities?	30.72^{a*b} 3	43.50^{ac***} 3	59.83^{b***c} 4	$H(2)=$ 21.34^{***}

Note. Items were scored on a scale from 1 to 5, with 5 representing the greatest perceptions of feelings of preparedness, knowledge, experience, and competence. For *H*, *** indicates significance at *p* < .001.
[abc] Paired Comparisons: Mean ranks with matching superscript letters ([a, b, c]) were all significantly different, 1-tailed tests, * *p* < .02, ** *p* < .01 and *** *p* < .001.

Experience and Self Competence Ratings. The results of the pairwise comparisons indicated that teachers with a higher level of expertise rated themselves as more experienced and competent. That is, expert teachers rated themselves higher than intermediate and novice teachers on each the four items related to experience (questions35 through 38) and competence (questions 39 through 42), and intermediate teachers rated themselves with more experience and competence than novice teachers. Specifically, teachers with more expertise rated themselves as having more experience teaching students with exceptionalities (question 39); and more experience adapting and/or modifying the curriculum (question 40), the environment (question 41), and their teaching (question 42). Also, teachers with more expertise felt more competent to teach students with exceptionalities; and more competent to adapt and/or modify the curriculum, the environment, and their teaching.

Self Knowledge Ratings. Expert teachers also rated themselves as more knowledgeable than teachers classified as having less expertise (questions 31 through 34). Specifically, expert teachers felt more knowledgeable than both intermediate and novice teachers: They felt that they had more knowledge of best teaching practices for students with exceptionalities, and felt more knowledgeable about adapting and/or modifying the curriculum, the environment, and their teaching. While intermediate teachers did rate themselves as being more knowledge of best teaching practices for students with exceptionalities than did novice teachers, there were no significant differences in how intermediate and novice teachers rated themselves on their level of knowledge for adapting/modifying: the curriculum (question 32), the environment (question 33), and their teaching (question 34) for individuals with exceptionalities.

Self Ratings of Preparedness. The expert teachers also rated themselves significantly higher than novice teachers on the four items related to preparedness (questions 27 through 30). Further, the expert teachers also rated themselves higher than intermediate teachers on feeling prepared to teach individuals with exceptionalities (question 27), and on how prepared they felt to adapt/modify: the environment (question 29), and their teaching (question 30) for individuals with exceptionalities. However, there sere no significant differences between expert and intermediate teachers on their perceptions of preparedness to adapt/modify the curriculum for individuals with exceptionalities (question 28),

Intermediate teachers also rated themselves significantly higher than novice teachers on feeling prepared to teach individuals with exceptionalities (question 27). However, there were no significant differences in how intermediate and novice teachers rated themselves on how prepared they felt to adapt/modify: the curriculum (question 28), the environment (question 29), and their teaching (question 30) for individuals with exceptionalities.

A-ii.1) Self-Ratings of Special Education Expertise by Level of Expertise

For question 47, teachers were asked to rate their overall level of expertise in special education and responded on a scale from 1 to 10, where 1 indicated "Novice" and 10 indicated "Expert". It was hypothesized that the teachers classified as expert on the *9 Indicators of Special Education and Teaching Expertise Classification Scale* would indicate that they had more special education expertise than intermediate and novice teachers, and the intermediate teachers would indicate that they had more special education expertise than the novice teachers. A Kruskal-Wallis test revealed significant

differences between the groups, $H(2) = 37.208$, $p < .001$. The mean ranks of the rating of special education expertise for the novice teacher group was 24.32, for the intermediate teacher group was 48.81, and for the expert teacher group was 62.92. Follow-up tests using the Mann-Whitney statistic were then conducted to evaluate pairwise comparisons between groups. The Bonferroni approach was used to control for Type 1 error resulting in using a criterion level of $p < .02$ level to test for significant differences between groups. Pairwise comparisons revealed that the expert teachers (*Mdn* = 7) rated their special education expertise significantly higher than did intermediate teachers (*Mdn* = 5), $U = 186.50$, $p = .008$, and novices (*Mdn* = 3), $U = 67.50$, $p < .001$; and intermediate teachers rated their special education expertise significantly higher than novice teachers, $U = 164.50$, $p < .001$.

A-ii.2) Self-Ratings of Teacher Expertise by Level of Expertise

For question 57, teachers used the *Self Nomination Scale of Expertise in the Education Profession* (SNS-E) to rate themselves as a novice, intermediate, or expert teacher. It was hypothesized that the teachers classified as expert on the *9 Indicators of Special Education and Teaching Expertise Classification Scale* would indicate that they had more teaching expertise than intermediate and novice teachers, and that the intermediate teachers would indicated that they had more teaching expertise than the novice teachers. A Kruskal-Wallis test revealed significant differences between the groups, $H(2) = 41.03$, $p < .001$. The mean ranks of the rating of teaching expertise for the novice teacher group was 26.44, for the intermediate teacher group was 45.41, and for the expert teacher group was 63.75. Follow-up tests using the Mann-Whitney statistic were then conducted to evaluate pairwise comparisons between groups. The Bonferroni

approach was used to control for Type 1 error resulting in using a criterion level of $p <$ .02 level to test for significant differences between groups. Pairwise comparisons revealed that the expert teachers ($Mdn = 3$) rated their teaching expertise significantly higher than did intermediate teachers ($Mdn = 2$), $U = 173.00$, $p = .001$, and novices ($Mdn = 1$),

$U = 61.00$, $p < .001$; and intermediate teachers rated their special education expertise significantly higher than novice teachers, $U = 243.00$, $p < .001$.

Teachers who were classified as having more special education and teaching expertise on the *9 Indicators of Special Education and Teaching Expertise Classification Scale*, also rated themselves as having more expertise in special education and more teaching expertise. This provides evidence of validity for the *9 Indicators of Special Education and Teaching Expertise Classification Scale*.

A-iii) Special Education Information Needs by Level of Expertise

It was hypothesized that novice and intermediate teachers would indicate that they need more special education information than teachers classified with more expertise. Teachers were asked how much special education information they felt they required (question 46) and responded on a scale from 1 to 5, where 1 indicated "Not at All" and 5 indicated "A Great Deal". Contrary to the hypothesis, a Kruskal-Wallis test revealed no significant differences between the 3 expertise groups on how much special education information they required ($H(2) = 0.446$, $p = .80$). The median score for the novice teacher group was 4, for the intermediate teacher group was 4, and for the expert group was 4. This indicated that all teachers, novice through experienced teachers, felt that they needed a "Fair Amount" of special education information. Having less

experience did not mean that a teacher would feel that they required more special education; experienced teachers felt they required just as much special education information as less experienced teachers.

B. Guiding Exploratory Research Question Results

B-i) Teachers' Preferred Information Sources

For question 49, survey respondents were asked to rate how much they preferred 15 different sources of professional information on a scale from 1 to 5, where 1 indicated "Not at All Preferred" and 5 indicated "Extremely Preferred". There were also four item options available on the survey where teachers could specify and rate other preferred sources of information. However, no teachers completed these latter options. Table 10 lists teachers' most to least preferred information sources based on the overall group's mean for each source and descriptive statistics for each item (medians, means, and standard deviations). The top preferred information source for all teachers was 49-d) Someone with expertise such as a learning resource specialist or consultant and the least preferred information source was 49-m) A blog, chat room, or online discussion group.

Table 10

Teachers' Most to Least Preferred Information Sources (Descriptive Statistics: Medians, Means, Standard Deviations, and Range)

Order*	Preferred Information Sources (Question 49)	All Teachers ($N = 85$)			
		Mdn	*M**	*SD*	*Range*
1	49-d) Someone with expertise such as a learning resource specialist or consultant	5	4.34	0.9	1–5
2	49-n) Face-to-face discussion	4	3.94	1.0	1–5
3	49-a) A colleague (i.e., another teacher)	4	3.93	0.8	2–5
4	49-b) A mentor	4	3.91	0.8	1–5
5	49-e) A presentation, work-shop, or in-service training	4	3.81	1.1	1–5
6	49-g) An additional qualification or educational/ post-secondary course	4	3.73	1.1	1–5
7	49-f) A professional conference	4	3.64	1.2	1–5
8	49-c) Your principal, vice-principal, or supervisor	4	3.57	1.1	1–5
9	49-l) A website	3	3.29	1.1	1–5
10	49-h) A professional book or magazine	3	3.17	1.0	1–5
11	49-k) A television program, video, DVD, or CD	3	3.11	1.1	1–5
12	49-i) A research journal or journal article	3	3.04	1.1	1–5
13	49-j) A newsletter	3	2.74	1.1	1–5
14	49-o) An email	3	2.66	1.1	1–5
15	49-m) A blog, chat room, or online discussion group	2	2.44	1.1	1–5

Note. Items were scored on a scale from 1 to 5, with 5 representing the most preferred sources of information. *N* = Number of Survey Respondents, *Mdn* = Median, *M* = Mean, *SD* = Standard Deviation.

* Order: Items have been ordered from 1 "Most Preferred" to 15 "Least Preferred" based on group means.

One of the central questions of this exploratory study was to examine if there were differences in teachers' preferred information sources based on teachers' level of expertise. A series of Kruskal-Wallis tests were conducted on the 15 information sources to determine if there were differences between the responses of the 3 expertise groups. Figure 3 displays a graph of how each of the expertise groups (novice, intermediate, and expert teachers) rated (mean rank scores) each of the 15 preferred sources of information. To be consistent in reporting, items have been plotted based on the expert teachers groups' most preferred to least preferred information sources. Follow-up tests using the Mann-Whitney statistic were then conducted to evaluate pairwise comparisons between groups. The Bonferroni approach was used to control for Type 1 error resulting in using a value of $p < .02$ level to test for significant differences between pairs. Table 11 displays the results of the Kruskal-Wallis tests and pairwise comparisons on each of the 15 information sources by level of teaching expertise (mean ranks and medians for each item have been included).
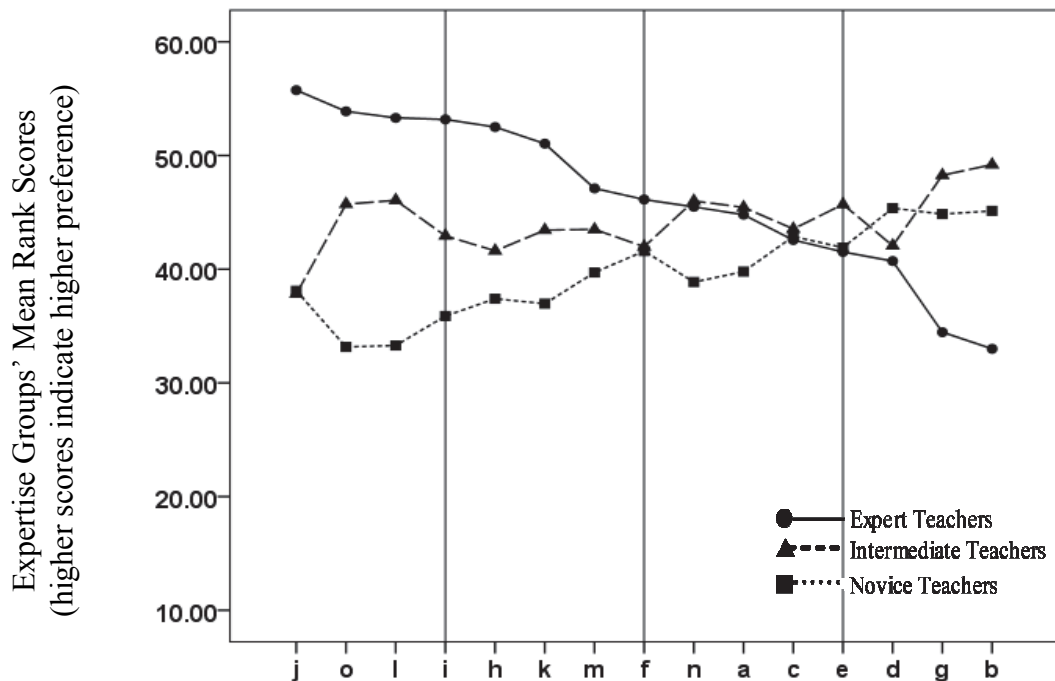
Preferred Sources of Professional Information (Question 49):

j	A newsletter	n	Face-to-face discussion
o	Email	a	A colleague (i.e., another teacher)
l	A website	c	Your principal, vice-principal, or supervisor
i	A research journal or journal article	e	A presentation, work-shop, or in-service training
h	A professional book or magazine	d	Someone with expertise such as a learning resource specialist or consultant
k	A television program, video, DVD, or CD	g	An additional qualification or educational/ post-secondary course
m	A blog, chat room, or online discussion group	b	A mentor
f	A professional conference		

Figure 3. Expertise groups' (i.e., novice, intermediate, and expert teachers) mean rank scores on most preferred sources of professional information.

Table 11

Kruskal-Wallis Test for Differences for Preferred Sources of Information by Level of Teacher Expertise (Mean Ranks, Medians)

Information Source (Question 49)	Novice Teachers ($n = 34$)	Inter-mediate Teachers ($n = 27$)	Expert Teachers ($n = 24$)	H-Values
49-j) A newsletter	38.10[b] 3	37.83[c**] 2	55.75[b**c] 3	$H(2) =$ 9.50[**]
49-o) An email	33.16[b] 2	45.72 3	53.88[b**] 3	$H(2) =$ 11.10[**]
49-l) A website	33.29[ab] 3	46.06[a*] 3	53.31[b**] 4	$H(2) =$ 10.60[**]
49-i) A research journal or journal article	35.88[b] 3	42.93 3	53.17[b*] 4	$H(2) =$ 7.45[*]
49-h) A professional book or magazine	37.40[b] 3	41.61 3	52.50[b*] 4	$H(2) =$ 5.82[*]
49-k) A television program, video, DVD, or CD	36.97 3	43.44 3	51.04 4	$H(2) =$ 4.89
49-m) A blog, chat room, or online discussion group	39.71 2	43.50 2	47.10 3	$H(2) =$ 1.36
49-f) A professional conference	41.60 4	41.98 4	46.13 4	$H(2) =$ 0.58

Table 11 *(continued)*

Information Source (Question 49)	Novice Teachers (n = 34)	Inter-mediate Teachers (n = 27)	Expert Teachers (n = 24)	*H-Values*
49-n) Face-to-face discussion	38.37 4	46.00 4	45.48 4	$H(2) = 1.76$
49-a) A colleague (i.e., another teacher)	39.79 4	45.44 4	44.79 4	$H(2) = 1.21$
49-c) Your principal, vice-principal, or supervisor	42.88 4	43.54 4	42.56 4	$H(2) = 0.02$
49-e) A presentation, workshop, or in-service training	41.90 4	45.70 4	41.52 4	$H(2) = 0.52$
49-d) Someone with expertise such as a learning resource specialist or consultant	45.37 5	42.06 5	40.71 5	$H(2) = 0.69$
49-g) An additional qualification or educational/post-secondary course	44.85 4	48.26 4	34.46 3	$H(2) = 4.63$
49-b) A mentor	45.13[b] 4	49.20[c*] 4	33.00[b*c] 4	$H(2) = 7.10$[*]

Note. Items were scored on a scale from 1 to 5, with 5 representing the most preferred sources of information. Items have been ordered based on expert teachers' highest to lowest mean rank scores.

For *H*-values, * indicates significance at $p < .05$, and ** indicates significance at $p < .01$.

[abc] Paired Comparisons: Mean ranks with matching superscript letters ([a, b, c]) were significantly different, * indicates significance at $p < .02$, and ** indicates significance at $p < .01$.

There were 9 sources of information where there were no significant differences in preferences between the three teacher expertise groups: (k) a television program, DVD, video, or CV; (m) a blog, chat room, or online discussion group; (f) a professional conference; (n) a face-to-face discussion; (a) a colleague; (c) a principal, vice-principal, or supervisor; (e) a presentation, workshop, or in-service; (d) someone with expertise; and (g) an additional qualification or educational course.

There was one source of information that novice (U=281.00, p = .02) and intermediate (U=211.00, p = .02) teachers preferred more than expert teachers: (b) a mentor. However, there was no significant difference between novice and intermediate teachers' preference for a mentor.

There were five sources of information that expert teachers preferred more than novice teachers: (j) a newsletter, (o) an email, (l) a website, (i) a research journal or journal article, and (h) a professional book or magazine.

Expert teachers preferred (j) a newsletter as a source of information more than novice teachers (U=242.50, p = .007). Expert teachers also preferred a newsletter as a source of information more than intermediate teachers (U=183.50, p = .006). However, there was no significant difference between novice and intermediate teachers' preference for a newsletter as a source of information.

Expert teachers preferred (o) an email as a source of information more than novice teachers (U=213.00, p = .002). However, there was no significant difference between novice and intermediate teachers' preference for an email as a source of information, nor between expert and intermediate teachers.

Expert teachers (U=225.50, p = .003) and intermediate teachers (U=311.50, p = .02) preferred (l) a website as a source of information more than novice teachers. However, there was no difference between expert and intermediate teachers preferences for a website as a source of information.

Expert teachers preferred (i) a research journal or journal article as a source of information more than novice teachers (U=254.00, p = .012). However, there was no significant difference between novice and intermediate teachers' preference for a research journal or journal article as a source of information, nor between expert and intermediate teachers.

Finally, expert teachers preferred (h) a professional book or magazine as a source of information more than novice teachers (U=265.00, p = .02). However, there was no significant difference between novice and intermediate teachers' preference for a professional book or magazine as a source of information, nor between expert and intermediate teachers.

Grouping information source preferences: 4 factors.

To further examine the data on teachers' information source preferences, a Principal Components Factor Analysis with Varimax Rotation was conducted to explore which information sources could be best grouped together. To ensure stability of factor solutions, previously authors have recommended that for exploratory factor analysis the ratio of participants to items be greater than 5:1 with a sample size of 100 participants. (Bryant & Yarnold, 1995) and in a review of the literature De Winter, Dodou, and Wieringa (2009) found a minimum sample size recommendation of 50 participants. The participant item ratio for the present analysis was 7:1 with a sample size of 85

participants. However, more recent recommendations suggest that sample size is less important than having high commonalities (greater than .6), no cross loadings, and several variables loading on each factor (Costello & Osborne, 2005; MacCallum, Widaman, Preacher, & Hong, 2001; MacCallum, Widaman, Zhang, & Hong, 1999). The data for this factor analysis could be considered as strong data as all items (information sources) used had high factor loadings (all above .6), items were not cross loaded on other factors, and all factors had several variables loading highly onto each factor.

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy obtained was .73, which suggested that it was appropriate to do a factor analysis on this data and that this data would yield reliable factors (Field, 2009). Bartlett's Test of Sphericity resulted in a significance level of .001, which indicated that this was not an identity matrix but that there was some relationship between items, and therefore a factor analysis was appropriate (Field, 2009).

The following information sources were removed from the factor analyses as they did not load on to any of the factors and were not highly correlated with the other information sources: Q49-d) Someone with expertise, Q49-n) Face-to-face, and Q49-o) Email. The best fit for the remaining 12 information source items was a solution of 4 factors, which were named based on the themes of the groupings: Factor 1: Media/Online Source Preferences (4 items), Factor 2: Education and Training Source Preferences (3 items), Factor 3: People Source Preferences (3 items), Factor 4: Professional/Research Source Preferences (2 items). The overall variance in responses explained by the four factors was 73.8%: Eigenvalues (and percent of variance)

accounted for by each factor were: Factor 1 was 4.13 (37.4%), Factor 2 was 2.40

(20.0%), Factor 3 was 1.44 (12.0%), and Factor 4 was 0.88 (7.4%). Each of the 12 items

loaded significantly onto only one of the four factors: Item loadings for each factor were

all equal to or above .60 with a range from .60 to .92. The factor loadings for each factor

are presented in Table 12.

Table 12

Factor Loadings of Items on Teachers' Information Source Preferences Scales

Item	Scales For Preferred Information Sources			
Preferred Information Source…	Factor 1: Media/ Online	Factor 2: Education/ Training	Factor 3: People	Factor 4: Professional /Research
Q49-k) A television program, DVD, video, or CD	**.85**	.12	-.05	.22
Q49-l) A website	**.84**	.04	-.04	.23
Q49-j) A newsletter	**.75**	.22	-.06	.35
Q49-m) A blog, chatroom, or online discussion group	**.69**	.01	.10	.00
Q49-e) A presentation, workshop, or in-service training	.17	**.92**	-.02	-.01
Q49-f) A professional conference	.06	**.87**	.19	.19
Q49-g) An additional qualification or educational/ post-secondary course	.04	**.60**	.24	.26
Q49-b) A mentor	-.00	.12	**.88**	-.08
Q49-a) A colleague	.16	.03	**.86**	-.07
Q49-c) Your principal, vice-principal, or supervisor	-.18	.20	**.69**	.17
Q49-i) A research journal or journal article	.26	.12	.01	**.88**
Q49-h) A professional book or magazine	.42	.29	-.02	**.78**

The four factor scales had good internal consistency reliabilities, with Cronbach's Alpha Coefficients ranging from 0.74 - 0.87. On a 5-point scale, teachers' most preferred information source was Factor 3: People with a mean score of 3.73 and teachers' least preferred information source was Factor 1: Media/Online with a mean score of 2.89. Detailed reliability information and mean scale scores are presented in Table 13.

Table 13

Internal Consistencies, Mean Factor Scores, and Standard Deviations for the Scales of Information Source Preferences

Scales of Preferred Information Sources	Internal Consistency (Cronbach's Alpha Coefficients) $N = 85$	Mean Factor Score	Standard Deviation
Factor 1: Media/Online (4 items)	.83	2.89	.90
Factor 2: Education/Training (3 items)	.78	3.73	.95
Factor 3: People (3 items)	.74	3.80	.75
Factor 4: Professional/Research (2 items)	.87	3.10	.99

Correlations among the 4 scales ranged from .26 to .57, which indicated that the scales were measuring distinct yet related constructs. Scale correlations are presented in Table 14.

Table 14

Correlations Among the Information Source Preferences Scales

Scale	Factor 2: Education/ Training	Factor 3: People	Factor 4: Professional/ Research
Factor 1: Media/Online	.26*	-.01	.57**
Factor 2: Education		.30**	.41**
Factor 3: People			.04

Note: * indicates $p<.05$, and ** indicate $p<.01$.

One-way Analyses of Variance were then conducted to look at the differences between novice, intermediate, and expert teachers' information source preferences based on the four factors. There were no significant differences for teachers' information source preferences for Factor 3: People, or Factor 2: Education and Training sources based on teachers' expertise level. However, there were significant differences for teachers' information source preferences by level of expertise for Factor 4: Professional/Research Information Sources, $F(2,82) = 3.39$, $p = .04$, and for Factor 1: Media/Online Information Sources, $F(2,82) = 3.94$, $p = .02$. Since group sample sizes were slightly different, Gabriel's procedure was used for post hoc comparisons (Field, 2009). Post hoc comparisons using Gabriel's test revealed that expert teachers significantly preferred Professional/Research Information Sources ($M = 3.50$, $SD = 1.12$) more than novice teachers ($M = 2.84$, $SD = .93$), $p = .03$, and expert teachers significantly preferred Media/Online Information Sources ($M = 3.29$, $SD = .94$) more than novice teachers

(M = 2.63, SD = .92), p = .02. Teacher expertise groups' means for each of the

4 preferred information source factors are plotted in Figure 4.
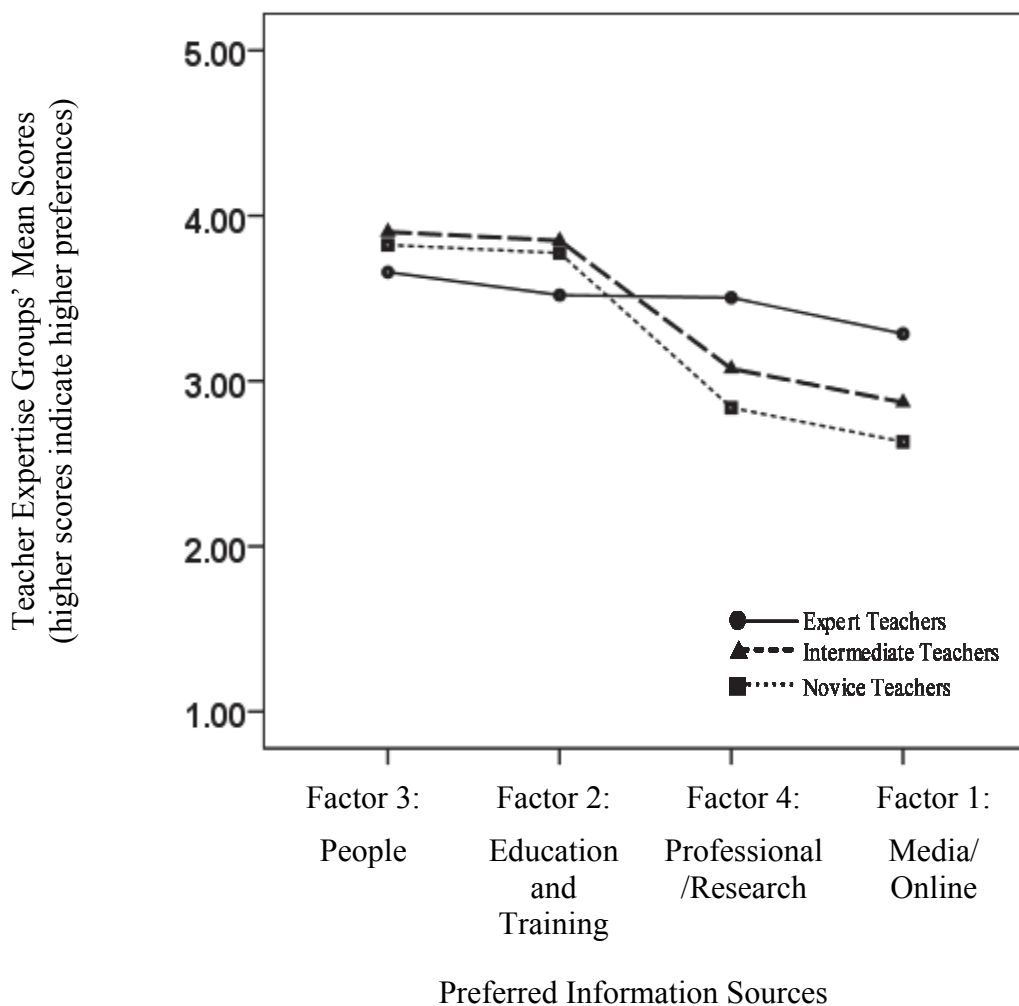
Figure 4. Teacher expertise groups' (i.e., novice, intermediate, and expert teachers) mean scores on their most preferred sources of professional information based on 4 factors.

B-i.1) Teachers' Preferred Online Information Sources: Websites, Search Engines, Databases

In the survey, teachers were asked to list the (a) websites, (b) search engines, and (c) databases that they used most frequently to find professional information. Table 15 provides a list of the most frequently identified websites, search engines, and databases for each level of teacher expertise. (a) A total of 120 different websites were reported. The websites that teachers mentioned searching most frequently included: various special education websites (40%), websites related to teaching resources and lesson plans (22.5%), the Ontario Ministry of Education's website (15 %), their own and other Ontario school boards' websites (12.5%), various Ontario University libraries' websites (5.8 %), and professional websites (4.2%) such as the Ontario College of Teachers' website and the Ontario Teacher Federations' websites. Overall, teachers with more expertise (i.e., intermediate and expert teachers) tended to provide more websites than the novice teachers. (b) Thirty-eight teachers reported using search engines. The most frequently used search engines were Google (89.5%), Yahoo (5.3%), and Bing (5.2%). (c) Only 12 teachers reported using databases. The most frequently used databases that teachers listed were databases of research articles: Wikipedia (41.7%), Educational Resources Information Center (ERIC; 33.3%), Google Scholar (8.3%), Proquest (8.3%), and JSTOR (8.3%).

Table 15

Teachers' Preferred Online Sources of Information: Most Frequently Used (a) Websites,

(b) Search Engines, and (c) Databases

Rank*	Preferred Online Sources of Information *Percentage (Expected Percentage)*	Novice Teachers $n = 34$	Inter-mediate Teachers $n = 27$	Expert Teachers $n = 24$	All Teachers $n = 85$
	A. Most Frequently Used Websites (Total Number of Websites Reported = 120)				
1	Various Special Education and Disability Websites (examples included):	6.7 (9.2)	**20.0** (19.2)	13.3 (19.2)	40.0
	• *Autism Ontario (www.autismontario.com)*				
	• *Autism Society of Canada (www.autismsocietycanada.ca)*				
	• *Child and Parent Resource Institute (www.cpri.thehealthline.ca)*				
	• *Council of Exceptional Children (www.cec.sped.org)*				
	• *Learning Disabilities Association of Ontario (www.ldao.ca)*				
	• *Learning Disabilities Online (www.ldonline.org)*				
	• *One Place for Special Needs (www.oneplaceforspecialneeds.com)*				
2	Teaching Resources and Lesson Plan Websites (various websites)	6.7 (9.0)	5.8 (7.1)	**10.0** (6.4)	22.5
3	Ministry of Education, Government of Ontario (www.edu.gov.on.ca)	1.7 (6.0)	**8.3** (4.8)	**5.0** (4.2)	15.0
4	Ontario School Boards (various websites)	0.8 (5.0)	**5.8** (4.0)	**5.8** (3.5)	12.5
5	Ontario University Libraries (various websites)	0 (2.3)	0.8 (1.8)	**5.0** (1.6)	5.8
6	Professional Websites for Educators	0 (1.7)	**3.3** (1.3)	0.8 (1.2)	4.2
	• *Elementary Teachers' Federation of Ontario (www.etfo.ca)*				
	• *Ontario College of Teachers (www.oct.ca)*				
	Column Total	15.8 (40.0)	**44.2** (31.8)	**40.0** (28.2)	100 %

Table 15 *(continued)*

Rank*	Preferred Online Sources of Information *Percentage (Expected Percentage)*	Novice Teachers *n* = 34	Inter-mediate Teachers *n* = 27	Expert Teachers *n* = 24	All Teachers *n* = 85
B. Most Frequently Used Search Engines (Total Number of Websites Reported = 38)					
1	Google (www.google.com)	31.6 (35.8)	23.7 (28.4)	**34.2** (25.3)	89.5
2	Bing (www.bing.com)	0 (2.1)	0 (1.6)	**5.3** (1.5)	5.3
3	Yahoo (www.yahoo.com)	**2.6** (2.1)	**2.6** (1.7)	0 (1.5)	5.2
	Column Total	34.2 (40.0)	26.3 (31.8)	**39.5** (28.2)	100 %
C. Most Frequently Used Databases (Total Number of Websites Reported = 12)					
1	Wikipedia (www.wikipedia.org)	8.3 (17.9)	**25.0** (13.2)	8.3 (11.8)	41.7
2	Educational Resources Information Centre (ERIC; www.eric.ed.gov)	8.3 (13.3)	**16.7** (10.6)	8.3 (9.4)	33.3
3	Google Scholar (www.scholar.google.com)	0 (3.3)	0 (2.6)	**8.3** (2.3)	8.3
3	Proquest (www.proquest.com)	0 (3.3)	**8.3** (2.6)	0 (2.3)	8.3
3	JSTOR (www.jstor.org)	0 (3.3)	**8.3** (2.6)	0 (2.3)	8.3
	Column Total	16.7 (40.0)	**58.3** (31.8)	25.0 (28.2)	100 %

Note. * For rank, 1 indicates the most mentioned websites, and 6 indicates the least mentioned websites. Brackets indicate percentages expected if groups responded equally given number of respondents per group. **Bold** indicates that the group responded more than was expected.

In total, teachers reported using 170 websites. A Chi Square Goodness of Fit test was used to examine the relationship between level of expertise and the number of websites reported. Novice teachers reported 34 websites in total, intermediate teachers reported 70 websites, and expert teachers reported 66 websites (given the number of teachers per group, the expected number of websites if each group had reported an equal proportion of websites would be 68.0, 54.1, and 47.9 respectively). There was a relationship between level of expertise and the number of websites reported, $X^2(2, N = 170) = 28.50$, $p. < .001$. The proportion of websites reported by groups was different. Novice teachers reported fewer websites than expected, and intermediate and expert teachers reported more websites than expected.

Types of information searched for online.

On the survey, teachers listed websites that they frequently used and described the content that they were searching for. Teachers most frequently listed websites containing information on teaching resources, lesson plans, and the Ontario curriculum. Secondly, they listed websites related to special education information (such as specific information about a disability; strategies to differentiate, accommodate, or modify lesson plans or teaching delivery for students; or information on assistive technology). The next most frequent areas in which teachers searched for information were content related to professional development and research.

B-ii) Types of Professional Information Sought By Teachers

Survey respondents were asked to rate the extent to which they sought 15 different types of professional information on a scale from 1 to 5, where 1 indicated "Not at All Sought" and 5 indicated "Sought to A Great Extent". Categories of

information sought by teachers included information related to: a particular subject being taught, student learning, student motivation, instructional strategies, student exceptionalities, the curriculum, teaching resources, a particular issue affecting a school, lesson or unit planning, assessment or evaluation, classroom management, technology use in the classroom, communicating with parents, professional development, or professional organizations. There were also four response options available on the survey where teachers could specify and rate other types of information sought. However, no teachers completed these options. Table 16 lists types of information most to least sought by teachers based on the overall group's mean for each source. This Table includes the median, mean, standard deviation, and range for each item. The highest overall group mean for information sought was for information related to a particular subject that teachers were teaching ($M = 4.14$, $SD = 0.8$) and the lowest overall group mean for information sought was for information related to teachers' professional organizations ($M = 2.97$, $SD = 1.0$). For all teachers, the extent to which all 15 types of information were sought out were from "A Moderate" to "A Fairly Great Extent".

Table 16

Types of Information Most Sought by Teachers (Descriptive Statistics: Medians, Means, Standard Deviations, and Range)

Order*	Types of Information Sought (Question 50)	All Teachers (*N* = 85)			
		Mdn	*M**	*SD*	*Range*
	Information related to…				
1	50-A) A particular subject that you are teaching	4	4.14	0.8	2–5
2	50-H) Student learning	4	4.12	0.9	1–5
3	50-I) Student motivation	4	4.05	1.0	1–5
4	50-G) Instructional strategies	4	4.04	0.9	2–5
5	50-J) Student exceptionalities	4	3.99	1.0	1–5
6	50-C) The curriculum	4	3.95	0.9	2–5
7	50-E) Teaching resources	4	3.94	1.0	1–5
8	50-B) A particular issue affecting your school (e.g., bullying, suicide, poverty, student diversity, etc.)	4	3.92	0.9	1–5
9	50-D) Lesson or unit planning	4	3.89	0.9	1–5
10	50-F) Assessment or evaluation	4	3.86	1.0	1–5
11	50-K) Classroom management	4	3.74	1.2	1–5
12	50-L) Technology use in the classroom (e.g., computers, software programs)	4	3.68	1.0	1–5
13	50-M) Communicating with parents	3	3.41	1.0	1–5
14	50-N) Professional development	3	3.32	1.0	1–5
15	50-O) A professional organizations (e.g., teacher federation or college of teachers)	3	2.97	1.0	1–5

Note. Items were scored on a scale from 1 to 5, with 5 representing information sought "To a Great Extent" to 1 representing "Not At All." *N* = Number of Survey Respondents, *Mdn* = Median, *M* = Mean, *SD* = Standard Deviation. * Order: Items have been ordered from 1 "Information Most Sought" to 15 "Information Least Sought" based on overall group mean

Figure 5 displays a graph of how each of the expertise groups (novice, intermediate, and expert teachers) rated each of the 15 items. The items have been plotted based on the expert groups' highest to lowest mean scores on each item. It is interesting to note that the lines for each of the expertise groups follow similar trajectories. As we move towards information less sought by teachers, we begin to see greater differences amongst expertise groups, with novice and intermediate teachers seeking out these types of information more than expert teachers.

Types of Professional Information Most Sought (Question 50)
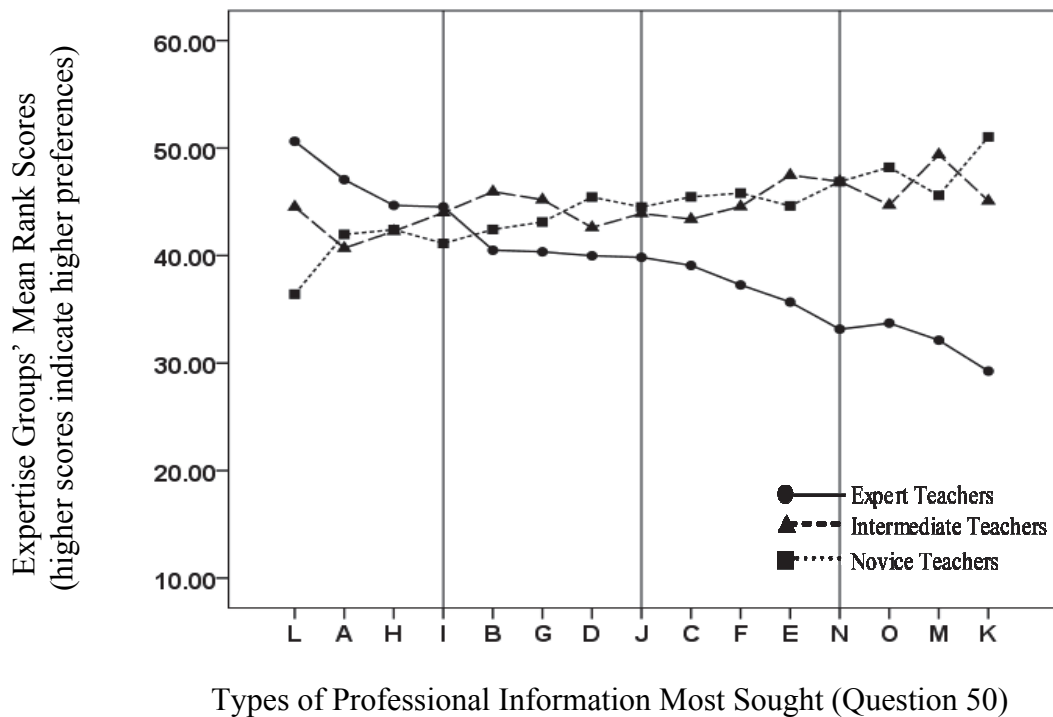
Information related to…

L	Technology use in the classroom (e.g., computers, software programs)	C	The Curriculum
A	A particular subject that you are teaching	F	Assessment or evaluation
H	Student learning	E	Teaching resources
I	Student motivation	N	Professional development (e.g., information on developing a portfolio)
B	A particular issue affecting your school (e.g., bullying, suicide, poverty, student diversity, etc.)	O	A professional organization (e.g., teacher federation or college of teachers)
G	Instructional strategies	M	Communicating with parents
D	Lesson or unit planning	K	Classroom management
J	Student exceptionalities		

Figure 5. Expertise groups' (i.e., novice, intermediate, and expert teachers) mean rank scores on types of professional information sought most.

Another of the questions guiding this exploratory study was whether there were differences in the type of professional information sought based on teachers' level of expertise. A series of Kruskal-Wallis tests were conducted on these 15 items to determine if there were differences between the responses of the 3 groups. Table 17 displays the mean ranks, medians, Kruskal-Wallis test results, and post hoc pair-wise comparisons for each of the items for each of the expertise groups. For most of these comparisons, there were no significant differences found amongst the groups, which meant that teachers of all levels of expertise were equally seeking out these various types of professional information. There were only three types of information that less experienced teachers sought more than expert teachers: (50-K) information related to classroom management, (50-M) information related to communicating with parents, and (50-N) information related to teachers' professional organizations. Follow-up tests using the Mann-Whitney statistic were then conducted to evaluate pairwise comparisons between groups. The Bonferroni approach was used to control for Type 1 error resulting in using a value of $p < .02$ level to test for significant differences between pairs. These comparisons revealed that both novice teachers and intermediate teachers sought information related to classroom management and communicating with parents more than expert teachers. Novice teachers also sought more information related to professional organizations than did expert teachers.

Table 17

Kruskal-Wallis Test for Differences for Types of Professional Information Sought by Level of Teacher Expertise (Mean Ranks, Medians)

Items (Question 50):	Novice Teachers ($n = 34$)	Inter-mediate Teachers ($n = 27$)	Expert Teachers ($n = 24$)	H-Values
Information related to…				
50-L) Technology use in the classroom (e.g., computers, software programs)	36.41 3	44.52 4	50.63 4	$H(2)=$ 5.26
50-A) A particular subject that you are teaching	41.97 4	40.69 4	47.06 5	$H(2)=$ 1.09
50-H) Student learning	42.41 4	42.26 4	44.67 4	$H(2)=$ 0.18
50-I) Student motivation	41.13 4	44.00 4	44.52 4	$H(2)=$ 0.37
50-B) A particular issue affecting your school (e.g., bullying, suicide, poverty, student diversity, etc.)	42.43 4	45.94 4	40.50 4	$H(2)=$ 0.73
50-G) Instructional strategies	43.12 4	45.20 4	40.35 4	$H(2)=$ 0.55
50-D) Lesson or unit planning	45.44 4	42.61 4	39.98 4	$H(2)=$ 0.78
50-J) Student-exceptionalities	44.51 4	43.91 4	39.83 4	$H(2)=$ 0.62

Table 17 *(continued)*

Items (Question 50):	Novice Teachers ($n = 34$)	Inter-mediate Teachers ($n = 27$)	Expert Teachers ($n = 24$)	*H*-Values
Information related to…				
50-C) The curriculum	45.46 4	43.39 4	39.08 4	*H*(2)= 1.07
50-F) Assessment or evaluation	45.81 4	44.56 4	37.27 4	*H*(2)= 2.03
50-E) Teaching resources	44.62 4	47.48 4	35.67 4	*H*(2)= 3.57
50-N) Professional development (e.g., information on developing a portfolio)	46.87[b] 3	46.89 4	33.15[b*] 3	*H*(2)= 5.81*
50-O) One of your professional organizations (e.g., teacher federation or college of teachers)	48.21 3	44.70 3	33.71 2	*H*(2)= 5.40
50-M) Communicating with parents	45.60[b] 3	49.39[c*] 4	32.13[cb*] 3	*H*(2)= 7.58*
50-K) Classroom management	51.04[b] 4	45.09[c*] 4	29.25[cb***] 3	*H*(2)= 12.15**

Note. Items were scored on a scale from 1 to 5, with 5 representing the most sought information. Items have been ordered based on expert teachers' highest to lowest mean rank scores.

For *H*-values, * indicates significance at $p < .05$, and ** indicates significance at $p < .01$.

[abc] Paired Comparisons: Mean ranks with matching superscript letters ([a, b, c]) were significantly different, * indicates significance at $p < .02$, and *** indicates significance at $p < .001$.

B-iii) Teachers' Special Education Information Needs and CEC's Professional Standards for Special Education

Teachers were asked to think about their information needs related to special education, inclusion, and/or students with exceptionalities, and to then identify and list their questions and greatest information needs (question 55). Teachers' questions and needs were then coded into one of the 10 knowledge and content areas of the CEC's Professional Standards for Special Education (2009). These Standards provided category labels to describe in which areas teachers' information needs lie. Further, the frequency of information needs in each category were compared by level of teacher expertise (novice, intermediate, expert teachers). Table 18 displays the percent of total identified needs for each of the CEC Special Education Standards by teachers' expertise level. Teachers did not identify any needs under CEC Standard 3: Individual Learning Differences, CEC Standard 6: Language, and CEC Standard 9: Professional and Ethical Practice.

Table 18

Percent of Total Identified Information Needs for Each CEC Special Education Standard by Expertise Level (percentage of total information needs and expected percentages)

Rank*	CEC Special Education Standard *Percentage* *(Expected Percentage)*	Novice Teachers *n* = 34	Inter-mediate Teachers *n* = 27	Expert Teachers *n* = 24	All Teachers (Row Total)
1	CEC Standard 4: Instructional Strategies	17.9 (19.1)	**16.4** (15.2)	13.4 (13.5)	47.7
2	CEC Standard 5: Learning Environments and Social Interactions	6.0 (6.3)	4.5 (5.0)	**5.2** (4.4)	15.7
3	CEC Standard 2: Development and Characteristics of Learners	3.7 (5.4)	**5.2** (4.3)	**4.5** (3.8)	13.4
4	CEC Standard 10: Collaboration	1.5 (3.3)	2.2 (2.6)	**4.5** (2.3)	8.2
5	CEC Standard 7: Instructional Planning	3.0 (3.0)	**3.0** (2.4)	1.5 (2.1)	7.5
6	CEC Standard 8: Assessment	0.7 (1.8)	2.2 (1.4)	**1.5** (1.3)	4.5
7	CEC Standard 1: Foundations	0.7 (1.2)	0.7 (1.0)	**1.5** (0.8)	3.0
Column Total		33.5 (40.0)	**34.2** (31.8)	**32.1** (28.2)	100 % = 134 Total Comments

Note. Teachers did not identify any information needs under CEC Standard 3: Individual Learning Differences, Standard 6: Language, and Standard 9: Professional and Ethical Practice.

* For rank, 1 indicates the most mentioned needs, 7 indicates the least mentioned needs.

Brackets indicate percentages expected if groups responded equally given the number of respondents per group. **Bold** indicates that the group responded more than was expected.

There were a total number of 134 needs identified. Almost half of the identified needs (47.7%) could be categorized as CEC Standard 4: Instructional Strategies. Questions and information needs in this category, from most to least frequent, included: (1) how to differentiate, modify, and accommodate the curriculum and lessons for students with special needs, (2) what are instructional strategies for teaching and meeting the needs of students with specific disabilities, (3) what are strategies to support students using assistive technology, and (4) what are effective behaviour management strategies for changing disruptive behaviours.

Teachers' second most frequently identified needs were related to CEC Standard 5: Learning Environments and Social Interaction, with 15.7% of identified needs coded under this category. Questions and information needs in this category, from most to least frequent, included: (1) understanding inclusion and how to create an inclusive environment, (2) how to deal with group versus individual needs, (3) how to tell other students in the classroom about a child's disability, and (4) how to develop student/teacher relationships.

Teachers' third most frequently mentioned need was related to CEC Standard 2: Development and Characteristics of Learners, with 13.4% of the identified needs falling into this category. Questions and information needs in this category were related to wanting to know more about specific disabilities/exceptionalities.

Teachers' fourth most frequently mentioned need was related to CEC Standard 10: Collaboration, with 8.2% of the identified needs falling into this category. Questions and information needs in this category were related to wanting to know more effective

collaborative strategies for dealing with parents, administration, and colleagues in regards to students with exceptionalities.

The fifth most frequently mentioned information need by teachers was related to CEC Standard 7: Instructional Planning, with 7.4% of the identified needs falling into this category. Questions and information needs in this category were related to understanding and developing Individual Education Plans (IEPs).

The sixth most frequently mentioned information need was related to CEC Standard 8: Assessment, with 4.5% of the identified needs falling into this category. Questions and information needs in this category were related to wanting to know more about how to do assessment for students with specific disabilities.

Finally, the least most frequently mentioned need was related to CEC Standard 1: Foundations, with 3.0% of the identified needs falling into this category. Questions and information needs in this category were related to wanting to know more about special education policies.

A Chi Square Goodness of Fit test was used to examine whether teachers with different levels of expertise identified different amounts of special education information needs. Novice teachers reported 45 information needs, intermediates reported 46, and experts reported 43 (given equal proportions of information needs were reported given the number of teachers in each category, the expected proportion of needs would be 53.6, 42.6, and 37.8 respectively). The Chi Square result indicated that the three groups did not differ significantly in the number of special education needs they reported, $X^2(2, N = 134) = 2.37, p = .31$.

B-iv) Teachers' Information Seeking Behaviours: Hindrances and Supports

Hindrances to information seeking.

Teachers were asked to identify what limited or prevented them from seeking professional information or resources (question 52) and what difficulties they had experienced in searching for information (question 53). Table 19 lists the top 8 most frequently identified hindrances to teachers' information seeking by expertise level. The top identified hindrance to information seeking was lack of time. Forty-three out of 85 respondents (50.6%) mentioned that they did not have enough time in their day to search for information. If information seeking occurred, it was on teachers' own time during the evening, on weekends, or during summer holidays. The second most frequent hindrance was not knowing how to begin to search, not knowing where to find resources, or not knowing experts to contact. The third most frequent hindrance was related to cost. Teachers felt that resources were expensive, for example many websites required an access or professional fee. The fourth most frequently mentioned hindrance to information seeking involved teachers' questioning the quality, credibility, reliability, and validity of the information and information source. Again teachers mentioned that it took time to sort through to find good information and confirm the accuracy of the information. Teachers' felt that they lacked knowledge of scholarly sources. They also complained that they often came across contradictory information. The fifth most frequent hindrance to information seeking involved access to information. Teachers reported that they did not have access to university library systems to be able access online journal articles. Some teachers reported not having access to a computer during their school day. The sixth most frequently identified hindrance to information seeking

Table 19

Top 8 Most Frequently Identified Hindrances to Teachers' Information Seeking

by Expertise Level (percentage of total hindrances and expected percentages)

Rank*	Identified Hindrance *Percentage (Expected Percentage)*	Novice Teachers *n* = 34	Inter-mediate Teachers *n* = 27	Expert Teachers *n* = 24	All Teachers (Row Total)
1	Lack of time to search for information	10.9 (13.3)	9.3 (10.6)	**13.2** (9.4)	33.3
2	Lack of awareness and knowledge. Do not know: resources, experts, how, or where to begin searching	**11.6** (8.1)	4.7 (6.4)	3.9 (5.7)	20.2
3	Cost	**7.0** (5.3)	2.3 (4.2)	**3.9** (3.7)	13.2
4	Question the quality, credibility, reliability, and/or validity of the information	**4.7** (3.4)	**3.1** (2.7)	0.8 (2.4)	8.5
5	Information not accessible	**3.9** (3.1)	2.3 (2.5)	1.6 (2.2)	7.8
6	Information overload	0.8 (2.5)	**3.1** (2.0)	**2.3** (1.7)	6.2
7/8	Information too general	**2.3** (2.2)	**2.3** (1.7)	0.8 (1.5)	5.4
7/8	No support from school boards, administration, other teachers, or parents	0.8 (2.2)	0.8 (1.7)	**3.9** (1.5)	5.4
Column Total		**41.9** (40.0)	27.9 (31.8)	30.2 (28.2)	100 % = 129 Total Comments

Note. * For rank, 1 indicates the most frequently mentioned hindrances to information seeking,

7 indicates the least mentioned hindrances.

Brackets indicate percentages expected if groups responded equally given the number of respondents

per group. **Bold** indicates that the group responded more than was expected.

was information overload. Teachers felt that there was just too much information to sort through to find what they were specifically looking for. The seventh most frequently mentioned hindrance was not being able to find specific information. Teachers mentioned that the information they found was often too general and was not specific enough to answer questions about a specific student. Teachers felt that each student and situation was unique and it was difficult to find suitable, relevant information. The eighth most frequently identified hindrance was teachers reporting not having support from their school boards, administrators, or even colleagues to engage in information seeking.

Teachers reported many other hindrances to their information seeking. Some teachers reported lacking motivation or energy at the end of the school day to engage in information seeking, even though they felt they needed the information. Teachers also reported that the information they encountered was either too simplistic or too academic/theoretical. Teachers mentioned that specific-subject information was much easier to find than information related to special education.

A Chi Square Goodness of Fit Test was conducted to examine if there were differences in the proportion of hindrances to information seeking reported by teachers with different levels of expertise. In total, 129 hindrances to information seeking were reported: Novice teachers reported 54 hindrances, intermediates reported 36, and experts reported 39. If equal proportions of teachers had reported hindrances, then the expected proportion of hindrances would be 51.6, 41.0, and 36.4 respectively. The Chi Square revealed that there were no significant differences in the proportion of hindrances reported by teachers with different levels of expertise, $X^2(2, N = 129) = 0.91$, $p = .64$.

Supports to information seeking.

On the survey measure, teachers were asked to describe how their information needs could be better met (question 54). The supports identified were grouped together into similar categories, resulting in three theme areas emerging in which the supports could be categorized: (1) Easy Access, (2) Knowledgeable Expert, and (3) Dedicated Time for Information Seeking. Table 20 lists the top 3 most frequently mentioned identified supports to teachers' information seeking by expertise level.

(1) The top identified support was having information that was easier to access and read. Forty out of 85 respondents (47.6%) mentioned that they would like easier access to information. The Easy Access theme area included supports to information seeking such as:

- Wanting information to be easy to find

- Wanting free access to information

- Wanting one central place to access information (such as a portal or hub)

- Wanting links to other resources (including links to more in-depth research and access to research journals)

- Wanting quality, reliable, and approved sources of information (such as information that had been tested, researched, and was shown to work in classroom settings)

- Wanting information that was easy to read

- Wanting information that was summarized and to the point

- Wanting information that was better organized

- Wanting very specific information that was easy to find

Table 20

*Top 3 Most Frequently Identified Supports to Teachers' Information Seeking by Expertise
Level (percentage of total supports and expected percentages)*

Rank*	Identified Supports *Percentage* *(Expected Percentage)*	Novice Teachers *n* = 34	Inter-mediate Teachers *n* = 27	Expert Teachers *n* = 24	All Teachers (Row Total)
1	Access to and Style of Information: Free, Easy to Access, Centralized, Summarized, Organized, Reliable, More Specific Information	16.7 (19.0)	**21.4** (15.1)	9.5 (13.4)	47.6
2	Time with a Knowledgeable Expert (Facilitated, Hands-On, Practical Experiences)	10.7 (14.8)	**14.3** (11.7)	**11.9** (10.4)	36.9
3	Dedicated Time for Information Seeking and Professional Development	1.2 (6.2)	2.4 (4.9)	**11.9** (4.4)	15.5
Column Total		28.6 (40.0)	**38.1** (31.8)	**33.3** (28.2)	100 % = 84 Total Comments

Note. * For rank, 1 indicates the most frequently mentioned supports to information seeking,

and 3 indicates the least mentioned supports.

Brackets indicate percentages expected if groups responded equally given the number of respondents

per group. **Bold** indicates that the group responded more than was expected.

(2) The second most frequently mentioned support was wanting access to a knowledgeable expert. Over one third of respondents (36.9%) wanted to have opportunities and time to connect and consult with an expert that was familiar with teachers' specific contexts and students, and could answer teachers' specific questions. Teachers wanted in-class support with a knowledgeable expert to help facilitate learning, including being able to observe experts in action. When teachers had professional development such as workshops or in-services with knowledgeable experts, they wanted hands-on, practical experiences and strategies, and on-going follow-ups with that expert.

(3) The third most mentioned support was having dedicated time for information seeking and professional development (15.5% of respondents mentioned the need for dedicated time). Teachers felt that they did not have any time during the school day for professional development or time to search for information to meet their information needs and have their questions answered.

In total, teachers reported 84 supports to their information seeking.. A Chi Square Goodness of Fit test was used to examine the relationship between level of expertise and the number of supports reported. Novice teachers reported 24 supports in total, intermediate teachers reported 32 supports, and expert teachers reported 28 supports (given the number of teachers per group, the expected number of supports if each group had reported an equal proportion of supports would be 33.6, 26.7, and 23.7 respectively). The results of the Chi Square indicated that there was no relationship between level of expertise and the number of supports reported, $X^2(2, N = 84) = 4.58, p. = .10$. Novice, intermediate, and expert teachers reported equal numbers of supports to their information seeking.

CHAPTER 6:

CONVERGENCE OF THE INTERVIEW DATA WITH THE SURVEY DATA

In this chapter, the findings from the survey data are briefly summarized. The findings from the interview data are presented with the survey data, and are used to provide further clarification and illumination of the results of the online survey. This chapter has been organized based on the research hypotheses and the exploratory questions. To maintain teachers' anonymity, teachers' comments have been identified only as belonging to a novice, intermediate, or expert teacher. Further, as there was only one male interviewee, to maintain confidentiality, all comments are referred to in the third person feminine form (e.g., 'she' stated).

A-i) Special Education Expertise: Teachers' Perceptions of Preparedness for, Knowledge of, Experience with, and Competence in Special Education by Expertise Level

As expected, teachers with more special education and teaching expertise rated themselves higher in their preparedness for, knowledge of, experience with, and competence in teaching special education than did less experienced teachers. Novice teachers rated their special education preparedness, knowledge and competence as greater than their experience. As intermediate teachers gain experience, all of their ratings increased, however, their experience ratings still remained below their preparedness, knowledge, and competence ratings. Finally, while expert teachers rated their special education preparedness, knowledge, experience, and competence high, their lowest ratings were on competence. If experienced teachers are feeling less competent, this may indicate why these teachers rate that they require more special education information.

The interview data reflected these findings. During the interviews, all of the novice teachers expressed concerns about teaching students with exceptionalities. These teachers did not feel well-prepared from their pre-service teacher training to teach students with exceptionalities, and these four novice teachers all planned to take an additional qualification course in special education. One novice teacher reflected on wanting more experience in special education: *"I wish we had had more opportunities to work in special education fields while completing our practicum. I think it would be optimal if everyone could have at least one special education practicum. I just don't feel prepared for the probability of having a special needs child in my classroom."*

During the interviews, the more experienced intermediate and expert teachers did not express concerns about their level of preparedness to teach students with exceptionalities. These teachers did talk about their experiences with special education and inclusion. These teachers were very specific about their special education information needs and about what they needed to learn to feel more competent. A key information need that all the intermediate and three of the expert interviewees discussed was differentiated learning. One intermediate teacher described her main special education need as: *"Differentiated learning—I want to really work that in to my teaching so that each student is benefiting from being in my class. That is what I really want to learn: different strategies to learn for differentiated learning. Like how to accommodate students in the classroom, the ones who have a hard time paying attention or getting engaged—how to get them engaged in the lesson."* These teachers were all focused on practical strategies to make differentiation and inclusion work in the classroom (for example, how to best make accommodations and modifications to the curriculum, the

environment, and their instruction to improve student learning). One intermediate teacher described why the information she found on differentiation was often not useful: *"It's unrealistic. The advice that you are given on how to program would be delightful if you were only programming for one child, but I have 30 kids. The frustrating thing is when you find information it will tell you how to meet that child's needs, but it won't tell you how to mesh it with everybody else's needs. It's the differentiation piece that is rarely addressed sufficiently."*

A-ii) Self-Ratings of Special Education and Teaching Expertise by Level of Expertise

The survey results indicated that teachers with more special education and teaching expertise rated themselves as having more expertise in special education and more expertise in teaching. The interview data also reflected this finding. The experienced teachers (both the intermediate and expert teachers) provided detailed descriptions about their extensive teaching experience and qualifications with students with exceptionalities. One intermediate teacher described how every student with a new special need added to that teacher's learning: *"For example, a couple years ago I had my first child who was hearing impaired. And so I had to use a microphone—it was huge. I had to learn about using the tech with her. And you have different kids that come with different packages and you pick up a bunch of information with each new kid."* In contrast, all of the novice teachers noted in their interviews that they had little experience working with students with exceptionalities. One novice pre-service teacher could not recall working with any students with exceptionalities in any of her student

teacher placements. Another novice teacher noted: *"I haven't had much opportunity to work with special education students."*

A-iii) Special Education Information Needs by Level of Expertise

It was surprising in the survey data that novice, intermediate, and expert teachers equally indicated that they needed more special education information—experienced teachers required special education information as much as novice teachers. Teachers expressed an urgency when it came to needing special education information. In the survey, one expert teacher wrote: *"One of the things about feeling I require more information is that the feeling is more urgent when a special education student arrives in the classroom, especially with a need I have not encountered before or for some time."*

However, the interviews revealed that the information that these groups required was qualitatively different. Novice teachers were very vague about what types of special education information they required. One novice described her information needs as*: "I just want to know about it [special education] in general because I don't know enough about it."* It took these teachers time to identify what their special education needs were. Their answers were very general, such as information about the characteristics of different disabilities or how to identify if a child had an exceptionality.

Intermediate teachers were more focused on what their specific special education needs were and they were quickly able to identify their needs. Their information needs were very specific, such as needing to learn more about teaching strategies for a specific type of disability (e.g., fetal alcohol syndrome, cerebral palsy), or how to modify the curriculum for a student in a higher grade who was functioning significantly below his/her classmates and still include the student in class activities. One intermediate

teacher described how her needs had changed over the years to be much more child specific and the difficulties she had finding specific information to address these needs:

> *"They are more specific to the needs of each individual child. And the other thing, since I have started teaching, is wading through the information. I need people to point me to a good website rather than 'this is out there', 'this is out there'. There is too much to read and maybe that's why if you Google to help a low reader, you are just going to be swamped. But, if you can Google how to help a low reader who has Asperger's, or who is 9 and has ADD and is on Ritalin, if you can pinpoint it, then you have a prayer of finding something out."*

Intermediate teachers specifically described searching for special education information mostly at the beginning of the school year. One teacher said:

> *"I think that's what's really interesting is each kid doesn't come with a handbook and so as a result when you're setting up a program you have a lot of research to do, especially in September, about how to deal with each of these kids. I think that that's where my information need lies right now: Just exactly what am I supposed to do with this kid in my classroom? How am I supposed to teach him? How am I supposed to reach him? What will his needs be?"*

The expert teachers also identified very specific special education needs, but these needs were very different than less experienced teachers. These teachers' needs were not focused on a specific exceptionality or on how to identify a disability, rather, these teachers each had needs such as learning more about special education policies or specific laws, finding community resources that could address specific needs of their students with special needs, what types of funding were available for their students, and

about how to use specific technology to enhance student learning. Expert teachers further elaborated on strategies they planned to use to meet their information needs. One expert teacher described her specific special education needs and how she planned to meet those needs:

> *"Even the in-service that I had on ASD last year was a repeat of what I already knew. ASD [and related disabilities]... I've covered all of the workshops on those. Queens [University] has a Special Education Autism Certificate, so I'm definitely interested in that. I'd like to learn more about the individual—to find out more of the learning styles of some of these children. We used to think that it is one umbrella, one IEP modified. We used to think these kids are all at one level, so let's modify their IEP in the same way. But, there are so many variances to all of these LDs. I think that taking Special Education Part 2 would help me dive a little bit more into some of these special ed. areas and the learning, the recall, the storage issues...."*

The more experienced teachers, both the intermediate and expert teachers, also spoke about the importance of creating an inclusive classroom and about needing more information about how to develop an inclusive classroom. These teachers wanted to know more about best practices and how to implement them into the classroom. One intermediate teacher described that her needs were now more focused on student engagement and inclusion, rather than on the curriculum:

> *"When I started teaching, my information needs were just trying to grapple with the basics. Now, my needs are much more focused on planning and the day to day work in the classroom. So that now my focus is on getting the kids to participate*

in the program. That's where my need really lies right now. I've got to plan for

these kids. What are the best practices? How am I going to get this kid to

participate with the other kid? How am I going to include everyone in to the

discussion?"

The specifics of how to do differentiation in practice was a key theme that most experienced teachers (both intermediate and expert teachers) discussed as an information need. One intermediate teacher described how this need had evolved from when she was a novice teacher:

"Well, for one thing, differentiating was a huge issue when I first started. I was

pounded with a lot of workshops on that when I first started teaching—it was a

big push in my board. And so I've got a good background in it now. Now my issue

isn't how to differentiate in general, it's now specifically how do I differentiate for

each of the kids in my classroom, especially the ones with exceptionalities that are

new to me."

Further, the expert teachers also noted that there was an overall need in their schools for their colleagues to learn more about differentiated instruction and inclusion. One expert teacher described the need for professional development on differentiated instruction for all teachers:

"Before I struggled with, 'How do I differentiate this work?' I have invested

my own time to research how to do that. But now, it's extending that to my

colleagues. When my students go out on rotary, they are not getting that same

differentiation. They are getting one test, and only one test. And the IEPs are

not carefully being followed by all. It may be a lack in their professional

development, that they didn't have the time, or the opportunity to go out and

learn these things. So, I think that 's the biggest challenge...it's just working

collaboratively with the whole team."

Another expert teacher talked about the lack of inclusive teaching practices being used by

her colleagues and the need for her colleagues to learn more about special education:

"I think that a regular classroom teacher can't possibly meet all of their [special

education students'] needs. Maybe one out of four are doing what they should be

doing for these kids. I wouldn't say it is half, from what I've seen and from

conversations that I've had with my colleagues. They have experiences with these

kids and they are integrated in the classroom, but I think they could continue to

make the same mistakes...just because you have these kids in your class doesn't

make you an expert. Some teachers keep using the same teaching practices over

and over."

B-i) Teachers' Preferred Information Sources

Both in the survey and the interview data, novice teachers preferred a face-to-face

consultation with a colleague or expert as their first approach to satisfying their need for

information. However, the expert teachers, in both the survey and interview data,

preferred other sources of information, such as a website, a research article, or a

professional book or magazine.

The findings on information source preferences indicated that novice teachers

generally preferred social, engaging, interactive information sources, such as face-to-face

interactions with colleagues or an expert, than more passive, individual activities, such as

reading, watching a video, or online activities. The top eight preferred sources of

information all involved engagement with others (i.e., an expert, face-to-face discussion, a colleague, a mentor, a workshop/presentation/in-service training, an educational course, a professional conference, or a principal/supervisor). The six least preferred information sources could be characterized as more passive activities that one would do on one's own (i.e., search a website, read a professional book or magazine, watch a video, read a research article, read a newsletter, read an email, or read a blog). This preference came out when novice teachers suggested what would support their information needs: they desired opportunities to talk with an expert or colleague. One novice teacher described why she preferred colleagues as information sources:

> *"But, that's why I go to my colleague, because it is fast, it is right there, she knows the student—because you just don't have the time [to seek information elsewhere]. And sometimes I find answers by asking a colleague or the itinerant teachers who are specialized in one area. I feel like a lot of the things are unique to that one student, so if they do not know that student, then certain things are not going to help the student....I think it is important to seek out information from colleagues, especially experienced teachers. Having a good rapport with your colleagues can really help out a lot."*

The novice interviewees, in reflecting on information source preferences, always discussed consulting other experienced teachers or experts, such as colleagues, learning resource teachers, principals, or professors. One novice teacher confirmed her source preference was teachers: *"From teachers. Even though I looked it up on the Internet... I had some questions and I couldn't really find what I was looking for on the Internet, so I went to ask the resource teacher that I worked with. And she gave me all this assistive*

technology information. And the other one gave me all this information about the government and school board and what she thinks about how special ed. is in Ontario and the school board. She also gave me a really good book to use.” One might think that the younger, novice teachers would be more accustomed to and engaged with online materials, but this was one of their least preferred information sources. These novice teachers all noted that they were less likely to look for information online as they had difficulty finding the specific information that they needed. One novice teacher described her difficulties using the Internet:

> *“And another thing, there is so much information out there and it is hard to weed through it all. Even if you go to Google and enter ‘gifted child’, there is so much out there. And I’m not really sure what is going to be most helpful to me, so I just look at a few things, and think, ‘Oh, that’s not going to help’—so I just forget about it and that’s why I don’t often use the Internet.”*

In the interviews, the intermediate teachers described consulting an expert to satisfy their information needs. However, these teachers also provided specific examples of websites that they frequently used to get information. All of these teachers mentioned using their local or other school boards’ websites and the Ontario Ministry of Education website when they were searching for special education information. One intermediate teacher described her favourite website information sources: *“I end up going to the Ministry of Education website, because they have a lot of answers.”* These teachers also mentioned websites that they frequently used for specific information. One intermediate teacher provided a few examples of some favourite websites: *“Ottawa-Carleton school*

board has a great website–I will often go there. Evergreen [website], they have some
really good things to jump off on to for strategies."

The expert teachers who were interviewed focused on online sources of
information. In describing the perfect information source, these teachers often selected
online sources: *"[The] perfect resource? I love a website."* Another expert teacher also
selected online information as her preferred information resource: *"Websites. I do a lot*
of online research if I have any questions...I have probably 50 to 100 specific websites
that I have accumulated in a database." One expert teacher described why she preferred
the Internet as an information source: *"We have a Learning Support Teacher, but,*
I would probably say that my experiences with spec. ed. surpasses my LST's knowledge."
Expert teachers noted that they sometimes had difficulties getting information from
knowledgeable experts and often turned to the Internet to find information for
themselves. One expert teacher described why she ended up using the Internet to do her
own research:

> "*You would do your own research, or through the LST. The LST would have to*
>
> *find the next contact and then you just don't know where that channel ends.*
>
> *And sometimes you may not get that response back for another 2 or 3 weeks,*
>
> *depending on that Learning Coordinator's busyness. And sometimes they just*
>
> *send you 10 websites and say, 'Do it yourself' or 'Here's a print-out of what*
>
> *Asperger's is'—you know what, that's great that I know what Asperger's is,*
>
> *but it's not a strategy with this child. I need tried, tested, true strategies."*

B-i.1) Teachers' Preferred Online Sources of Information

The survey data revealed that intermediate and expert teachers reported using online information sources to a greater extent than did novice teachers. The same results were reflected in the interview data. The novice teacher interviewees described their search strategies as seeking information from colleagues and knowledgeable experts. These teachers did not mention using the Internet until specific probing questions about the Internet were asked. On being asked about the Internet one novice described not liking that source: *"If it is about a specific student, the first thing I would do is talk to the learning support teacher. I, very rarely, on a few occasions, just because I don't love the Internet, have gone on to try to find information....but, I find that everyone is so individualized. If it is a need for a specific student, I would go to a colleague first."* The novice teachers then talked about using the Internet to search for lesson plans or using Google or Wikipedia to search for information about a specific disability. The novice teachers all noted that they often could not find the information that they needed on the Internet and preferred to consult a colleague to answer their questions. One novice teacher spoke about her difficulties with the Internet: *"There is too much general information. [I'm] not sure where to start. Too much general information. It's hard to wade through."*

The exception to preferring to consult a colleague for information was expert teachers. During the interviews, the expert teachers noted that while they too preferred talking with someone knowledgeable, they found that they were often more knowledgeable than their colleagues or the learning resource teachers in their school board, so they often turned to "expert" materials such as professional readings, journal

articles, and research online. One expert teacher talked about being more knowledgeable than her contacts and resources: *"I don't have someone that I can just go to and say, 'I have this kid in my class, and I'm noticing this...'."*

Both intermediate and expert teacher interviewees reported using more online information sources than did novice teachers. When asked about their information seeking and about their preferred sources of information, the 3 intermediate and 4 expert teacher interviewees all mentioned online information sources. Preferred websites included the Ontario Ministry of Education website and various Ontario school board websites. As described previously, these teachers talked about a number of specific web sources that they used for different purposes. The experienced teachers also mentioned using research-oriented materials such as journal articles or databases to search for research. One intermediate teacher described her search strategy for retrieving journal articles from the Educational Resources Information Center: *"I used ERIC and just typed in the keywords."* Another expert teacher retrieved information: *"Through the university's library...there are a lot of online journals and documents."* One expert teacher noted she preferred to take her additional qualification courses through a local university online because: *"I like their courses because they are very academic and very research-based."*

B-ii) Types of Professional Information Sought By Teachers

In the survey, teachers reported seeking professional information often (i.e., from a moderate to a fairly great extent). Teachers reported seeking information for a variety of reasons (e.g., information related to: a particular subject being taught, student learning or motivation, instructional strategies, student exceptionalities). However, expert teachers

reported needing certain types of information (i.e., professional development information, information on communicating with parents, and information on classroom management) less than the novice and intermediate teachers.

All of the interviewees reported needing more professional information. The novice teacher interviewees talked about seeking information related to their lesson plans, teaching resources, and classroom management. One novice teacher described the type of information that she searched for online: *"I used board websites to find resources. I don't think I used one more than another. Other than the Ministry website. The Ministry website had the curriculum guidelines so I found that I was going there a lot to find information. A lot of the things I was looking up were for lesson plans, unit plans."*

These four teachers did not mention seeking information related to special education until they were specifically asked about it. Then, the novice teachers usually spoke about trying to find information about a specific disability. One novice teacher explained: *"I've looked up information of students in my class who have been diagnosed with something: learning disabled, gifted, low average intelligence. I had a student last year who was severe ADHD—I've never seen anything like it before in my life. And he started eating different things, non-edible things. So I only look up information for a student in my class. I don't look up information for just in general."*

However, all of the intermediate and expert teacher interviewees talked about seeking information related to special education. Often information sought was about a specific disability that the teachers wanted to learn more about. One intermediate teacher described the type of exceptionality information that she was interested in:

"I had a severe FAS student last year, so I'm really interested in that as a topic. Next year I will have a CP kid so I'm kind of thinking about that and where to get more information. I have a nephew who has Down's, so those three categories are the things I'm thinking about. And, I've read quite a lot on autism because I'm interested in autism and I'm fascinated by that Asperger's. How many kids who are just a little odd might fall on the early part of that spectrum? I read memoirs about Asperger's and autism—that's recreational reading for me— but, the more I think about it, that's professional development too."

Finding out more about differentiating instruction was a key theme for all of the experienced teachers. Three of the 4 expert teacher interviewees also specifically talked about needing more information around technology and special education. One expert teacher described her top learning need and then went on describe how her need could best be met:

"I think the biggest thing that I want to learn about is the technology that's out there to help the students. I know the names of the programs, but I don't know how to properly use them in the sense to help that student, or even help the whole class. And I find that there is not enough opportunity in our professional development to go to workshops to learn them. And that is my biggest need. It's fine to send me a manual, but we don't have time to read it. We need to have someone else help us in a facilitating way to learn the program. And then maybe even seeing how that technology is being used within an integrated classroom. So you have a lot of laptops being used, where are they being stored? How are the children getting the information that they need? You need the

time to learn it and properly facilitate it into your classroom as well so that everyone can

succeed from it. So my number one [information need] is the technology."

B-iii) Teachers' Special Education Information Needs

In the survey, teachers of all levels of expertise reported that they needed more

special education information. About 50% of all the comments related to special

education needs were categorized under *CEC Professional Standard 5: Instructional*

Strategies. Teachers indicated that they needed more information on how to differentiate,

and modify the curriculum and lessons, and how to make accommodations for students

with specific disabilities. Further, teachers wanted to know more instructional strategies

for meeting the needs of students with exceptionalities. The interview conversations also

reflected this. One intermediate teacher described how her special education information

needs had changed with experience:

> *"When you start, you don't know what you don't know...but then as you get more*
>
> *experience, your information needs change because you become more adept at*
>
> *balancing the daily stuff. So your information needs become very pinpointed.*
>
> *I don't want to know how to just program for my kids reading at 1.0. I want to*
>
> *know, 'Why he is reading at 1.0? What does he have? What is wrong with him?'*
>
> *so that I can do some reading to pinpoint the specific things. So my information*
>
> *needs have become more pinpointed, have become very child specific, condition*
>
> *specific."*

The novice teachers reflected on becoming aware of how much they still needed

to learn about teaching. One novice teacher reflected: *"I came in [to the pre-service*

program] thinking that I knew everything, and I'm sure most of us came in thinking the

same way because we all went to school—well, we were wrong." Novice teacher interviewees struggled to identify their specific needs. When asked what her special education needs were, one novice teacher said: *"I can't think of anything right now, but maybe I'll think of some things as we go along."* These teachers took time to think about and articulate a response in the interviews. One expert teacher described that the difficulty that new teachers had is that new teachers do not know what information is important and relevant: *"I think that when I was a beginning teacher, I wanted to know everything about everything, and learn all I could."* Novice teachers reported that they needed more information in the area of differentiation and instructional strategies, but they talked about this in general and were not able to provide a specific example of their needs in this area.

All of the intermediate and expert teacher interviewees were able to provide specific examples of their special education needs. These teachers spoke at length about some of the difficulties they had in differentiating instruction for students with exceptionalities. During the interviews, teachers with more expertise were more easily able to identify their special education needs. These teachers were better able to articulate their needs and were very specific about their information needs. One intermediate teacher described that she no longer needed to know the specifics about a disability ('the what'), but rather required information on how to specifically address that disability in the classroom ('the how'):

> *"It's the same thing we need to know about everything. We get a lot of 'what', not a lot of 'how'. This is what Asperger's is, this is what ADHD is. So, tell me how to teach the ADHD kid. But, don't stop there...tell me how to recognize him,*

tell me how to maximize his potential, tell me how to get his parents on the same page...tell me how to do all of this in the midst of meeting all of my other kids' needs."

Expert teachers were also focused on how to apply theory to practice, and how to make special education work in the classroom. One expert teacher described what teachers in her school were struggling with: *"Our teachers in particular are having a hard time getting their head around the differentiated instruction model—and 'How do I do this with all of these little kids in one classroom?'"* Teachers with more expertise seemed to be more aware of what they did not know and could more easily identify what information they required that would help them to practice better. Further, these teachers talked about where they could find the information to meet their needs and specific steps they were taking to meet these needs.

B-iv) Teachers' Information Seeking Behaviours: Hindrances and Supports

   Hindrances to Information Seeking

The interview data on hindrances and supports to information seeking paralleled the information obtained in the survey data. Some of the main barriers to information seeking discussed during the interviews included the lack of time and support to search for information to meet teachers' professional needs; lack of knowledge of how and where to find information; information overload and too much information to sort through; difficulties accessing information, finding specific answers to questions, and finding information that could easily be applied to practice; and the time it took to verify the validity, reliability, and source of the information.

Lack of time. A main theme emerging from the interview data was the lack of time teachers had to search for information to meet their needs. One novice teacher described her desire to search for special education information, but that she could not because of the lack of time:

> *"Because you just don't have the time. I would love to look stuff up and read books and papers, but I just don't have the time. And I don't have the motivation to do that either. You know, there is so much other stuff that I need to do, it's just not a priority for me now. In years down the road, once I have a better handle on day to day stuff, and I'm not as crazy—I don't know if I'll ever come to that point—but, then you would have more opportunity to look at some of the research."*

The teachers, novice through expert, all reported being very busy during their school day. As one novice interviewee described it: *"Time is always your enemy as a teacher."* Information seeking was done on teachers' own time, often after school or at home. An expert teacher explained the commitment it took to find answers: *"I think the biggest thing is your commitment to spec. ed., it's a huge factor. It's a lot of searching for that answer on your own time."* Experienced teachers described the amount of effort it took to search for special education information. One intermediate teacher reported: *"The amount of time that goes into preparing is immense, right? Throw in a couple kids with disparate exceptionalities and suddenly your planning time increases because you've got to consider how you're going to deliver curriculum to these kids...because every time a kid [with a special need] comes [into the classroom] the teacher's got a*

whole new set of research to do." Given the time barriers, it is not surprising that teachers reported that they do not have the motivation or energy to search for information. As one intermediate teacher said: *"When time is limited, you tend to work with what you already have."*

   Lack of knowledge on how and where to search for information. A second key theme from the interview data was the lack of knowledge of how to search and where to find information to meet teachers' information needs. One novice teacher reflected on her difficulties finding information online: *"Not knowing how to [find information online]. Not knowing what's the perfect word you have to type into Google to find exactly what you want. You'll type one word in and then you'll type another one and you'll have totally different information. It would be nice to know websites you can use. When it came to special education we didn't really have any websites you could go to get good information. So, I guess that's been the most difficult is just knowing what's the best way to research."* A number of teachers noted that there were no specific websites for special education like there were for teaching other subjects like math or reading. One intermediate teacher said that there are: *"No Internet sites specifically for special education, [you] must go to multiple sites."* Teachers reported wanting to be able to go to one credible source for all of their special education needs.

   Information overload. One of the key themes that emerged from both the survey and the interview data was that when it came to information seeking, information overload was a real concern for teachers. Teachers of all experience levels reported feeling being overloaded with information and expressed feelings of being overwhelmed. One expert teacher explained information overload: *"I think that teachers in our school*

are overwhelmed by all of the initiatives that are coming at them and they don't know how to sift through it [all the information] to support the kids." Another expert teacher explained how the Internet often added to teachers' feeling overwhelmed:

> *"I think with the Internet it is frustrating because there is so much information and it is so hard to find current information that is reliable and that gives you something that you can use right away. [We don't have] a lot of prep time to try to figure it all out, sift through everything, and get something useful to use. I think that's the biggest thing with teachers. As well, there is a ton of stuff that teachers are bombarded with, and 'What are we going to use that is going to work?' Even the Ministry initiatives—they are always coming down with new initiatives—but how do I use it in my classroom?"*

Difficulties finding information. Further, teachers reflected on the difficulties they had trying to find specific information to answer their questions. One novice teacher explained that she had difficulties finding information because she did not know what information to search for: *"I guess knowing what's out there. I didn't know that I was going to have such a difficult time trying to find information. I went into it thinking 'Oh, it is going be so easy, I'll just type this into Google and all these books will come up'. I even had no idea of the kind of information I had to be looking for. I guess if I had known beforehand, like that tip that she [the experienced teacher] gave me...[I would not have had such difficulties]."* Another novice teacher noted the difficulties of finding specific information on the Internet: *"Using the right phrases when you're online. There have been times where I entered in what I think is pretty much crystal clear, and I'm looking and I'm looking and it doesn't come up until the fifth page, what I'm looking*

for. So, that's really frustrating. And then there are times where sometimes the information skirts around the direct issue or what I'm looking for. So, it hasn't really touched on it."

All teachers reported difficulties finding specific information on the Internet. One of the intermediate teachers described why searching online for specific information was so time intensive:

"[U]sing the Internet—it could be difficult because sometimes you're looking for just a specific clue. And you get a lot of the general [information] instead. I find that online searching is very intensive in that you have to figure out exactly how to phrase it so you get what you want. And there's a lot of hit or miss with that method. The other thing too is that it's much easier for people to post general information than to deal with specific information. I think it can take longer, the more specific your question is, the longer your search is going to take. That's why it would be nice if it was all in one spot. I think the other thing too is that a lot of the stuff comes in lists and doesn't have explanations."

One of the expert teacher interviewees also described the problem with not being able to find specific online information: *"[The Internet] gives me general knowledge. I usually then have to make a phone call. The information is generalized, it's left open for interpretation, and that results in me having to call someone. Because it doesn't explain—there is a depth there that is missing—so it still warrants more investigation. I would say that a good deal of the information that you get [on the Internet] is fairly ambiguous."*

Supports To Information Seeking

The supports to teachers' information seeking identified in the survey data (i.e., accessible and practical information, support from a knowledgeable expert, and dedicated time for information seeking) were also the key themes from the interview data.

Accessible and practical information. During the interviews, in discussions about ideal information sources, a key theme was easy access to reliable, easy to read, organized, practical information, accessible through one central place. One expert teacher described the preferred type of information that teachers need: *"The more hands on stuff we have so we can apply it...is wonderful. I think there is just so much out there for teachers, and we have so much on our plate that you want to get the condensed form. And it has to be practical information. And with the technology it's there, but how do we access it? How do we properly access it?"* Teachers noted that they had difficulties applying found information to practice. Novice through expert teachers wanted information that was very practical and could be easily applied to their own classroom contexts. Another expert teacher described how practical and easily applicable information would be most useful to teachers in a variety of formats:

> *"Video options, so watching an expert in the field—but it has to be in a classroom that's pretty realistic. Even pamphlets: they are easy to pick-up and transportable, you can read them on your own time and its not in-depth. [Pamphlets]about strategies: 'Have you thought of this or that?' And at the end of the pamphlet very simple contact information. The biggest thing is that you want to have it real, not just research-based, it is tested: these things work, these things do not work. It should include the set-up of the classroom so someone can picture what you*

are looking at, so you know what they are dealing with. It's getting something

that is applicable to you. The more realistic it is, the better it is. Or if you have

a website, you could say this is the strategy, this is the video. This is the strategy,

this is the video. Anything that is quick, that is not going to take a lot of in-depth

effort. 'Interested in this, look here'. 'Interested in this, look here'. As they always

say, keep it simple and keep it real."

All teachers noted that they did not have the time to do a lot of searching. Teachers wanted to access special education information from one Internet site. One expert teacher summed it up as: *"I think that there is so much out there, but it is all very individualized, a bit scattered...if we could pull it all together in a more efficient, searchable manner."* Teachers wanted a special education site that was well organized, easy to search, and contained both general and specific information. Further, experienced teachers wanted further links to more in-depth information and information on best practices. One intermediate teacher described how a special education information website could be organized: *"The way I would envision it is kind of like a wiki. In that you'd go there, you could search internally for specific things. Or you could find a table of topics and you could go from those topics and you could find the information you need there. The lay out would be general information about an exceptionality. Then I want information about general practices to do for them. And then what I want is specific practice. Specific questions [answered]. It would also have external links."*

Novice through expert teachers all reported that a perfect web resource would include access to knowledgeable experts. One expert teacher who preferred websites to answer her questions, still wanted to be able to talk with a more knowledgeable expert:

"I'd love someone on the website that I could call right away and discuss with. So, I can read about it...but when I have a question, I want the person who is sitting at the desk to be there to answer the question." Another expert teacher described her preferred information source also as a web resource, and she too emphasized contact with other knowledgeable experts and other teachers:

> *"My perfect resource would have a web-link to it and this web-link would have something where you could ask professionals because you are always going to have questions that you don't have answers to. And there are going to be activity suggestions, learning suggestions, handouts—where you can also contribute so you can put your stuff down as well. New information that is always coming up. Articles—and it is all going to be printable. There is also going to be phone numbers. And workshops/courses available to expand your knowledge. And access to other teachers who you can say, 'I have this type of student' and you can work things out together."*

Access to a knowledgeable expert. A knowledgeable expert also emerged as an ideal information source: someone who knew about the specific context of a situation (e.g., the school culture, the classroom situation, and the specific child's characteristics and difficulties) and could identify what information was important and relevant. All of the novice teacher interviewees discussed that their ideal information source would be access to a knowledgeable expert/colleague. One novice teacher explained why she preferred a knowledgeable colleague over other sources of information:

"For me it would be talking with an experienced teacher or some kind of expert or itinerant teacher. To actually sit down and plan specific things, even just to plan a couple of lessons. Like, 'These are the steps', 'This is what you need to do', 'These are the questions that you need to ask'. I find it better if someone comes in and sees exactly what I'm doing in my class and helps me work with the tools that I have already put in place and to make that better."

Novice teachers talked about the importance of getting information from knowledgeable teachers through both mentorship and job shadowing experiences. One novice teacher described how she liked to learn from experienced teachers:

"I've also sought out other people for mentorship. There's a teacher who is very experienced and very good...I think the preferred PD [professional development] for me is to see other people teaching. I've just popped into the classroom of a friend who teaches at the school and I sat and listened to her and it was good to see someone else teaching and see what they do. The thing I find worse about teaching is that everyone is teaching together, but you don't know what anyone else is really doing in their classroom because you don't actually see any of your colleagues teaching. There is no opportunity to learn good skills other than talking about it. But, it's different talking about it than what you are actually like in front of the students."

Another novice teacher explained why it was so important to have an experienced teacher to talk to:

"I like working with other teachers. I guess more practical experience that helps me and so on. Like shadowing another teacher. Watching a teacher going into the

classroom and see differentiated instruction. You can go to someone, maybe a veteran teacher who's been teaching awhile and go into their classroom and they'll teach you how they do it in their classroom. I like that kind of mentoring. You're with another teacher and then you're getting more practical hands on. Because you can learn about something from a book but then when you actually do it, then that's when you need the most help, because that's usually when important questions come up."

Teachers especially felt that they needed to talk with a knowledgeable expert when it came to special education. One intermediate teacher explained why knowledgeable experts were good sources of information: *"You need to be pointed in a direction because there is too much [special education] info. I've had lots of great LSTs over the years that I could go to with questions. I'm very willing to network with anyone who can point me in the right direction."* A novice teacher explained the importance of having someone knowledgeable in special education to consult:

"I think it is a challenge as a new teacher—and I'll probably say this 100 times—but there is just so much to learn. And what I have learned is that every child is so individual in what their needs are. A child who has special needs is just so individual. Tools and strategies that work for one child that has a specific problem are not always going to work for another child with the same problem. At times that can be extremely frustrating being new because you are just trying to figure everything out: from daily planning, to having extra-curricular activities going on–it is just very overwhelming. And it's hard when there is no support from other people to really show you exactly what to do."

Novice teachers especially appreciated when knowledgeable experts would help find relevant information to answer novice teachers' questions. One novice teacher explained:

> *"I have a student who is learning disabled and gifted so I find that if you have a student with more than one exceptionality, I have tried to find things, and the learning support teacher has tried to find things, and the itinerant teacher... and I find with more than one exceptionality, just because they are so unique, it is hard to find information to best help them. So, she searched and she actually got this really great article from an educational journal and it had some really great strategies in that. But I didn't search that out, she searched that out!"*

Teachers wanted an expert contact that was similar to the literacy coach model (i.e., where teacher literacy experts are available to provide one-on-one coaching in teachers' own classrooms). One novice teacher described her preferred information source as someone like a literacy coach: *"I like when other people come in and do a lesson in front of me so I can see how they do it. I know aspects of it, bits and pieces, but it would be helpful to see someone do it in practice....Last year I had this literacy coach and she was amazing, but they took them out of the school this year because of the funding. So, I don't have anybody like that this year, so that's a shame."* One expert teacher suggested using the literacy coach model to address special education questions: *"That's what we need for spec. ed. as well, someone who has mastered a program. So then that person becomes your expert to contact."* Expert teachers had a number of professional development suggestions that could be implemented to improve other teachers' special education knowledge and uptake of appropriate special education

practices. One expert teacher described what special education professional development might look like for regular classroom teachers:

"Maybe giving a half day of release or even a full day of release, and then bringing certain case studies in a room, certain spectrums—so the autism spectrum, a LD [learning disability], the different spec. ed. spectrums, all in one room. And you could go around the room and bring in your own case study and you can talk to someone about your own child, get your questions answered about that certain child. And create while you are there certain tactics: create your visual schedules, and looking through the IEP 'How can you meet this' and 'How can you meet this', looking at the curriculum. Sort of like a team teaching. Maybe you could have three or four teachers going to that particular expert to help you facilitate that. And then after that day, since you had the day of release, having a commitment of going back—say on your own time, like after school. So you can go back and say what worked and what didn't. So, it's not saying that on that full-release day we've solved all the problems—let's come back and talk about what you ran into again. It's like you've been rewarded a day, and then you can go back and sit around a table and be professionals and talk. I think that teachers need to be in their classroom and we've been removed so many times, but having a commitment and bringing your own work, that would be fine because it would be so applicable. Sometimes you go to a workshop and you think, 'Yeah, these are all going to work', and it doesn't, so you resort back to your old ways. Just being able to say that I've got three more weeks, and I'm going to hang in and I'm going to work with that team again to say it didn't work. And then you get that expert

contact that actually knows what you are struggling with. You could spend half a day with autism spectrum and the other with an LD, or you could be doing 45 minute sessions—something that you are not being lectured at is what I'm getting at—it's an expert talking to a professional that is wanting to make a difference. Or around a table if four or five other teachers are coming together from different schools, and if they all have a child with Asperger's then we can all converse about what is working—and you learn through each other."

Reliable information from credible sources. Finally, novice through expert teachers all noted that they wanted reliable information from credible sources. However, they reported that they did not have the time to check on the reliability of found information from such sources as the Internet. One novice teacher explained why she was reluctant to use online information: *"I would use Google, but I don't know if the websites are reputable or not...I only go to something that I know for sure is reputable."* One expert teacher described why teachers had to be very cautious of the information retrieved from the Internet and why teachers had to check the source of the information: *"You want to consider the citations, the credentials of the person who is posting the information—it could be some parents who are just posting it, thinking that this is what is going to work."*

Teachers reported that they wanted research-based information that has been proven to work in practice. One novice teacher said: *"Sometimes, if I don't see it in a journal or a reputable website I don't really know if it is true or not. But, I always like to know [if it is] proven or researched, that it is going to do some good and then try it out, rather than it's just somebody's ideas somewhere. And maybe that's just the university*

student in me who's always been told that you need to have reliable and reputable

sources." Desiring research-based sources was a key theme for experienced teachers.

One intermediate teacher described wanting a website that contained the top research

articles on teaching: *"But I find that I just do not have the time to go on the Internet and*

look for the stuff. If there was some Internet site that you could click on [the year] and

get the top 10 journal articles I would read it." Further, teachers talked about wanting

to provide credible, researched sources to parents. One expert teacher said: *"I don't*

recommend books for parents because there is such varying information. I don't direct

parents to that because you don't know what you are going to get. But I know CPRI

[Child and Parent Resource Institute] is a valid organization and they have a lot of

research. I pick and choose where I direct parents to because I want to make sure that

they are going to get solid information. Because, you can get a million different things

when you type something into the Internet."

Teachers noted that it took a lot of time to check the credibility of a site—time

that they often could not spare. One novice described how she looked up information on

the Internet and the checklist that she used to judge the credibility of the website:

> *"If it is something I don't know anything about then I do it the same way everyone*
>
> *else does, I go on to Google and I type a few words and go from there. Sometimes*
>
> *I'll go to the forbidden Wikipedia. I don't normally take the information from*
>
> *Wikipedia, but I do go to some of the links that seem credible. I'm a person that*
>
> *does back-ups so I won't just visit one site, I'll go to a number of different sites*
>
> *that look professional that have all my checks...I have a checklist for websites to*
>
> *make sure they are credible. [Things that are on that checklist?] Authors that I*

can look up and see where they are coming from, copyright dates, web updates to make sure it has been updated within a year. That there is a homepage to the site. I always check if they have a reference list that they have used, and those references are things that I can also look up. I don't always go into that much depth—it depends on what I'm looking up—but those are my big points. And advertisements. If there are advertisements on there, then I'm always iffy about the site. For example, most credible medical sites they might have an advertisement for a journal, but they don't have those fashion advertisements."

Because teachers did not have the time to check the credibility of websites, teachers often chose websites that they were familiar with. Teachers wanted websites that were easily accessible, but that didn't have a cost associated with them. One expert teacher had talked about using the Internet as her preferred source of information, but she also had many concerns related to the Internet:

"I do Google searches, but I'm very hesitant about the Internet as well because of the sources—I know the Council for Exceptional Children, I was a member of that. I trust their sources. But sometimes to get those sources, you have to be a member. So again, that's a cost. But there is so much out there—before you even start reading, you have to know the source. So it's difficult and time consuming as well. I'm teaching the kids right now about Wikipedia. So how reliable is it? And then sometimes you find a site, and then it's not there. And often it doesn't have as narrow of focus as you want. You have to read between the lines."

Teachers often chose the Ontario Ministry of Education and various school board

websites to address their special education information needs because they felt that these

websites would have trustworthy, research-based information that was also practical.

CHAPTER 7:

DISCUSSION OF THE RESULTS, SUMMARY, AND CONCLUSION

Discussion of the Research Findings

A gap has been identified in the research literature between what is actually happening in the classroom and best practices in special education (Klinger et al., 2003). A key barrier to professionals accessing the best evidence for decision-making has been identified as information overload (Andrews, Pearce, Ireson, & Love, 2005). In the current study, teachers of all experience levels, novice through expert teachers, reported needing more special education information. Main barriers to information seeking included not having the time to seek information, being overloaded and overwhelmed with information, and not being able to find information to meet teachers' specific special education information needs. Case (2007) has described the consequences of information overload on information seeking as, "Giving up…when the effort of gathering information seems too great, we make do with what little information we have. And yet when one stops searching before one has found much of anything, the result may be a complete failure to meet task goals. For this reason, encouraging success in task-related information seeking has been a major concern of information literacy advocates." (p. 106). If best practices are to be implemented in special education, then the first step is that teachers will need to have their special education information needs met.

The results found on teachers' information seeking behaviours in this study are similar to investigations done on other professional groups. Bennett et al. (2006) examined physicians' information seeking behaviours and found that physicians did most of their search at home after work, or during breaks during the day. Physicians reported

similar facilitators and barriers as reported by teachers in this study: Facilitators included being able to access information at work, and having designated time to engage in information searches. Barriers included lack of specific information and too much information to scan.

In a review of the research literature on the information seeking behaviour of healthcare professionals, Fourie (2009) reported that studies have shown that healthcare professionals have difficulties in expressing information needs, have unrecognized information needs, may not know that they need to seek information, and limit information sources to those things someone knows to be available.

One of the key findings in this study is that level of teaching and special education expertise made a difference in teachers' information seeking behaviours. Novice teachers in this study had difficulties identifying their special education information needs. Individuals may have difficulties finding information when they have not identified their needs sufficiently (Shenton, 2007). Shenton described different types of needs: needs that are known to the user, needs that are misunderstood, and needs that are not known (i.e., when an individual has not perceived they have an information problem). The difficulties that novice teachers experienced in information seeking may be due to the fact that these teachers do not know what they do not know and therefore do not know what to look for. When it comes to teachers' information needs on special education and students with exceptionalities, novice teachers may not know what questions they need to ask, and may not be able to identify relevant information. This might explain why novice teachers preferred knowledgeable experts and colleagues as information sources as these sources may be better able to identify relevant

information for a special education problem. Further, novice teachers least preferred information sources such as websites, journals, professional books and magazines, and electronic media. Novice teachers reported being unsuccessful at finding the specific information they needed from these sources. One novice teacher interviewee told a story about purchasing many professional books on a certain topic in special education, and how she was not able to find the information she needed in any of the books to help her program for a student with a specific exceptionality. Instead, she was able to find the information that she required by consulting her associate teacher. Apparently, the novice teacher had been focusing on the wrong aspects of the exceptionality.

Whereas, teachers with more expertise may have preferred information sources such as websites, journals, professional books and magazines, and electronic media because they have identified their specific needs and know what information is relevant to their needs. This may result in more effective searching and retrieval of information from these types of information sources to satisfy their information needs.

Teachers' Special Education Information Needs

Novice, intermediate and expert teachers equally indicated that they wanted more information on special education and inclusion. Teachers' most frequent information need was for CEC Special Education Standard 4: Instructional Strategies. Specifically, teachers wanted more information on how to differentiate, modify, and accommodate the curriculum, the environment, and their teaching for students with special needs. Teachers also wanted effective instructional strategies for teaching and meeting the needs of students with exceptionalities. Further, teachers required more information on inclusion and how to create an inclusive environment. Teachers want to know more than

just the 'what', they want practical information about how to apply best practices for special education in the classroom.

Teachers with more experience were more easily able to identify their special education needs, were better able to articulate their needs, and were very specific about how they could address their needs. These teachers were more aware of what information would help them to practice better. Novice teachers had more difficulty identifying their special education needs. Novice teachers may not be aware of what they do not know and may not be able to identify what information may be most relevant to address their needs. This could explain why novice teachers had such difficulty finding information using online information sources. It would be beneficial for novice teachers to explore their special education information and professional development needs with more experienced colleagues. This could be done during the mentorship program for new teachers.

Information Source Preferences

Both in the survey and the interview data, novice teachers preferred a face-to-face consultation with a colleague or expert as their first approach to satisfying their need for information. This is similar to other professional groups, such as physicians, whose first choice in problem-solving is consultation with a colleague (Bennett et al., 2006).

A key finding in this study is that teachers with different levels of expertise preferred different types of information sources. Novice teachers most preferred more socially engaging, interactive information sources such as face-to-face consultations with experienced colleagues and knowledgeable experts (e.g., learning support teachers). It was expected that young novice teachers who grew up using the internet may have

chosen online sources as a preferred special education information source. However, contrary to these expectations, online sources of information were one of novice teachers' least preferred sources. Novice teachers least preferred sources of information that were passive, individual activities such as searching online sources of information; reading professional books, magazines, and research resources; or watching videos. Case (2007) concluded that the key to information overload was being able to interpret and understand what information is there. Novice teachers may have had difficulties finding information from these passive sources as these teachers may not have the knowledge or experience to be able to identify what information is important and relevant to address their inquiry. Novice teachers may prefer consulting with more experienced colleagues as these knowledgeable experts may be able to select the most relevant and salient information to better meet a novice teacher's information needs. Additionally, knowledgeable colleagues may be able to help novice teachers apply special education information to practice (e.g., to a specific class, child, or situation). Further, teachers reported that one of the key barriers to finding information was not having knowledge of or access to knowledgeable experts or colleagues. The implication for practice is that if novice teachers are going to seek their information from experienced colleagues then these novices need to have access to knowledgeable colleagues and be informed about their colleagues' areas of expertise. It would be beneficial to provide novice teachers with contact information of a variety of knowledgeable experts that they could consult for different issues. It would also be beneficial for novice teachers to get information about the area of expertise of knowledgeable colleagues within their own schools (i.e., in-house experts). Novice teachers may be hesitant to ask questions of their colleagues for fear of

looking incompetent. Therefore, it would be important to create a work culture that recognizes teachers as professional learners requiring specific information supports at different times in their careers. In such a work culture, novice teachers would be encouraged to seek information from their more experienced colleagues, and experienced teachers would understand the importance of their role as knowledge brokers (i.e., helping to find, translate, and share research information on best practices in special education with their less experienced colleagues).

On the other hand, expert teachers' most preferred sources of information included online sources of information, professional books and magazines, electronic media, and research resources. These teachers found that they had more knowledge about special education than their colleagues, and therefore sought other sources of information. These experienced teachers used online information sources and had favourite online sites that they visited for specific information. The expert teachers in this study talked about using research resources to inform their practice. It may be that expert teachers may be better at applying research findings to practice. To get more special education evidence into practice, it may be important to provide these expert teachers with relevant research findings on best practices in special education. Teacher source preferences should be kept in mind when providing special education information to teachers. This could be done by providing brief research summaries containing practical applications to sources that expert teachers consult, such as school board websites, the Ontario Ministry of Education website, or professional magazines. After all, it is these experienced teachers that will be sought after by their novice colleagues engaged in information seeking.

Supporting Teachers' Information Seeking

Teachers noted that they have very limited time for information seeking, so they want information that is both evidence-based and from credible sources, but also information that has been translated into easy-to-read, practical strategies that work in the classroom (i.e., "the how" to implement findings into practice). Teachers reported that they needed dedicated time to meet their information needs. Teachers felt that their special education information needs could be better met by having easier access to close-at-hand information. When it came to online special education information, teachers wanted to get their information from one point of access or central source, such as a hub or portal. Teachers were very specific about the style of the information. They wanted the information to be easy to read, summarized, and well-organized. They wanted quality, reliable, and approved sources of information (information that was evidence-based and shown to work). They wanted information that was practical and could easily be applied to practice. And finally, they wanted links to further sources of more in-depth information.

Teachers reported that they were only using a few websites as their main point of access for special education information: school board websites, the website from the Ministry of Education (Ontario, Canada), and a variety of disability association websites. It is important for these providers to realize the critical role they play in disseminating research-based evidence to teachers. These websites may be one of the few online resources that teachers consult for special education information. To better meet teachers' information needs, such sites need to have easily accessible information that is organized

and summarized, proven and practical, high quality information from credible and reliable sources, and links to more in-depth information.

Novice teachers reported being overwhelmed with the amount of found information such as on online sources, not knowing where to start, and not being able to find the specific information to satisfy their special education needs. Novice teachers could benefit from professional development activities that included information seeking and search strategies. Novice teachers would also benefit learning such strategies with more experienced teachers as these experienced teachers could be explicit about what found information was most relevant to satisfy a special education information need.

How this Study Adds to the Research Literature

This study provides information on teachers' information seeking, an area that lags behind in terms of the number of studies in the research literature compared to other professions. This study has implications for providing special education information to teachers. An important finding from this study is that information source preference differs depending on level of teaching expertise. For example, one often hears that teachers prefer information from colleagues to other sources of information. However, a key finding from this study was that while some teachers do prefer colleagues as a source of information, there are differences based on level of expertise. While novice teachers in this study did prefer face-to-face information sources such as colleagues and knowledgeable experts, teachers with more teaching and special education expertise preferred sources such as the Internet, professional books and magazines, and research resources. Another widely held belief is that teachers do not prefer research sources of information such as research journals or journal articles. This was true in the case of

novice teachers in this study, where research resources were one of their least preferred information sources. However, more experienced teachers in this study did indicate that research resources were one of their most preferred information sources. Another key finding from this study was that novice teachers did not prefer the Internet as a source of information. These teachers reported having difficulties finding specific information from this source. However, the Internet was a preferred source for expert teachers. This study provided evidence that level of teaching expertise did make a difference in information source preference, and therefore should be included as a mediating variable in future research studies on teachers' information seeking.

Another strength of this study was the mixed methods design. While the survey data provided a picture of teachers' information seeking behaviours, the interview data provided complementary data that confirmed these findings. Further, the interview data provided richer details which allowed for deeper exploration of teachers' special education information seeking. This interview data provided possible explanations and factors that could help to explain the quantitative results. For example, the survey data revealed that there were distinct differences in information source preferences by teaching experience level. The interview data then provided some further information about why teachers with different experience levels preferred the sources they did.

This study also provided an opportunity for teachers to reflect on their special education information needs. One must be aware of a need before one will seek to satisfy that need. Reflective practice is encouraged as a way to develop professional expertise. Smith (2001) has argued that the most powerful learning can occur in times of quiet reflection on action and in the recalling and reframing of events. At the end of her

interview, one teacher rated at an intermediate level of expertise, described how participating in the interview had changed her perspective about a particular student with special needs:

> "*I agreed to do it [the interview], because being reflective is my big thing. I like to reflect. I have to tell you that sitting down and talking about my young [student with special needs] with you has helped me to solidify that. At first, I felt guilty that I didn't want her enough [in my classroom], but now I'm realizing that even just talking through it with you, that I did learn a bunch of stuff. And I would deal with newer students differently.*"

Limitations of the Present Study

Low Response Rate

One limitation of this study is that a survey response rate could not be calculated. Five school boards participated in this study. However, a survey response rate could not be calculated because it was impossible to know how many teachers even received the invitation. School boards' policies and procedures made it difficult to recruit participants. School boards were restricted in sharing information, such as teachers' names and email addresses, with researchers by information privacy laws and school board policies. Some of the boards' policies required that research requests go through principals. Thus, it was up to busy principals to pass on the information. Further, the school boards contacted principals on the researcher's behalf, some not allowing direct contact with principals. This meant that there was no way to follow-up on how many teachers received the invitation to participate in the research. When follow-up was allowed in one school board, principal feedback indicated that very few principals (10%) had passed on the

research invitation to teachers. There were also difficulties recruiting experienced novice teachers, as many of these teachers were occasional teachers (on a supply teacher list) and were not assigned to a specific school, and therefore did not receive an invitation email from a school principal.

There were also other gatekeepers that restricted access to potential teacher participants: one teachers' federation felt that teachers were too busy and would not consider advertising a survey. Thus, teachers who may have potentially been interested in participating in the research may not have even known about the research or invitation to participate. One suggestion for school boards for future research is to allow teachers to be directly contacted and to let teachers have the choice to participate in research.

One interview participant noted that there are few dollars for professional development and that her school board may not have been interested in teachers thinking about their special education information needs. Her school board's priorities were focused on raising Equality and Accountability Office (EQAO) testing scores. Burns (2005) noted that when it comes to continuing professional development the research literature consistently finds a tension between what the school (or school board) needs to demonstrate as an organization, and what teachers feel they need. In a review of studies on information needs over the past 60 years, Wilson (2006) indicated that the work-environment and its climate (e.g., board focus on certain issues), socio-cultural environment, political-economic environment (e.g., money for professional development, board policies), and physical environment, may all contribute to what information seeking behaviours occur.

Biased Sample: Who Responded

There were only 85 respondents that participated in this study from 5 school boards and 1 Faculty of Education. This suggests that there could be a possible self-selection bias in the sample. The data is from teachers who received the invitation and who chose to voluntarily participate in study: Perhaps only teachers who felt comfortable completing an online survey participated, or just teachers who had an interest in special education? While there was the option to complete a paper survey, no teachers chose to do so. From the survey responses, we know that teachers with various levels of personal and professional interest in special education responded to survey. Also, teachers with a variety of teaching experiences participated.

Self-Report of Expertise Level

One limitation of this study is that it relied on self-ratings of teaching and special education expertise. The problem with self-ratings, as Chabris and Simons (2010) point out, is that people are not as good as they think they are at understanding themselves. They noted that the less skilled tended to overate their ability. They called this the illusion of knowledge: People think they know more than they actually do, when in fact, they are unskilled and unaware of it. Further, in summarizing some of the difficulties of needs assessments, Parry (2002) pointed out that self-ratings may be problematic for novices as they may not be able to make informed judgements about their training needs. Experts have also shown a systematic bias in their self-ratings, experts tend to underestimate their ability relative to their peers (Kruger & Dunning, 1999). The research literature on rating expertise suggests that such ratings could be improved by including peer ratings or observation data. However, due to teacher federation rules restricting peer

evaluations/ratings, peer ratings of expertise could not be obtained for this study. While a principal rating of teaching expertise was sought for the interviewees, only 5 principals completed this form.

To improve the ratings of teacher expertise level, The *9 Indicators of Special Education and Teaching Expertise Classification Scale* was created for this study. This scale used 9 indicators that were selected from the literature as important criteria for establishing teacher expertise. Thus, teachers' overall ratings of level of expertise were based on more than just teachers' self-ratings of expertise, they took into account the depth and breadth of teachers' teaching and special education experiences. This scale could be further improved by adding indicators that provide an objective measure that distinguished teachers' level of expertise such as a measure of teaching self-efficacy, or student achievement. Future studies could also use observational data to add evidence to the validity of the classification rating scale.

Suggestions for Further Research

This study has added to the literature on teachers' special education information seeking behaviours. However, many more questions can be raised based on the findings from this study. One question is: How do teachers' special education needs change with grade level? This study did not focus on whether or not teachers' special education needs differed by grade level, or how these needs might differ. However, there were indications from the interview data that there were differences. One of the themes from the qualitative interviews was that junior/intermediate teachers (Grades 4 through 8) needed to do more differentiation for students in these older grades. For example, teachers noted that it was difficult to program for students in Grade 8 who were functioning at a Grade 4

level in a subject. Further, teachers noted that it was difficult to include such students in class activities when there were such differences in what these students could do. These teachers were very concerned about the effect that these differences had on the self-esteem of students with special needs. Future studies could look at whether grade level taught made a difference on teachers' special education information needs.

In this study, novice teachers reported being less successful at finding special education information to satisfy their needs. These teachers reported having difficulties using the Internet to find special education information to meet their specific needs. These teachers also had difficulties identifying and articulating their special education needs. It would be interesting to explore a number of areas related to these findings. First, if novice teachers were better able to identify their special education needs, would they be better at finding information to meet these needs? Moreover, will teachers with different levels of experience who have the same information need, find and retrieve the same information from a specific source? For example, given a specific special education need or case study, what information do teachers with different experience levels choose as relevant for satisfying an information need? Besides, if novice teachers are mainly seeking special education information from their more experienced colleagues, how can these more experienced teachers better scaffold special education information when they are mentoring novice teachers?

In this study expert teachers' information source preferences included online information sources, professional books and magazines, and research information sources. It was suspected that expert teachers may be better at identifying relevant information from these sources to meet their special education needs. Further research

needs to be conducted to better understand why expert teachers prefer these sources. Are expert teachers better at pulling information from these sources and applying the information to practice?

Teachers were very clear about how information could best be presented to support their information needs. Teachers specifically wanted one easily accessible, central source for their special education information. They wanted the information to be well organized, in an easy-to-read format. They wanted information that was evidence-based, from credible sources, and could easily be applied to practice. The question is: Do teachers know what is best for them? Is what teachers think would be best to support their information seeking, actually best? If such a source existed, would teachers be more able to satisfy their information needs, or would this depend on their level of teaching expertise?

Finally, novice teachers had difficulties identifying and articulating their special education information needs. Rather than using open-ended questions, future studies could use the Council for Exceptional Children's 10 content, knowledge, and skill standards for *What Every Special Education Teacher Must Know* to develop questions to use as probes. In this study, teachers did not mention any needs from CEC Standard 3: Individual Learning Differences, CEC Standard 6: Language, and CEC Standard 9: Professional and Ethical Practice. It may be that teachers do have needs in these areas, but are not aware of these needs. Providing an explicit list of potential needs to teachers may help them to better identify their own information needs.

Summary: Implications of this Research for Practice

Teachers are dealing with more students with exceptionalities in the regular classroom. Novice through experienced teachers have indicated that they need more special education information. However, little is known about teachers' information seeking behaviours and how to best meet teachers' special education information needs. The purpose of the present exploratory study was to gather information that could be used to better understand teachers' information needs, perceived competencies, preferences for information sources, and information seeking behaviours related to special education. The findings from this study provide some insight on better ways that information can be provided to support and meet teachers' information needs for special education. The ultimate goal is for information on best practices in special education to be easily accessible to teachers so that teachers can be better supported in finding information to address their needs. Addressing teachers' special education information needs may result in teachers providing appropriate education for students with special needs.

A key finding was that teachers with different experience levels preferred different types of information sources. Novice teachers tended to prefer sources that were face-to-face and interactive, such as consulting with an experienced colleague or knowledgeable expert (e.g., a learning support teacher). Novice teachers least preferred sources of information were individual and more passive activities, such as reading a professional book or research article, or searching online. Novice teachers reported having difficulties finding specific information online to satisfy their information needs. On the other hand, expert teachers found that they were often more knowledgeable than their colleagues, and preferred sources of information such as professional books,

research articles, and online sources. Expert teachers may be one key to helping bridge the knowledge to practice gap in special education. Expert teachers prefer professional texts and research information sources and may be better able to apply special education research findings to practice. Since less experienced teachers are seeking special education information from knowledgeable experts, it makes sense to provide easily accessible research findings to these expert teachers.

Those teachers with more teaching and special education experience reported feeling more prepared to teach special education, more knowledgeable about special education, and felt more competent in teaching special education. Teachers' greatest special education information need could be classified as CEC Standard 4: Instructional Strategies. Teachers wanted to know: (1) how to differentiate, modify, and accommodate the curriculum and lessons for students with exceptionalities, (2) instructional strategies for teaching and meeting the needs of students with specific disabilities, and (3) strategies to support students using assistive technology. Teachers also identified needs related to CEC Standard 5: Learning Environments and Social Interaction. Teachers wanted to understand the 'how' of inclusion: (1) how to create an inclusive environment, (2) how to deal with group versus individual needs, and (3) how to tell other students in the classroom about a child's disability. Teachers' needs were also related to CEC Standard 2: Development and Characteristics of Learners, with teachers wanting to know more about specific disabilities/exceptionalities. Novice teachers had difficulty identifying and articulating their special education information needs and their needs were very general. Not knowing one's needs would make information seeking tasks more difficult. This may be why novice teachers most preferred consulting a colleague and

least preferred online information retrieval. More experienced teachers had well articulated and very specific special education needs.

Teachers want dedicated time to satisfy their information needs. Teachers believed that their special education information needs could be better supported by having dedicated time with a knowledgeable expert—someone who could provide facilitated, hands-on, practical learning experiences tailored to educators' specific teaching contexts. Considering teachers' preferences for information sources, this emphasizes the importance of mentorship programs which pair novice teachers with more experienced colleagues for meeting novice teachers' special education information needs. Schools need to develop a culture where novice teachers are encouraged to ask their colleagues questions to satisfy their special education information needs. This means that novice teachers must be aware of who the knowledgeable experts are in their schools and school boards, and they need to know how to contact these experts. Further, it is important the teachers learn information search strategies so they can make the best of the little time they have to seek information. Information literacy skills, such as search strategies, could be taught during teachers' pre-service training and through professional development activities. Pairing novice teachers with more experienced teachers when learning skills such as information seeking and retrieving skills may help novices to better identify what special education information is most relevant.

Despite teachers desperately needing more information on special education to satisfy their information needs, we need to be cognizant that teachers may have little time for information seeking. Information seeking is often done outside of work hours.

To satisfy a need, teachers are likely to seek a few, trusted information sources. And when information seeking becomes overwhelming, teachers may not be motivated to find answers to satisfy their special education information needs. They may 'give up' and make do with what information they have. Therefore, we need to provide information through sources that teachers prefer, and in formats that teachers believe will support their information seeking. Teachers are looking for one source of special education information that they can easily access. Teachers in this study looked for special education information from school boards' and the Ontario Ministry of Education's websites. It is critical for these sources to provide special education information in formats that support teachers' information seeking. Information needs to be easily accessible, easy to read, organized, evidence-based, and practical. These may be one of the few online sources that teachers consult for special education information.

Conclusion: Teachers' Special Education Information Needs and Bridging the Research to Practice Gap—Policy Implications

The findings from this research have implications for education policy makers and leadership. In their interviews, expert teachers recognized that their less experienced colleagues needed more special education information and professional development on best practices in special education. Teachers are not well educated about best practices in special education. Yet, most general education teachers will have students with exceptionalities in their classrooms. This study affirms the findings from the research literature—that teachers, novice through expert, want more special education information. It is critically important to use evidence based teaching practices for students with special needs. Yet, there is a large gap between the amount of research

evidence in special education and the teaching practices that occur in the general education classroom. It may be that teachers do not understand the importance of using evidence-based practices with students with special education needs. It could be that teachers do not have the skills or time to find, evaluate, and translate research findings into practice. Either way, there is an urgent need for teachers to embrace evidence-based practices in special education in order for students with exceptionalities to succeed and flourish in the general education classroom. We want teachers to be good decision makers. We want teachers to use research evidence to inform their practice. The critical question for both policy makers and leadership is: "How do we make this happen: How do we encourage teachers to learn about and implement best practices in special education?" We need methods for making this happen.

This study has made it clear that we need to be mindful of teachers' information seeking behaviours and source preferences, especially at different stages of their careers. It is clear that teachers, novice through expert, require more special education information. Teachers said they wanted reliable, research-based information, from credible sources. But, they also wanted the information to be organized, summarized, and practical for use in their classrooms. However, teachers lacked the time needed to search for information to address their special education information needs. Further, teachers had difficulties finding special education information. Novice teachers wanted special education information from a knowledgeable expert or colleague. Only the expert teachers talked about research as a preferred information resource. Leadership needs to encourage teachers to use evidence-based practices and to support teachers' information seeking in best practices. It is important to not only develop a culture of inquiry, but also

to provide professional development for teachers to develop the skills that they

need to find, evaluate, and implement research evidence into best practices.

Teachers of all experience levels could benefit from training on information seeking

skills and strategies (information retrieval), training on critically evaluating research

(critical appraisal), and training on applying research to practice (knowledge translation

and uptake). Such training should include pairing novice teachers with their more

experienced colleagues so that the novice teachers could benefit from their colleagues

making tacit processes visible, by identifying the most relevant and salient information,

and scaffolding the information. This would be an example of cognitive apprenticeship

(which includes scaffolding, modeling, mentoring, and coaching) which Dennen (2004)

described as more experienced assisting less experienced individuals through social

interactions with the goal of moving novices' skills and abilities to the expert level.

Liu (2005) found that a web-based model of cognitive apprenticeship, where expert

teachers guided pre-service teachers through a modeling-observing phase, a scaffolding-

practicing phase, and a guiding-generalizing phase in regards to instructional planning,

enhanced these novice teachers' performance and attitudes towards instructional planning

compared to the traditional course delivery.

Other professions have also been struggling with how to develop a culture of

inquiry and encourage the use of evidence-based practices by practitioners. Peirson,

Ciliska, Dobbins, and Mowat (2012) recently reported the results of a study about the

efforts of a large public health organization in Ontario to build capacity and encourage

evidence-based decision-making throughout the organization. The organization took a

top-down approach where leadership played a key role in encouraging, implementing,

and sustaining the use of evidence-based practices. Results indicated that it took ongoing and committed leadership, effort, resources, time, and skills development in order to develop a culture of inquiry within the organization and to build the value of using evidence to inform decision-making. A key finding was that staff reported being overwhelmed with the demands of practice and needed both permission/encouragement, dedicated time, and mentoring to engage in tasks related to evidence informed decision-making.

Experienced teachers are often called upon to mentor novice teachers. One of the key implications of the current research study is that there is a role for experienced teachers beyond simply mentoring. Experienced teachers could adopt what Glazer and Hannafin (2006) describe as the collaborative apprenticeship model where to promote professional development, peer-teachers serve as modellers and coaches of strategies to improve instruction and implement best practices. Experienced teachers could play an essential role in becoming research evidence knowledge brokers for their less-experienced colleagues: helping to bridge the gap between theory and practice by identifying relevant and salient information, scaffolding information, and helping to translate and integrate research evidence into everyday classroom practice. Critical reflection in novice teachers does not occur automatically—it requires nurturing and professional example (Harrison, Lawson, & Wortley, 2005). Using experienced teachers in the role of knowledge brokers may be key in developing research capacity in teachers. Such an approach is supported by the research literature. McWilliam (2007) presented a theory-based, bottom-up strategy to promote knowledge translation and research uptake by practitioners. McWilliam noted that: "Current evidence suggests that tacit knowledge

related to how to be and how to do things is best learned through interactions among individuals" (p. 73). She has recommended that a facilitated learning experience by an experienced clinician educator, who blends "research findings with experiential and context-relevant knowledge during everyday practice" (p. 77), can promote the value of research evidence, facilitate knowledge translation, and encourage the uptake of best practices.

The need for more information on best practices in special education is critical for children with special needs to succeed and flourish in the classroom. Froese-Germain and McGahey (2012) reviewed a variety of reports and Statistics Canada data and found that over the past 10 years teachers across Canada have had an increase in the number of students with special needs in their classroom. They also noted that teachers often lacked the resources and support needed to practice successful inclusion. Teachers of all levels of experience reported that they need more special education information. Yet, teachers often do not have the time to engage in information seeking to address their special education information needs. In her interview, one expert teacher stressed that when it came to special education, teachers were doing the best job that they could: *"I think over the last couple of years I have more of an appreciation of the effort that generally people put towards their Special Education positions or jobs, and classroom teachers' efforts to include—and with that appreciation the need to do everything I can to not put stress upon them…that they are doing the best they can."* If teachers are to be encouraged to use evidence-based practices in special education, the value of such practices must be made salient. Further, efforts need to be made to make special education research more easily accessible and presented in teacher-friendly formats. Meeting teachers' special education

information needs through teachers' preferred information sources may be the first step in bridging the research to practice gap, and may in turn help children with special needs to succeed and flourish in the classroom.

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APPENDICES

Appendix A: Original Ethics Approval Notice from The University of Western Ontario, Received May 19, 2009

THE UNIVERSITY OF WESTERN ONTARIO
FACULTY OF EDUCATION

Western Education **USE OF HUMAN SUBJECTS - ETHICS APPROVAL NOTICE**

Review Number: 0904-3
Applicant: Michelle Servais
Supervisor: Robert Sandieson
Title: *Understanding Teachers' Information Needs, Perceived Competencies, and Information-Seeking Behaviours for Special Education Information*
Expiry Date: December 31, 2009
Type: Ph.D. Thesis
Ethics Approval Date: May 19, 2009
Revision #:
Documents Reviewed &
Approved: UWO Protocol, Letters of Information & Consent, Recruitment Documents

This is to notify you that the Faculty of Education Sub-Research Ethics Board (REB), which operates under the authority of The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects, according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario has granted approval to the above named research study on the date noted above. The approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information.

No deviations from, or changes to, the research project as described in this protocol may be initiated without prior written approval, except for minor administrative aspects. Investigators must promptly report to the Chair of the Faculty Sub-REB any adverse or unexpected experiences or events that are both serious and unexpected, and any new information which may adversely affect the safety of the subjects or the conduct of the study. In the event that any changes require a change in the information and consent documentation, newly revised documents must be submitted to the Sub-REB for approval.

Dr. Jason Brown (Chair)

2008-2009 Faculty of Education Sub-Research Ethics Board

Dr. Jason Brown	Faculty (Chair)
Dr. Elizabeth Nowicki	Faculty
Dr. Jacqueline Specht	Faculty
Dr. John Barnett	Faculty
Dr. J. Marshall Mangan	Faculty
Dr. Immaculate Namukasa	Faculty
Dr. Robert Macmillan	Assoc Dean, Graduate Programs & Research (*ex officio*)
Dr. Jerry Paquette	UWO Non-Medical Research Ethics Board (*ex officio*)

The Faculty of Education	Karen Kueneman, Research Officer
1137 Western Rd.	Faculty of Education Building
London, ON N6G 1G7	kueneman@uwo.ca
	519-661-2111, ext.88561 FAX 519-661-3029

Copy: Office of Research Ethics

Appendix B: Revised Ethics Approval Notice from The University of Western Ontario, Received January 4, 2010

THE UNIVERSITY OF WESTERN ONTARIO
FACULTY OF EDUCATION

USE OF HUMAN SUBJECTS - ETHICS APPROVAL NOTICE

Review Number:	0904-3
Principal Investigator:	Michelle Servais
Student Name:	Robert Sandieson
Title:	*Understanding Teachers' Information Needs, Perceived Competencies, and Information-Seeking Behaviours for Special Education Information*
Expiry Date:	July 31, 2010
Type:	Ph.D. Thesis
Ethics Approval Date:	January 4, 2010
Revision #:	1
Documents Reviewed & Approved:	Revised Study End Date, Revised Inclusion Criteria, Revised Recruitment, Revised Letters of Information for Teachers

This is to notify you that the Faculty of Education Sub-Research Ethics Board (REB), which operates under the authority of The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects, according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario has granted approval to the above named research study on the date noted above. The approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the study or information/consent documents may be initiated without prior written approval from the REB, except for minor administrative aspects. Participants must receive a copy of the signed information/consent documentation. Investigators must promptly report to the Chair of the Faculty Sub-REB any adverse or unexpected experiences or events that are both serious and unexpected, and any new information which may adversely affect the safety of the subjects or the conduct of the study. In the event that any changes require a change in the information/consent documentation and/or recruitment advertisement, newly revised documents must be submitted to the Sub-REB for approval.

Dr. Jason Brown (Chair)

2009-2010 Faculty of Education Sub-Research Ethics Board

Dr. Jason Brown	Faculty (Chair)
Dr. Elizabeth Nowicki	Faculty
Dr. Jacqueline Specht	Faculty
Dr. Farahnaz Faez	Faculty
Dr. Wayne Martino	Faculty
Dr. George Gadanidis	Faculty
Dr. Robert Macmillan	Assoc Dean, Graduate Programs & Research (*ex officio*)
Dr. Jerry Paquette	UWO Non-Medical Research Ethics Board (*ex officio*)

The Faculty of Education	Karen Kueneman, Research Officer
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Appendix C: Revised Ethics Approval Notice from The University of Western Ontario, Received March 17, 2010

THE UNIVERSITY OF WESTERN ONTARIO
FACULTY OF EDUCATION

Western
Education

USE OF HUMAN SUBJECTS - ETHICS APPROVAL NOTICE

Review Number: 0904-3
Principal Investigator: Michelle Servais
Student Name: Robert Sandieson
Title: *Understanding Teachers' Information Needs, Perceived Competencies, and Information-Seeking Behaviours for Special Education Information*
Expiry Date: July 31, 2010
Type: Ph.D. Thesis
Ethics Approval Date: March 17, 2010
Revision #: 2
Documents Reviewed & Approved: Revised Inclusion Criteria, Revised Recruitment, Revised Letters of Information & Consent, Revised Survey, Recruitment email for Preservice Teachers, Revised Recruitment Poster

This is to notify you that the Faculty of Education Sub-Research Ethics Board (REB), which operates under the authority of The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects, according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario has granted approval to the above named research study on the date noted above. The approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the study or information/consent documents may be initiated without prior written approval from the REB, except for minor administrative aspects. Participants must receive a copy of the signed information/consent documentation. Investigators must promptly report to the Chair of the Faculty Sub-REB any adverse or unexpected experiences or events that are both serious and unexpected, and any new information which may adversely affect the safety of the subjects or the conduct of the study. In the event that any changes require a change in the information/consent documentation and/or recruitment advertisement, newly revised documents must be submitted to the Sub-REB for approval.

Dr. Jason Brown (Chair)

2009-2010 Faculty of Education Sub-Research Ethics Board

Dr. Jason Brown	Faculty (Chair)
Dr. Elizabeth Nowicki	Faculty
Dr. Jacqueline Specht	Faculty
Dr. Farahnaz Faez	Faculty
Dr. Wayne Martino	Faculty
Dr. George Gadanidis	Faculty
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Copy: Office of Research Ethics

Appendix D: Email Recruitment Scripts for Initial Contact with Potential Participants for the Online Survey

Greetings Principals,

Could you please email/share this research request with your J.K through Grade 8 teachers and post the attached poster for your staff. The research involves a brief online survey looking at teachers' special education information needs and preferences. Find below information about the research and an email for your teachers.

Thanks for helping to recruit teachers!

Director of Education

A. Brief Email To Introduce This Research Study to Principals

Subject: Request for J.K.–Grade 8 Teachers to Complete A Brief Online Survey of Their Spec. Ed. Information Needs

About the Research:
The research literature consistently indicates that teachers desire more information on inclusion and teaching children with special needs. The purpose of this study is to gather information that can be used to better understand teachers' information needs, perceived competencies, preferences for information sources, and information seeking behaviours related to special education.

Who:
Please invite your **J.K.–Grade 8 Teachers** to participate in a brief **online survey** (it takes approximately **18 minutes** to complete) about their special education information needs, information seeking behaviours, and preferred information sources.

Details:
To access this online survey: **http://mservais.net**

This is a password protected website. Teachers will need to enter the following words to access the survey.
Teachers' User ID is: **start**
Teachers' Password is: **teacher**

This research will potentially inform on better ways that information can be provided to support and meet teachers' information needs for special education.

More details about the survey can be found on the website: **http://mservais.net**
or by contacting the researcher:

Michelle Servais, Graduate Student
Faculty of Education, The University of Western Ontario

B. Recruitment Email for Initial Contact with Teachers for Online Survey

Subject: Request to Complete A Brief Online Survey on Your Spec. Ed. Information Needs

Dear Teacher,

My name is Michelle Servais and I am a doctoral student at the Faculty of Education at the University of Western Ontario. The research literature tells us that teachers want more information on special education and teaching students with special needs. I am inviting you to participate in a brief online survey (it takes approximately 18 minutes to complete) about your special education information needs, information seeking behaviours, and preferred information sources. Educators currently eligible to teach J.K. to Gr. 8 are eligible to participate.

To access this online survey click on the following link (or type it in your browser): **http://mservais.net**

This is a password protected website. You will need to enter the following words to access the survey.
Your User ID is: **start**
Your Password is: **teacher**

More information about the study can be found on the website.

As a thank you for your participation, your name will be entered into a draw for one of two $100 gift cards to Chapter's Book Store or Cineplex-Odeon Theatres.

Thank you for considering this request! Your feedback will be valuable in determining better ways that information can be provided to support and meet teachers' special education information needs.

If you have any questions, or would prefer a paper copy of the survey, please feel free to contact me.

More details about the survey can be found on the website: **http://mservais.net**

Sincerely,
Michelle Servais, Graduate Student
Faculty of Education, The University of Western Ontario

Appendix E: Recruitment Poster for the Online Survey

Appendix F: Letter of Information for Potential Online Survey Participants

Title of Research: Understanding Teachers' Special Education Information Needs, Perceived Competencies, and Information Seeking Behaviours for Special Education Information

Dear Teacher,

My name is Michelle Servais and I am a doctoral student at the Faculty of Education at the University of Western Ontario. I am investigating teachers' information needs, information seeking behaviours, and preferences for special education information. You are invited to participate in this research study if you fit the eligibility criteria for this study: you are currently eligible to teach Junior Kindergarten to Grade 8 in a school in Southern, Ontario.

Why This Research Is Important

The research literature consistently indicates that teachers desire more information on inclusion and teaching children with special needs. The purpose of this study is to gather information that can be used to better understand teachers' information needs, perceived competencies, preferences for information sources, and information seeking behaviours related to special education. This research will potentially inform better ways that information can be provided to support and meet teachers' information needs for special education.

How Will You Be Involved?

If you agree to participate in this study, your involvement in this research will include completing an online survey which will take approximately 18 minutes to complete. This survey will contain questions about your background teaching experiences and your information needs, preferences, and information seeking behaviours related to special education. At the end of the survey, you will be asked if you would be interested in participating in an optional follow-up interview. Once all the data has been analyzed, the results of this study will be posted on this website. No reference will be made to any specific person or school.

In appreciation for your assistance with the study, your name will be entered into a draw for one of two $100.00 gift cards for Chapter's Book Store or Cineplex Theatres. If you wish to be entered in the draw you will need to provide your name and contact information at the end of the survey. At the completion of the study, two names will be randomly drawn to each receive a $100.00 gift card, and these winners will be notified by mail by September 15, 2010.

Rights of Research Participants

Confidentiality: Any information that you provide during this study will be kept anonymous. The information collected will be used for research purposes only. Your name will not appear on any documentation. In reporting findings from this study, all questionnaire information will be collated, and any references that might reveal the identity of participants will be removed or altered. All information collected for this

study will be stored in a locked filing cabinet accessible only by the researcher for five years past journal publication, then destroyed.

Participation and Withdrawal: Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. There are no known risks associated with participation in this study. There will be no negative consequences should you choose not to participate. You indicate your voluntary agreement to participate in this research study by completing the questionnaire.

Benefits of Participation: By participating in this study, you may help to establish a better understanding of teachers' information needs related to special education. Participants may benefit from examining their professional development needs.

Questions?

If you have any questions regarding your rights as a research participant or the conduct of the study, you may contact the Director of the Office of Research Ethics, University of Western Ontario, telephone number: 519–661–3036 or email: ethics@uwo.ca. Thank you for considering this request to participate in the study. If, at any time, you have any questions or concerns about this research study, please feel free to contact me or my supervisor at any time (contact information is listed below).

Thank you for participating in this research study.

Sincerely,

Study Investigator:	**Supervisor:**
Michelle M. Servais	Dr. Robert Sandieson
Graduate Student	Associate Professor
Faculty of Education	Faculty of Education
The University of Western Ontario	The University of Western Ontario

✓ **Click here to print a copy of this Letter of Information**.

✓ **Click here to begin the online survey.**

Appendix G: Last Page of Online Survey—Recruitment Page for Potential Interview Participants

Information Needs & Preferences Survey

Thank you for participating in this survey!

Please complete this form and click the submit button to complete your session.

If you choose not to complete this form, please click the Submit button anyway to remove all cookies set by MServals.net.

Note that this form is in no way connected to your survey answers.

I look forward to sharing the results with you. Please complete this page if you wish to have a *report of the findings* sent to you, your *name entered into the draw*, and/or sign up to *participate in a follow-up interview*.

Please check your preferences below *(check all that apply)*

☐ Yes, please email a report of the study findings to me.

A report of the findings from this survey will be posted on June 30, 2011 on this website. Please check the box if you would prefer the report to be emailed to you.

☐ Yes, please enter my name in the draw.

The names of all research participants will be entered into a draw for one of two $100 gift cards. I will need your contact information to enter you into the draw and to contact you should your name be selected. Please type in your email address, or your name and phone number. This information will remain confidential and will not be used for any other purpose.

☐ Yes, I would be interested in a follow-up interview.

Invitation to Participate in a Follow Up Interview: Would you like to talk further about this topic? I am looking for teachers who would be interested in doing a 50-minute follow-up interview on their views on teachers' Special Education information needs, preferences, and information-seeking behaviours. Please check the box if you would be interested in participating in an interview.

Further information about the interview session can be found on the website: mservals.net

Michelle will contact you to set-up an interview time.

Please provide your contact information if you checked any of the above boxes.

Name: [_____]

Email address: [_____]   and / or   Phone Number: [_____]

Submit

Appendix H: Letter of Information and Consent Form for Potential Interview Participants

Title of Research: Understanding Teachers' Special Education Information Needs, Perceived Competencies, and Information Seeking Behaviours for Special Education Information

Dear Teacher,

My name is Michelle Servais and I am a doctoral student at the Faculty of Education at the University of Western Ontario. I am investigating teachers' information needs, information seeking behaviours, and preferences for special education information. You are invited to participate in this research study if you fit the eligibility criteria for this study: you are currently eligible to teach Junior Kindergarten to Grade 8 in a school in Southwestern, Ontario.

Why This Research Is Important

The research literature consistently indicates that teachers desire more information on inclusion and teaching children with special needs. The purpose of this study is to gather information that can be used to better understand teachers' information needs, perceived competencies, preferences for information sources, and information seeking behaviours related to special education. This research will potentially inform on better ways that information can be provided to support and meet teachers' information needs for special education.

How Will You Be Involved?

If you agree to participate in this study, your involvement in this research will include participating in a one-to-one interview session with the researcher that will last for approximately 50 minutes. In this interview, you will be invited to share your views, ideas, and experiences on your information needs, preferences, and information seeking behaviours related to special education. The interview will be audio-recorded and transcribed into written format.

It is important to get feedback from you about the data that is collected. You will be sent a copy of your interview transcript to review, and will have the opportunity to provide the researcher with your feedback on any changes, additions, or further clarification of your point of view—and the researcher will make these changes. At the conclusion of this study, a summary of the general research findings will be mailed to all study participants (no reference will be made to any specific person).

Rights of Research Participants

Confidentiality: Any information that you provide during this study will be kept anonymous. The information collected will be used for research purposes only. Your name will not appear on any documentation. The interview discussions will be digitally-recorded for transcription purposes. Any identifying information about you will be removed from the transcript. In reporting findings from this study, all questionnaire information will be collated and pseudonyms will be used for all participants, and any references that might reveal the identity of participants will be removed or altered. All transcripts and information collected for this study will be stored in a locked filing cabinet accessible only by the researcher for five years past journal publication, then destroyed.

Participation and Withdrawal: Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. There are no known risks associated with participation in this study. There will be no negative consequences should you choose not to participate. You will not be compensated for participating in this study. However, the names of all study participants will be entered into a draw for one of two $100.00 gift cards for Chapters Book Store or Cineplex Theatres. At the completion of the study, two names will be randomly drawn to each receive a $100.00 gift card, and these winners will be notified by mail by September 15, 2010.

Benefits of Participation: By participating in this study, you may help to establish a better understanding of teachers' information needs related to special education. Participants may benefit from examining their professional development needs.

Questions?

If you have any questions regarding your rights as a research participant or the conduct of the study, you may contact the Director of the Office of Research Ethics, University of Western Ontario, telephone number: 519–661–3036 or email: ethics@uwo.ca.
Thank you for considering this request to participate in the study. If, at any time, you have any questions or concerns about this research study, please feel free to contact me or my supervisor at any time (contact information is listed below).
Sincerely,

Study Investigator:

Michelle M. Servais
Graduate Student
Faculty of Education
The University of Western Ontario

Supervisor:

Dr. Robert Sandieson
Associate Professor
Faculty of Education
The University of Western Ontario

Note: This Letter of Information is yours to keep.

If you would like to participate in this research, please **complete and sign the attached Consent Form**, and return it to the Researcher at the time of your interview.

Consent Form – Consent to Participate in a Research Interview

SECTION 1: Participant's Signature

1) I have read the Letter of Information, the study has been explained to me and I agree to participate. All questions have been answered to my satisfaction.

_____   _____

Your Name (please print clearly)   Date (yyyy/mm/dd)

_____

Your Signature

SECTION 2: Participant's Contact Information

In order to send you a report of the research findings when this project is completed (and to send the gift cards to the winners of the draw), I require your contact information. Please print your mailing address below:

_____

Street Address (please print clearly

_____   ON   _____

City   Province   Postal Code

Title of Research: *Understanding Teachers' Special Education Information Needs, Perceived Competencies, and Information Seeking Behaviours for Special Education Information*

Study Investigator:

Michelle M. Servais
Graduate Student
Faculty of Education
The University of Western Ontario

Supervisor:

Dr. Robert Sandieson
Associate Professor
Faculty of Education
The University of Western Ontario

Appendix I: Teaching Experiences, Preferences, and Information Needs Questionnaire—Special Education Focus (TEPINQ-SEF)

**Teaching Experiences, Preferences, and Information Needs Questionnaire
(Special Education Focus)**

Note: In this questionnaire, **students with exceptionalities refer to** any students that have any sort of exceptionality or special need (for example, any learning need—including gifted students, learning disability, physical disability, behavioural need, etc). For the purpose of this questionnaire, these students do not need to be officially identified as having an exceptionality, and they may or may not have an individual education plan (IEP).

Instructions: Please <u>fill in the blank</u>, or select or check (e.g., ☑) the most appropriate option(s) for each question.

RESPONDENT'S INFORMATION

1. Please indicate the **date that you are completing this form**:

Day   Month   Year

2. Please indicate **your age** _____ years

SECTION 1: ABOUT YOUR CURRENT POSITION

3. What best describes **your current position**? *Check <u>one only</u>.*

- ○ Regular Classroom Teacher
- ○ Resource Teacher
- ○ Special Education Teacher
- ○ No Response
- ○ Supply Teacher
- ○ Teacher Candidate/Pre-service Teacher
- ○ Other (please specify) _____
  _____

4. **How many years have you been teaching** at your current school? _____ years or
○ No Response   ○ Not Applicable

5. What **grade levels do you currently teach**? *Check <u>all</u> that apply.*

- ☐ Junior Kindergarten
- ☐ Senior Kindergarten
- ☐ Grade 1
- ☐ Grade 2
- ☐ Grade 3
- ☐ Grade 4
- ☐ Grade 5
- ☐ Grade 6
- ☐ Grade 7
- ☐ Grade 8
- ☐ Grade 9
- ☐ Grade 10
- ☐ Grade 11
- ☐ Grade 12
- ☐ Special Class (please describe)
  _____
- ☐ Resource Class (please describe)
  _____
- ☐ Other (please describe)
  _____
- ☐ No Response
- ☐ Not Applicable

6. If you teach specific subjects, please **list the subjects that you are currently teaching** (during this school year).

_____

_____

_____

7. What is the approximate **total number of students** that you currently teach?

_____ total number of students that I teach

8. What is the approximate **number of students** that you currently teach **who have Individual Education Plans (IEPs)**?

_____ number of students on IEPs that I teach

9. What is the approximate **number of students** that you currently teach who **do not have Individual Education Plans (IEPs), but need any sort of additional assistance from you**?

_____ number of students not on IEPs that require additional assistance from me

10. For each exceptionality listed below, please indicate the approximate **number of students that (a) you currently teach that have the following exceptionalities, and (b) that you have taught throughout your teaching career**:

Primary Exceptionality	**A. Number of Students Currently Taught**	**B. Number of Students Taught Throughout Career**
Acquired brain injury:	[_____]	[_____]
Autism spectrum disorder (e.g., ASD, Aspergers):	[_____]	[_____]
Behaviour (e.g., ADD, conduct disorder):	[_____]	[_____]
Blind or visual impairment:	[_____]	[_____]
Deaf or hard-of-hearing:	[_____]	[_____]
Emotional disturbance (e.g., mental health issues):	[_____]	[_____]
Giftedness:	[_____]	[_____]
Intellectual or developmental disability:	[_____]	[_____]
Learning disability:	[_____]	[_____]
Physical disability (e.g., spina bifida, cerebral palsy):	[_____]	[_____]
Speech or Language impairment:	[_____]	[_____]
Other *(please specify)*: _____	[_____]	[_____]
Multiple exceptionality (i.e., having more than one of the above exceptionalities)	[_____]	[_____]

11. Which best describes the **size of the community** in which your school is located? *Check one only*.

   ○ Large urban (100,00 people or more)   ○ No Response
   ○ Medium urban (between 50,000 and 99,999)   ○ Not Applicable
   ○ Small urban (between 15,000 and 49,999)
   ○ Town (between 3,000 and 14,999)
   ○ Rural area (less than 3,000)

12. Where is your **school located**? *Check one only*.

   ○ Central city ○ Suburb ○ Small Town ○ Rural area ○ No Response
   ○ Not Applicable

13. At your school, what **resources are available to teachers who teach students with exceptionalities** in their classes? Please list all resources:

_____

_____

14. Is there **anything else that you could tell us about your current position** that would help us to better understand your current position (for example, please describe any unique characteristics about your current position):

_____

_____

SECTION 2: ABOUT YOUR TEACHING QUALIFICATIONS AND EXPERIENCES

15. **How many years** have you been **teaching** (i.e., working in a school environment; please do not include any personal leaves)?

      _____ total years teaching experience (to the nearest half-year)

16. What is the **highest level of education** that you have **completed**? *Check one only*.

   ○ Completed high school   ○ Completed Doctoral degree
   ○ Completed college or technical training ○ Other (please specify)_____
   ○ Completed Bachelor's degree   _____
   ○ Completed Master's degree   ○ No Response

17. What **grade levels** are you **professionally qualified to teach**? *Check all that apply*.

   ❑ Junior Kindergarten   ❑ Grade 6   ❑ Special Class (please describe)
   ❑ Senior Kindergarten   ❑ Grade 7   _____
   ❑ Grade 1   ❑ Grade 8   ❑ Resource Class (please describe)
   ❑ Grade 2   ❑ Grade 9   _____
   ❑ Grade 3   ❑ Grade 10 ❑ Other (please describe)
   ❑ Grade 4   ❑ Grade 11   _____
   ❑ Grade 5   ❑ Grade 12 ❑ No Response

18. Over your teaching career, what **grade levels** have you **taught for at least one school year**? *Check all that apply*.

❏ Junior Kindergarten
❏ Senior Kindergarten
❏ Grade 1
❏ Grade 2
❏ Grade 3
❏ Grade 4
❏ Grade 5

❏ Grade 6
❏ Grade 7
❏ Grade 8
❏ Grade 9
❏ Grade 10
❏ Grade 11
❏ Grade 12

❏ Special Class (please describe)
_____
❏ Resource Class (please describe)
_____
❏ Other (please describe)
_____
❏ No Response

19. Please **list** the **subject areas/disciplines that you are qualified to teach**:

_____
_____

20. Please **list** all of your **additional teaching qualifications**:

_____
_____

21. Please **describe** any **teaching qualifications in special education**:

_____
_____

22. What is the **number of undergraduate courses** you have completed in **special education** ?

_____ undergraduate courses

23. What is the **number of graduate courses** you have completed in **special education** ?

_____ graduate courses

24. What is the **number of professional courses** you have completed in **special education** ?

_____ professional courses (including workshops)

25. Please estimate the approximate **number of additional in-service training hours related to special education** that you have received to date:

○ None
○ 1 to 10 hours
○ No Response

○ 11 to 20 hours
○ 21 to 30 hours

○ 31 to 50 hours
○ More than 50 hours

26. Has your **main teaching assignment ever been in special education**?

○ Yes
○ No
○ No Response

If yes, of the total number of years that you have been teaching, what is the number of years that have you been teaching special education?

_____ number of years teaching Special Education

A. FEELINGS OF <u>PREPAREDNESS</u> TO TEACH IN SPECIAL EDUCATION

Please check the option that most accurately reflects your response.	Extremely Prepared	Fairly Prepared	Somewhat Prepared	A Little Prepared	Not At All Prepared	No Response
	5	**4**	**3**	**2**	**1**	**NR**
27. **How well prepared** do you feel to **teach** individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
28. How well prepared do you feel **in adapting/ modifying curriculum** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
29. How well prepared do you feel **in adapting/ modifying the environment** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
30. How well prepared do you feel **in adapting/ modifying your teaching** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯

B. LEVEL OF KNOWLEDGE IN SPECIAL EDUCATION

	Extremely Knowledgeable	Fairly Knowledgeable	Somewhat Knowledgeable	A Little Knowledgeable	Not At All Knowledgeable	No Response
	5	**4**	**3**	**2**	**1**	**NR**
31. What is your level of **knowledge in best teaching practices** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
32. What is your level of **knowledge in adapting/ modifying curriculum** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
33. What is your level of **knowledge in adapting/ modifying the environment** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
34. What is your level of **knowledge in adapting/ modifying your teaching** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯

C. LEVEL OF EXPERIENCE IN SPECIAL EDUCATION

	Extremely Experienced	Fairly Experienced	Somewhat Experienced	A Little Experienced	Not At All Experienced	No Response
	5	**4**	**3**	**2**	**1**	**NR**
35. What is your level of **experience in teaching** individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
36. What is your level of **experience in adapting/ modifying curriculum** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
37. What is your level of **experience in adapting/ modifying the environment** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯
38. What is your level of **experience in adapting/ modifying your teaching** for individuals with exceptionalities?	◯	◯	◯	◯	◯	◯

D. PERCEIVED LEVEL OF COMPETENCE IN SPECIAL EDUCATION

Please check the option that most accurately reflects your response.	Extremely Competent	Fairly Competent	Somewhat Competent	A Little Competent	Not At All Competent	No Response
	5	**4**	**3**	**2**	**1**	**NR**
39. What is your perceived level of **competence in teaching** individuals with exceptionalities?	○	○	○	○	○	○
40. What is your perceived level of **competence in adapting/ modifying curriculum** for individuals with exceptionalities?	○	○	○	○	○	○
41. What is your perceived level of **competence in adapting/ modifying the environment** for individuals with exceptionalities?	○	○	○	○	○	○
42. What is your perceived level of **competence in adapting/ modifying your teaching** for individuals with exceptionalities?	○	○	○	○	○	○

43. **For each exceptionality**, please **indicate the amount of teaching experience** that you have had with students with such exceptionalities in a school setting (*check the best* option):

	No experience	Less than 1 year experience	More than 1 year, but less than 5 years experience	More than 5 years, but less than 10 years experience	More than 10 years experience	No Response
Acquired brain injury:	○	○	○	○	○	○
Autism spectrum disorder (e.g., ASD, Aspergers):	○	○	○	○	○	○
Behaviour (e.g., ADD, conduct disorder):	○	○	○	○	○	○
Blind or visual impairment:	○	○	○	○	○	○
Deaf or hard-of-hearing:	○	○	○	○	○	○
Emotional disturbance (e.g., mental health issues):	○	○	○	○	○	○
Giftedness:	○	○	○	○	○	○
Intellectual or developmental disability:	○	○	○	○	○	○
Learning disability:	○	○	○	○	○	○
Physical disability (e.g., spina bifida, cerebral palsy):	○	○	○	○	○	○
Speech or Language impairment:	○	○	○	○	○	○
Other *(please specify)*: _____	○	○	○	○	○	○
Multiple exceptionality (i.e., having more than one of the above exceptionalities)	○	○	○	○	○	○

YOUR LEVEL OF INTEREST IN SPECIAL EDUCATION

Please check the option that most accurately reflects your response.	A Great Deal	A Fair Amount	Some	A Little	Not At All	No Response
	5	**4**	**3**	**2**	**1**	**NR**
44. How much does the topic of special education fit with *your personal* **interests**?	○	○	○	○	○	○
45. How much does the topic of special education fit with *your professional* **interests**?	○	○	○	○	○	○
46. Overall, how much **special education information** do you feel that **you require**?	○	○	○	○	○	○

47. Please rate your **overall level of expertise in special education**? *Check only <u>one</u> option.*

Novice				Intermediate					Expert	
○	○	○	○	○	○	○	○	○	○	○
1	2	3	4	5	6	7	8	9	10	No Response

48. Is there **anything** that you would like to add **that would help us to understand your teaching experiences or qualifications related to special education**?

_____

_____

_____

_____

_____

Please Continue to Next Page

SECTION 3: ABOUT YOUR INFORMATION NEEDS, PREFERENCES, AND INFORMATION SEEKING BEHAVIOURS

49. What are your preferred sources of professional information? For each item please **indicate how much you prefer that source for professional information**. Please <u>list any other sources</u> that you prefer that are not listed below.

Please check the option that most accurately reflects your response.	Extremely Preferred 5	Fairly Preferred 4	Somewhat Preferred 3	A Little Preferred 2	Not At All Preferred 1	No Response NR
a) A colleague (i.e., another teacher)	○	○	○	○	○	○
b) A mentor	○	○	○	○	○	○
c) Your principal, vice-principal, or supervisor	○	○	○	○	○	○
d) Someone with expertise such as a learning resource specialist or consultant	○	○	○	○	○	○
e) A presentation, work-shop, or in-service training	○	○	○	○	○	○
f) A professional conference	○	○	○	○	○	○
g) An additional qualifications or educational/post-secondary course	○	○	○	○	○	○
h) A professional book or magazine	○	○	○	○	○	○
i) A research journal or journal article	○	○	○	○	○	○
j) A newsletter	○	○	○	○	○	○
k) A television program, video, DVD, or CD	○	○	○	○	○	○
l) A website	○	○	○	○	○	○
m) A blog, chat room, or online discussion group	○	○	○	○	○	○
n) Face-to-face discussion	○	○	○	○	○	○
o) Email	○	○	○	○	○	○
p) Other, (please specify): _____	○	○	○	○	○	○

50. What type of professional information do you seek? For each item please **indicate the extent to which you seek the following types of professional information**. Please <u>list any other types of professional information</u> that you seek that are not listed below.

Please check the option that most accurately reflects your response. **I seek the following types of information…**	To a Great Extent **5**	To A Fairly Great Extent **4**	To A Moderate Extent **3**	To A Small Extent **2**	Not At All **1**	No Response **NR**
a) Information related to a particular subject that you are teaching	◯	◯	◯	◯	◯	◯
b) Information related to a particular issue affecting your school (e.g., bullying, suicide, poverty, student diversity, etc.)	◯	◯	◯	◯	◯	◯
c) Information related to the curriculum	◯	◯	◯	◯	◯	◯
d) Information related to lesson or unit planning	◯	◯	◯	◯	◯	◯
e) Information related to teaching resources	◯	◯	◯	◯	◯	◯
f) Information related to assessment or evaluation	◯	◯	◯	◯	◯	◯
g) Information related to instructional strategies	◯	◯	◯	◯	◯	◯
h) Information related to student learning	◯	◯	◯	◯	◯	◯
i) Information related to student motivation	◯	◯	◯	◯	◯	◯
j) Information related to student exceptionalities	◯	◯	◯	◯	◯	◯
k) Information related to classroom management	◯	◯	◯	◯	◯	◯
l) Information related to technology use in the classroom (e.g., computers, software programs)	◯	◯	◯	◯	◯	◯
m) Information related to communicating with parents	◯	◯	◯	◯	◯	◯
n) Information related to professional development (e.g., information on developing a portfolio)	◯	◯	◯	◯	◯	◯
o) Information related to one of your professional organizations (e.g., teacher federation or college of teachers)	◯	◯	◯	◯	◯	◯
p) Other, (please specify): _____	◯	◯	◯	◯	◯	◯

51. If you use the Internet to find professional information, **please list what websites, search engines, and/or databases you use most frequently and a brief description of their content:**

Website Name and Website Address (if known)	Website Content (please identify what type of information you seek from this website)
Websites:	
Search Engines:	
Databases:	

52. What **limits or prevents you from seeking** professional information/resources**?**

    _____

    _____

53. What **difficulties have you experienced in searching for** professional information**?**

    _____

    _____

54. Please **describe how your information needs could be better met**:

    _____

    _____

55. Please think about your top 5 **information needs related to special education**, **inclusion, and/or students with exceptionalities?**

Your Special Education Information Needs	Ranking of Needs	Preferred Resources
• What questions do you have? • What information do you require? • Please **list your questions and information needs below**.	Considering your list of needs, please **rank** which is your **Most Important Need [1]** to your **Least Important Need [5]**	• Please list **where you would most likely go to find answers** to your questions. • What **resources would you consult**?
	[_____]	
	[_____]	
	[_____]	
	[_____]	
	[_____]	

56. Please provide any **other details about your information needs, preferences, or information seeking behaviours that we have not addressed** that would help us to better understand your information needs, preferences, and information seeking behaviours.

_____

_____

_____

_____

_____

_____

Thank you for completing this questionnaire!

Appendix J: Self Nomination Scale of Expertise in the Education Profession

Self Nomination Scale of Expertise in the Educational Profession (SNS-E)

Teaching **expertise** is complex and multidimensional. Expertise is an evolving process for individual teachers, and not every competent teacher is an expert! For the purposes of this scale, expertise is broadly defined. This definition involves attitudes and values, technical and interpersonal competencies, knowledge, and skill at making decisions and recommendations and in teaching effectively.

An expert is someone who displays a **deep understanding** of learning problems and has the ability to deal with **complex problems**. An expert is **well-respected** and has a **good reputation** within the work environment, is **sought out by colleagues** as a source of consultation for difficult or complicated cases, and is effective in helping to bring about positive **outcomes for students**. An expert displays **caring, compassion, and commitment** in his or her work. An expert shows a **high degree of creativity** and **flexibility** in his or her decisions by considering multiple perspectives. An expert is **highly motivated to improve** his or her teaching practice and makes **meaningful contributions** to his or her professional field. An expert is **someone you would recommend to others** and whose advice you would trust.

Using this broad definition as your guide select the one category below that you believe ***best describes you***.

- ❑ **Novice Teacher:** A teacher whose foundational skills in the above areas are still developing but *has not yet reached consistent competence in all areas of practice*.

- ❑ **Intermediate Teacher:** A teacher who is well grounded in his/her foundational teaching skills but *has not yet reached an expert level of practice (even if he or she is considered a specialist in a specific teaching area)*.

- ❑ **Expert Teacher:** A teacher who fits *most or all of the above definition and would 'intuitively' be seen as an expert in his or her field.*.

Once you have indicated the category that is most applicable please indicate *how confident* you feel about this rating according to the scale below:

Not At All Confident	Confident to a Very Small Extent	Confident to a Small Extent	Confident to a Moderate Extent	Confident to a Fairly Great Extent	Confident to a Great Extent	Extremely Confident
1	2	3	4	5	6	7

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Appendix K: Facilitator's Guide for the Semi-Structured Interview and Mind Mapping Session

Guide for the Semi-Structured Interview Session

The proposed interview component of the session will take approximately 60-minutes.

Welcome/Introduction

- **Welcome:** Greetings. Introductions. The researcher thanks the interviewee for taking time out of her/his busy schedule to participate in this research study.

- **Purpose and Plan for the Session:** The researcher introduces the research topic and plan for the session. The researcher will answer any questions about the study. The interviewee will hand in her/his completed consent form.

- **Confidentiality:** The researcher discusses confidentiality issues: (a) The interview is being digitally-recorded to make sure that nothing that is contributed is missed, (b) The interview will be transcribed, and any identifying names or information will be removed from the transcript. The researcher will answer any questions about confidentiality.

Proposed Interview Questions

Theme 1: Questions About the Teacher's General Information Needs, Preferences, and Information Seeking Behaviours

- Before we focus on special education, I'd like to know about your professional information needs. Is there anything that you would like to learn more about?
  Further probes:
  - If you have a professional growth plan or learning goals, what have you identified as your professional development needs that you would like to work on?
  - What challenges you most about teaching?
  - How have your informational needs changed as you gained more experience teaching?

- Given your professional development needs, what are your preferred ways to meet these needs? What are your favourite/preferred sources of information?
  Further probes:
  - Where do you go get your questions answered? Where do you go to look for information (what sources do you access and value)?
  - Who do you seek out to get answers to your education questions?
  - If you were mentoring/coaching a new teacher where would you recommend that she/he should look to answer her/his educational questions?
  - If you were to look up information using the Internet, describe how you would conduct your search for information.
  - Describe any difficulties you have encountered when searching for professional information.
  - How often do you find yourself searching for professional information? When do you search for professional information?

- What type of information do you prefer?
  Further probes:
  - What kind of information do you really like/dislike? What are you most likely to examine/read/ignore?
  - Do you read original source research articles or any journals like "Teaching Exceptional Children"?
  - If someone could create the perfect educational resource specifically for you, what would it look like? What information would it contain? How would you access it?

Theme 2: Questions About the Teacher's Experiences Related to Special Education

- Now I would specifically like us to focus on special education, inclusion, and students with exceptionalities. Please describe your experiences with delivering special education for students with exceptionalities.
  Further probes:
  - How does the delivery of special education work at your school?
  - What have you found are the benefits of including students with exceptionalities in the regular classroom?
  - What have you found are the challenges of educating students with exceptionalities in the regular classroom?
  - Have you found any limitations of including students with exceptionalities in the regular classroom?
  - Any lessons learned: Can you think of any critical incidences related to special education or students with exceptionalities that have changed your teaching or ways of thinking about your practice?

- Does your learning plan include goals for learning special education information? What are your learning goals for special education; or if you were to develop learning goals for special education, what would they be?

- If you were mentoring a student teacher, what information would you tell them that teachers need when it comes to Special Education, inclusion, or students with exceptionalities?

- Please think about the questions that you have with regards to Special Education, inclusion, and students with exceptionalities: What is it that you most want/need to know?
  Further probes:
  - Thinking about the last time you searched for Special Education information, what was it that you were looking for?
  - Now I would like you to think about your past teaching experiences—can you recall a challenging situation, a classroom experience, or a critical incident related to special education, inclusion, and students with exceptionalities? Please describe that experience. In retrospect, is there anything that you know now, that you did not know then, that would have helped you in this situation?

Wrap-Up of Semi-Structured Interview and Mind Mapping Session

- We have discussed your information preferences and your information needs related to special education, inclusion, and students with exceptionalities. Is there anything else you feel we should have talked about but did not? Do you feel there any issues we've missed or not spent enough time discussing?

- Of all the things we discussed, which is the most important to you?

Closing Statement

- Administrative details (future plans that participants need to know about):
  - Once I've had the opportunity to transcribe your interview, I will send you your interview and your mind map. At that time you can take a look at it and provide me with any feedback, additions, or changes.
  - Once all participants have been interviewed, I will be doing the draws for the $100 gift certificates, and will send the winners their gift certificates.
  - Once the analyses of the data have been completed, and I have written up the results, I will provide you with a summary of the study findings.

- Thank you for your participation in this research study. I really appreciate your time.

Appendix L: Curriculum Vitae (Brief)

Curriculum Vitae (*Brief*)

Name:	Michelle M. Servais
Post-secondary Education and Degrees:	Joint Ph.D. in Educational Studies, The University of Western Ontario, London, Ontario, 2012 Ph.D., Education

The University of Western Ontario, London, Ontario, 1999
M.Ed., Educational Psychology and Special Education
- In-course scholarship recipient 1995–1996

The University of Western Ontario, London, Ontario, 1994
B.Ed., OCT
- Dean's Honour List

Lakehead University, Thunder Bay, Ontario, 1993
H.B.A., Psychology
- First class standing
- In-course scholarship recipient 1992–1993, 1991–1992

Honours and Awards
Centre for Inclusive Education, 2006
Research Award Recipient (awarded $1,000).

Research Alliance for Children with Special Needs, 2003
Studentship Competition (awarded $10,000).

Related Work Experience:
Researcher
Thames Valley Children's Centre, 2000–present

Lecturer
Faculty of Education, The University of Western Ontario, 2005–2007
Taught required foundational courses in Education to pre-service teachers
- Fall-terms 2005, 2006: Course # E70Q—*Foundations in Educational Psychology*
- Winter-terms 2006, 2007: Course # E74S—*Educating Exceptional Students: Issues and Instruction*

Occasional Teacher
Belleville and London, 1996–2000

Publications:

Servais, M., & Sandieson, R. (2012). Teachers' special education information needs and source preferences. *Facts To Go, 8*(2). London, ON: Thames Valley Children's Centre.

Baldwin, P. J., King, G., Evans, J., McDougall, S., Tucker, M. A., & **Servais, M.** (2012). Solution-focused coaching in pediatric rehabilitation: An integrated model for practice. (Submitted for publication).

King, G., Specht, J., Petersen, P., **Servais, M.,** Bartlett, D., Stewart, S., Young, G., & Brown, H. (2012). The development of expertise in children's mental health therapists and teachers: Changes in perspective and approach. (Submitted for publication).

King, G., **Servais, M.,** Bolack, L., Shepherd, T., & Willoughby C. (2012). Development of a measure to assess effective listening and interactive communication skills in the delivery of children's rehabilitation service. *Disability and Rehabilitation, 34*(6), 459-469. DOI: 10.3109/09638288.2011.608143

King, G., Tam, C., Fay, L., Pilkington, M., **Servais, M.,** & Petrosian, H. (2011). Evaluation of an occupational therapy mentorship program: Effects on therapists' skills and family-centered behavior. *Physical & Occupational Therapy in Pediatrics. 31*(3), 245-262.

Specht, J., King, G., **Servais, M**., Kertoy, M., & Spencer, T. (2011). School roles: A way to investigate participation. *Exceptionality Education International, 21*(1), 2-14.

Baldwin, P. J., Evans, J., McDougall, S., & **Servais, M.** (2010). Solution-focused coaching in paediatric rehabilitation. *Facts to Go*, 6(3). London, ON: Thames Valley Children's Centre.

King, G., Specht, J., Bartlett , D., **Servais, M.,** Petersen, P., Brown, H., Young, G., & Stewart, S. (2010). A qualitative study of workplace factors influencing expertise in the delivery of children's education and mental health services. *Journal of Research in Interprofessional Practice and Education*, *1*(3), 265-283.

King, G., **Servais, M**., Forchuk, C., Chalmers, H., Currie, M., Law, M., Specht, J., Rosenbaum, P., Willoughby, T., & Kertoy, M. (2010). Features and impacts of five multi-disciplinary community-university research partnerships. *Health and Social Care in the Community, 18*(1), 59-69. doi: 10.1111/j.1365-2524.2009.00874.x

Malloy-Miller, T., & **Servais, M.** (2009). *'Learning to think and thinking to learn'. The Kids On-Track project uses evidence-based practices to support teachers in improving students' thinking and learning skills.* Report for Thames Valley District School Board. London, ON: Thames Valley Children's Centre.

Servais, M., Tucker, M. A., & Strachan, D. (2009). The Developmental Resources for Infants partnership: Enhancing interdisciplinary collaboration to improve services for clients and families. *Facts To Go, 5*(4). London, ON: Thames Valley Children's Centre.

Servais, M., Hall, C., Chadwick, C., & Lombardi, J. (2009). Peer-mediated school-based program proves successful in promoting positive social skills. *Facts To Go, 5*(3). London, ON: Thames Valley Children's Centre.

Servais, M., Baldwin, P., & Tucker, M. (2009). Relationship-centered practice: A best practice in pediatric rehabilitation service delivery. *Facts To Go, 5*(2). London, ON: Thames Valley Children's Centre.

King, G., **Servais, M**., Kertoy, M., Specht, J., Currie, M., Rosenbaum, P., Law, M., Forchuk, C., Chalmers, H., & Willoughby, T. (2009). A measure of community members' perceptions of the impacts of research partnerships in Health and Social Services. *Evaluation and Program Planning, 32,* 289-299.

McDougall, J., **Servais, M.**, Meyer, K., Case, S., Dannenhold, K., Johnson, S., & Riggin, C. (2009). A preliminary evaluation of a school support program for children with autism spectrum disorders: Educator and school level outcomes and program processes. *Exceptionality Education International, 19*(1), 32-50.

King, G., Currie, M., Smith, L., **Servais, M.**, & McDougall, J. (2008). A framework of operating models for interdisciplinary research programs in clinical service organizations *Evaluation and Program Planning, 31,* 160-173.

McDougall, J., **Servais, M.**, Meyer, K., Case, S., Dannenhold, K., Johnson, S., & Riggin, C. (2006, December). An evaluation of a school support program—Autism Spectrum Disorder. *Facts To Go, 2*(2). London, ON: Thames Valley Children's Centre.

McDougall, J., **Servais, M**., Sommerfreund, J., Rosen, E., Gillett, J., Gray, J., Sommers, S., Frid, P., DeWit, D., Pearlman, L., & Hicock, F. (2006). An evaluation of the Pediatric Acquired Brain Injury Community Outreach Programme (PABICOP). *Brain Injury, 20*(11), 1189-1205.

McDougall, J., **Servais, M**., Sommerfreund, J., Rosen, E., Gray, J., Sommers, S., Gillett, J., & Frid, P. (August, 2006). An evaluation of the Pediatric Acquired Brain Injury Community Outreach Programme (PABICOP). *Facts To Go, 2*(1). London, ON: Thames Valley Children's Centre.

Servais, M. (March, 2006). Action plans to increase the participation of children with special needs in our community. *Focus On, 6* (3). London, ON: Research Alliance for Children with Special Needs.

Smith, L., King, G., Currie, M., **Servais, M.,** DeWit, D., Kertoy, M., Killop, S., Miller, L., Specht, J., Spencer, T., Stewart, S., McDougall, J. (2006, March). *Final report for the Research Alliance for Children with Special Needs (2000-2005)*. London, ON: Research Alliance for Children with Special Needs.

Kneale Fanning, J., Legros-Kelly, J., McVittie, A., Pigache, J., Tucker, M. A., & **Servais, M.** (December, 2005). An evaluation of Developmental Resources for Infants: Collaborative health care services for infants and their families. *Facts To Go, 1*(4), London, ON: Thames Valley Children's Centre.

Servais, M. (2005, August). Book review of Pressley, M., Dolezal, S. E., Raphael, L. M., Mohan, L., Roehrig, A. D., & Bogner, K. (2003). Motivating primary-grade students. New York: The Guilford Press. *Education Review*, http://edrev.asu.edu/brief/aug05.html#12 (peer-reviewed).

Servais, M., & Currie, M., (June, 2003). Community awareness & attitudes toward the participation of children with special needs. *Focus On, 3*(1), London, ON: Research Alliance for Children with Special Needs. Currie, M., **Servais, M.,** & Bartlett, D. (October, 2002). Findings from a community forum on the participation of children with special needs. *Focus On, 2*(4), London, ON: Research Alliance for Children with Special Needs.

Servais, M., & Currie, M. (November, 2002). *Report on the proceedings: The community forum on the participation of children with special needs in our community*. London, ON: Research Alliance for Children with Special Needs (available to download from www.racsn.ca).

Servais, M. (January, 2001). Report: *A closer examination of the early childhood services program evaluation. Focus: Families' need for information*. London, ON: Thames Valley Children's Centre.

Servais, M. (November, 2000). Report: *Program evaluation of early childhood services.* London, ON: Thames Valley Children's Centre

Presentations:

Servais, M., & Sandieson, R. (2012). *Teachers' special education information needs: What pediatric therapists need to know.* Poster presentation (peer reviewed) to be presented at the 2012 Ontario Association of Children's Rehabilitation Services (OACRS) Conference, Toronto, Ontario, Canada (November 4 – 6, 2012).

Baldwin, P., **Servais, M**., & Tucker, M. (2012, June). *Translating solution-focused coaching into practice: An organizational perspective*. Oral presentation (peer reviewed) to be presented at the 2012 Ontario Association of Children's Rehabilitation Services (OACRS) Conference, Toronto, Ontario, Canada (November 4 – 6, 2012).

McDougall, S., & **Servais, M**. (2012, May). *AAC and Autism service providers collaborating for communication: Organizational lessons learned from using a knowledge exchange framework*. Oral presentation (peer reviewed) to be presented at the 2012 Ontario Association of Children's Rehabilitation Services (OACRS) Conference, Toronto, Ontario, Canada (November 4 – 6, 2012).

McDougall, S., & **Servais, M**. (2012, July). *AAC and Autism service providers collaborating for communication: A knowledge exchange framework*. Oral presentation (peer reviewed) for the 2112 International Society for Augmentative and Alternative Communication (ISAAC) 15th Biennial Conference, Pittsburgh, Pennsylvania, USA (July 28 – August 4, 2012).

Servais, M., & Sandieson, R. (2012, May). *Understanding teachers' special education information needs and source preferences*. Oral presentation (peer reviewed) for the 2012 Canadian Society for the Study of Education (CSSE) 40th Annual Conference, Waterloo, ON, Canada.

Specht, J., King, G., **Servais, M.**, Bartlett, D., & Rohatyn, N. (2012, May). *The MPOT: A tool for teacher development.* Poster presentation (peer reviewed) for the 2012 Canadian Society for the Study of Education (CSSE) 40th Annual Conference, Waterloo, ON, Canada.

Baldwin, P., **Servais, M.**, & Tucker, M. A., (2011, November). *Using solution-focused coaching in paediatric rehabilitation*. Oral presentation (peer reviewed) for the 2011 Ontario Association of Children's Rehabilitation Services (OACRS) Conference, Together for Excellence, Toronto, ON, Canada.

McDougall, S., & **Servais, M**., (2011, November). *AAC and autism best practices: Results and next steps of the OACRS 2011 best practice networking day on Autism and AAC*. Oral presentation for the 2011 Ontario Association of Children's Rehabilitation Services (OACRS) Conference, Together for Excellence, Toronto, ON, Canada.

McDougall, S., & Servais, M., (2011, March). *Report of the findings from AAC and Autism focus groups on priority needs and interdisciplinary collaboration*. Presented for the Autism Program Leadership Team Meeting, Thames Valley Children's Centre, London, ON, Canada.

McDougall, S., & Servais, M., (2011, March). *Report of the findings from AAC and Autism focus groups on priority needs and interdisciplinary collaboration*. Presented for the Augmentative Communication Service Team Meeting, Thames Valley Children's Centre, London, ON, Canada.

Specht, J., Young, G., Kertoy, M., **Servais, M.**, Spencer, T., Puskarich, M., & Pompeo, M. (2010, August). Participation in school roles: The importance of opportunity. Poster presented at the Inclusive and Supportive Education Congress, Belfast, UK.

Servais, M. (2010, April). *Understanding teachers' information needs, perceived competencies, and information seeking behaviours for special education information*. Poster presentation (peer reviewed) at the 2010 'Readin', Ritin' and Researchin' Research in Education Symposium, Faculty of Education, University of Western Ontario, London, ON, Canada.

Spencer, T., Specht, J., **Servais, M.**, Kertoy, M., King, G., Pompeo, M., Young, G., & Puskarich, M. (2010, February). *Elementary school roles: Making sure all participate*. Oral presentation (peer reviewed) at the 5th Annual Ontario Education Research Symposium, Toronto, ON, Canada.

Hall, C., **Servais, M.,** & Chadwick, C. (2009, October). *Generalizing social skills outside the classroom: A peer-mediated approach for students with autism*. Oral presentation for the Autism Program, Thames Valley Children's Centre, London, ON, Canada.

Baldwin, P., **Servais, M**., & Tucker, M. A. (2009, November). *Supporting the development of relationship-centred practices through the use of a self-reflection tool for pediatric therapists*. Poster presentation (peer reviewed) at the 2009 Ontario Association for Children's Rehabilitation Services (OACRS) Conference, Toronto, ON, Canada.

Bolack, L., Shepherd, T., **Servais, M**., King, G., & Willoughby, C. (2009, November). *Reflecting on effective communication and listening skills in therapeutic practice*. Oral presentation (peer reviewed) at the 2009 Ontario Association for Children's Rehabilitation Services (OACRS) Conference, Toronto, ON, Canada.

Servais, M., Tucker, M. A., & Baldwin, P. (2009, May). *Development of a self-reflective tool to deepen relationship-centered practices of pediatric rehabilitation therapists with families of children with disabilities*. Poster presentation (peer reviewed) at the 2009 Conference on Engaging Reflection in Health Professional Education and Practice, London, ON, Canada.

Specht, J., King, G., Bartlett, D., Stewart, S., Gilpin, M., Petersen, P., **Servais, M**., Brown, H., Young, G., & Kessler, N. (2009, May). *Facilitating the development of professional expertise in children's mental health, rehabilitation, and education services*. Poster presentation (peer reviewed) at the 2009 Conference on Engaging Reflection in Health Professional Education and Practice, London, ON, Canada.

Specht, J. A., **Servais, M**., Kertoy, M., Spencer, T., King, G., Young, G., Pompeo, M., Young, G., & Puskarich, M.(2009, August). *School roles: Opportunities to participate.* Oral presentation (peer reviewed) at the American Psychological Association Annual Conference, Toronto, ON, Canada (accepted).

McDougall, J., **Servais, M.**, Meyer, K., Case, S., Dannenhold, K., Johnson, S., & Riggin, C. (2009, April). *A preliminary evaluation of a school support program for children with autism spectrum disorders.* Poster presentation (peer-reviewed) at the 17th Annual Research Day of the Ontario Association for Developmental Disabilities Research Special Interest Group, Barrie, Ontario.

Hall, C., **Servais, M**., & Chadwick, C. (2008, November). *Effectiveness of peer-mediated social skills training: Prerequisites for generalization for students with autism.* Oral presentation (peer-reviewed) at the Ontario Association for Behaviour Analysis (ONTABA) Annual Provincial Conference, Toronto, Ontario, Canada.

Hall, C., Chadwick, C., **Servais, M.** (2008, November). *Reaching beyond the student with Autism: A school-wide, peer-mediated approach to social skill teaching.* Oral presentation (peer reviewed) at the 52nd Ontario Provincial Conference of the Council for Exceptional Children, London, ON, Canada.

Specht, J. A., Spencer, T., **Servais, M**., Kertoy, M., Young, G., Pompeo, M., Cressman, C., & Puskarich, M. (2008, November). *School participation: How educators can help.* Oral presentation (peer reviewed) at the 52nd Ontario Provincial Conference of the Council for Exceptional Children, London, ON, Canada.

Specht, J. A., **Servais, M.**, Kertoy, M., Spencer, T., King, G. A., Cressman, C., Pompeo, M., & Young, G. (2008, August). *School participation: Opportunities, enhancers, and limiters.* Oral presentation (peer reviewed) at the Annual Meeting of the American Psychological Association. Boston, MA, USA.

Specht, J. A., **Servais, M**., Kertoy, M., Spencer, T., King, G., Cressman, C., Pompeo, M., & Young, G. (2008, March). *School role participation: Perspectives of the child, parent, and the teacher.* Oral presentation (peer reviewed) at the 2008 Eighth Annual Second City Conference on Disability Studies in Education, New York, NY, USA.

Gray, J., McDougall, J., Somers, S., **Servais, M.**, Sommerfreund, J., Rosen, E., Gillett, J., D. DeWit, & P. Frid (2007, November). *An evaluation of the Pediatric Acquired Brain Injury Community Outreach Program (PABICOP).* Poster presentation (peer reviewed) at the New Frontiers in Pediatric Traumatic Brain Injury Conference, San Diego, CA, USA.

Baldwin, P., **Servais, M.**, Tucker, M. (2007, October). *Beyond family-centred care: Deepening our clinical practice of relationship-centred care with families of children with disabilities.* Oral presentation/workshop (peer reviewed) at the 2007 Ontario Association for Children's Rehabilitation Services (OACRS) Conference, Waterloo, ON, Canada.

McDougall, J., Meyer, K., Case, S., Dannenhold, K., Johnson, S., Riggin, C., & **Servais, M.** (2007, October). *An evaluation of a school support program for children with autism spectrum disorders.* Poster presentation (peer reviewed) at the 2007 Ontario Association for Children's Rehabilitation Services (OACRS) Conference, Waterloo, ON, Canada.

McDougall, J., Gray, J., Somers, S., **Servais, M.,** Sommerfreund, J., Rosen, E., Gillett, J., & Frid, P. (2006, November). *An evaluation of the Pediatric Acquired Brain Injury Community Outreach Program (PABICOP).* Oral presentation (peer reviewed) at the ABI Network Conference, Toronto, ON, Canada.

McDougall, J., Gray, J., Somers, S., **Servais, M.,** Sommerfreund, J., Rosen, E., Gillett, J., & Frid, P. (2006, September). *An evaluation of the Pediatric Acquired Brain Injury Community Outreach Program (PABICOP).* Oral presentation (peer reviewed) at the Ontario Association of Children's Rehabilitation Services Conference, Niagara Falls, ON, Canada.

Servais, M. (2006, August). *Literature search strategies using the PubMed database.* Invited presentation (oral) to Psychometrists, Thames Valley Children's Centre, London, ON, Canada.

Servais, M., Young, D., & Edmunds, A. (2006, May). *An examination of graduate students' experiences teaching educational psychology: Using reflective practice of critical teaching incidents to develop personal teaching philosophies.* Oral Presentation (peer reviewed) at the 2006 Canadian Society for the Study of Education (CSSE) Conference, Mapping the Educational Landscape: Diversity, Democracy and the Future. York University, Toronto, ON, Canada.

Servais, M., Arthur, A., Kehl, K., Kennerly, A., & Ker, K. (2005, July). *The Joint PhD cohort experience: Building a community of collaboration and support to facilitate the doctoral journey.* Presentation at the 2005 2nd Annual Conference for the Joint PhD in Educational Studies Program, University of Windsor, Windsor, ON, Canada.

Servais, M. (2005, April). *Exploring teachers' information-needs, preferences, and information-seeking behaviours for special education information*. Presentation of Research for the Centre for Inclusive Education, University of Western Ontario, London, ON, Canada.

Servais, M. (2005, February). *Enhancing research dissemination - using community forums as a tool to promote research utilization*. Presentation (peer reviewed) at the Sixth Interdisciplinary Advances in Qualitative Methods Conference, Edmonton, AB, Canada.

Servais, M. (2005, February). *Introduction to using online databases: Using the PubMed database to find research resources*. Invited presentation (oral) to Senior Therapists of the Southwest Regional Autism Program for Preschoolers, London, ON, Canada.

Servais, M. (2005, February). *Introduction to using online databases: Using the PubMed database to find research resources*. Invited presentation (oral) to ASD Consultants of the Southwest Regional Autism Program for Preschoolers, London, ON, Canada.

Servais, M. (2004, November). *Introduction to using online databases: Using the PubMed database to find research resources*. Invited presentation (oral) to Clinical Service Providers at Thames Valley Children's Centre, London, ON, Canada.

Servais, M. (2004, November 23). *Introduction to using online databases: Using the PubMed database to find research resources*. Invited presentation (oral) to Clinical Service Providers at Thames Valley Children's Centre, London, ON, Canada.

Servais, M., King, G., Currie, M., Kertoy, M., Law, M., Rosenbaum, P., Specht, J., Willoughby, T., Forchuk, C., Chalmers, H. (2004, July). *A model of the research impacts of research partnerships and the development of a tool to measure the community impacts of research oriented partnerships (the CIROP measure)*. Oral presentation (peer reviewed) at the 2004 First Annual Conference for the Joint PhD in Educational Studies Program: Innovative and Alternative Research Paradigms in Education, Brock University, St. Catharines, ON, Canada.

Servais, M. (2004, June). *The 2004 results of 'The participation of children with special needs in our community questionnaire'*. Presentation at the RACSN Community Forum on Creating Success Stories Together—Enhancing the Participation of Children with Special Needs in Our Community, London, ON, Canada.

Servais, M. (2004, January). *Action research workshop for teachers and staff of LDCSB and TVDSB*. Workshop presentation for the 2004 Research Alliance for Children with Special Needs Teacher and School Board Staff Research Award Recipients, Thames Valley Children's Centre, London, ON, Canada.

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