Selecting Literacy Approaches in Braille for Students with Visual Impairments

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Abstract

Braille literacy presents multiple challenges for teachers of students with visual impairments (TSVI), classroom teachers, educational assistants, students’ with visual impairments, and for their family members. As the braille code has evolved over the years so does the instructional braille method. The choice of instructional braille method depends on several factors, for example the degree of vision loss, learning styles, needs, and capabilities of students with visual impairments.

A qualitative study, interviewing two itinerant vision teachers or teacher of students who are visually impaired (TSVI) from two different school boards, revealed some braille literacy instructional methods that are used for braille acquisition. This study further explores the role of TSVI, classroom teacher, peers in class and parents play in fostering braille literacy environment.

Keywords: Braille, Literacy Approaches, Visual Impairments, Teacher of Students who are Visually Impaired (TSVI), Itinerant Vision Teacher
Chapter 1: INTRODUCTION

Introduction to the Research Study

“Braille is a true literacy medium that gives students access to the same print information as their sighted peers” as mentioned in Reading Strategies for Students with Visual Impairments: A Classroom Teacher’s Guide (2008) published by Special Education Technology British Columbia. A case study of braille users conducted by Schroeder (1996) stressed the importance of braille as a tool for literacy and a representation of group identity and independence. Zago (1996) also considers braille as a tool for students who cannot use print. Developing braille literacy empowers them to construct meaning from the text and to play with the words in a creative way, thus enhancing their knowledge and interests towards learning braille.

Approximately 85% of Canada’s estimated 678 students who use braille as their literacy medium are spending 70% of their day in the mainstream classroom in a public school setting with their same-aged peers (MacCuspie and Holbrook, 2007). Developing braille literacy among students who are visually impaired is a priority and a challenge for teachers and parents both, regardless of the setting and the nature of their educational programme (Lamb, 1998). There are several factors that are attributed towards the limited knowledge of braille for children with visual impairment and one of the factor that Swenson (1998) observed is that they are not provided with the same level of braille experiences as their same age peers who are reading print.

According to Braille Authority of North America (1994) “in braille there are more than 184 symbols for the young braille reader to learn compared with 26 print alphabet letters and a few print punctuation symbols for the young print reader.” Research indicates that students who are learning braille vary in their needs, abilities and interests, therefore braille teachers need to use a variety of instructional strategies with their students (Holbrook & Nannen, 1997).
With the above framework of using braille as a literacy medium, my research topic will focus on literacy instructional strategies that are used by TSVI to teach braille to students with visual impairments in mainstream classroom settings.

**Research Question**

The research question guiding this study is: What literacy approaches are used by teachers of students who are visually impaired (TSVI) when teaching braille to students with visual impairments?

In addition, other critical issues will be addressed through the following sub-questions:

1. What are the steps in setting up a braille literacy program?
2. What is the recommended order of teaching braille alphabets?
3. What is the importance of the school personnel and family members to have a knowledge of braille code?
4. How a student with visual impairment is integrated during mainstream classroom activities?

I believe the findings of this study have the potential to assist classroom teachers, support staff, and parents to come up with workable strategies that will help increase their awareness and involvement when working with students who are learning braille. It will also inform teacher candidates who want to pursue their career as a TSVI about the qualification, expectations and literacy approaches to use when working with students who are visually impaired.

**Positioning Myself as a Researcher**

Working in different capacities, mainly as a special needs assistant, emergency supply teacher and an interpreter within the largest school board in Canada for the past ten years has
given me tremendous exposure to the challenges faced by the classroom teachers, itinerant teachers, educational assistants, students and their parents in terms of specialized teaching techniques.

For most of my years with the board, I have been supporting special need students in mainstream classrooms or a special education classroom where the majority of the teachers and support staff are specially trained to teach the students. I have been a part of different special education classroom supporting students with behavioral, communicational, intellectual, physical or multiple exceptionalities. I observed that with every classroom and each student comes a unique challenge for which the whole classroom team including teachers, special needs assistant and an early childhood educator must prepare themselves.

From all of the above experiences in special education classrooms, I was trained and prepared to perform my job of supporting the students except in one classroom. The only time I felt unprepared was when I got a chance to work one-on-one with a kindergarten student who was visually impaired. Since braille is a specialized system of touch reading for the blinds, it requires a specialist teacher who is trained to teach the students who are visually impaired. As the classroom teacher and I were not trained in teaching braille, we were dependent on an itinerant vision teacher who also had other students in different schools all over the city that she visited according to her busy schedule to teach braille. During the absence of an itinerant teacher, I helped the child with practicing the braille that he had learned earlier from an itinerant teacher. Through this process, I began to learn braille alongside my own student. In my experience, learning braille is like learning a new code of a language which can only be written and read by people who are trained in it. Every time I learned something new in braille, I felt that I had unlocked a secret code or message. Since I
became very interested in the acquisition of braille, I enrolled in Braille part-1 course, also called Alphabetic braille which covers Grade-1 braille or uncontracted braille to obtain professional certification so that I could be more helpful to teachers and students.

Alphabetic braille because of its simplicity allows everyone in the reader's life to become a participant in the reader's literacy. General education staff, peers, and family can quickly learn the letter symbols, numbers and punctuation signs, if they are interested. The instruction of alphabetic braille in early grades allows the student with visual impairments to listen to and learn the same reading lessons as their peers in the classroom. The rules for spelling of words is the same for all students, and the materials can be more easily marked by the general education teacher without waiting for an itinerant vision teacher to arrive.

My motivation for choosing this specific research topic on teaching braille literacy to students with visual impairments in not only arises from my professional experiences but also from my personal experiences. Having a family history of Macular degeneration, I have witnessed at a very young age my grandfather and mother going through a very difficult time dealing with losing their vision slowly with age. Back home, they were supported by the family members and caretakers in terms of performing everyday routines such as reading letters and newspapers, hence they never felt the need to learn braille. The awareness of my family history of Macular Degeneration made me understand how important it is to prepare myself for future challenges, resulting in regular eye checkups and to learn braille.

In the future, I want to become a TSVI which requires a teacher certification as well as a braille certification to teach students with visual impairments. I believe that a mainstream classroom teacher should have a basic knowledge in all the special education areas such as learning about braille in order to be better prepared when a student with visual impairment is
included in their class. The knowledge of braille would not only be helpful for the student with visual impairments, but also for other students with sight in her classroom to understand each other needs.

As a researcher, I also intend to identify the importance of learning braille for a classroom teacher, support staff and parents as well. This research will also highlight the challenges that are encountered by TSVI as well as the measures adopted by them when teaching students with visual impairment in a mainstream classroom setting.

By embarking on a qualitative research-based study, I will be responding to the central question by interviewing two TSVI working within the mainstream classroom settings. In chapter two, I sub-divided the literature review under different headings to explain the definition of braille, various literacy approaches in teaching braille, importance of braille literacy for classroom teachers, educational assistants, other peers in class and parents as well. In chapter three, I elaborate on the research design. In chapter four, I present my findings, and in chapter five, I will discuss my findings and their importance in relation to the literature and the implications for my own practice as a new teacher.
Chapter 2: REVIEW OF LITERATURE

“Literacy is the ability to understand and employ printed information in daily activities, at home, at work and in the community, to achieve one’s goals and to develop one’s knowledge and potential” (International Adult Literacy Survey, 1994). According to Statistics Canada, “literacy is crucial to the success of individuals in both their career inspirations and their quality of life. It is more than a basic reading ability, but rather an indication of how adults use written information to function in society.”

Argyropoulos & Martos (2006) note that literacy skills are equally important for people with visual impairments. According to the National Braille Press, “there is no substitute for the ability to read. For people who are blind, braille is an essential tool that aids in the process of becoming literate.”

Definition of Braille

The National Braille Press defines Braille as: a system of touch reading for the blind, which employs embossed dots evenly arranged in a cell. Each cell contains six dots, three high and two wide. By selecting one or several dots to emboss (so they can be felt by touch), 63 different characters can be formed. To aid in describing these characters by their dot or dots, the six dots of the cell are numbered 1, 2, 3, downward on the left, and 4, 5, 6, downward on the right”.

Adkins (2010) notes that in order to fulfill the needs of students with visual impairments, the vision specialist teacher should investigate all forms of literacy and be able to teach them to their students. However, there is a notable revision in braille instruction methods for children with visual impairments because of the changes in the braille code (Andrea, 2009).
Level of support provided to students with visual impairments

The Special Education report 2013, released by the Toronto District School Board (TDSB) declares that students who are visually impaired are eligible to get support for their vision related needs. The extent of support depends on the severity of the eye condition and the results of a Functional Vision/Tactile Assessment that is performed by the Vision Program Assessment Team.

Several other researchers discussed the support level for students with visual impairments at different stages:

They [students with visual impairments] usually require a high level of extra support. At an early age, most of this will be direct teaching aimed at safety awareness, encouraging and motivating the child, providing appropriate verbal input, and promoting access to the school curriculum. At a later stage, extra support becomes progressively less direct as the child develops more confidence and independence (Webster, Alec, & Roe, 1998, p. 133-134).

Conversely, the research conducted by Mani (1998) discussed the level of support according to the grade level. The researcher suggests that children who are visually impaired require different kinds as well as different levels of service. Children who are in the primary grades will require the direct support of a specialist teacher whereas children in senior grades relies more on regular classroom teachers if they are given the necessary materials for learning in the regular classroom.

According to the American Foundation for the Blind (AFB, n.d.), depending on the age and development of students with visual impairments, their educational needs will vary. Therefore, the services needed will vary as well (Staff Development, Including a parents’ section, para. 3).
Hatlen (2009) found that most teachers of the students who are visually impaired (TSVI) are itinerant and it is common for their students who are blind and visually impaired to receive 1 to 3 or fewer contact hours per week with them (as cited in Massof, 2009).

**Braille Environment**

The *Braille Literacy Curriculum* (Wormsley, 2000), encouraged a framework for providing a “*braille-rich*” environment for children that includes placement of braille in the surroundings where a learner will be exposed to it, just as learners who are sighted and exposed to print. Similarly, Division of Student Support Services (2011) of Newfoundland and Labrador also emphasize on labelling the objects around with braille so the child can understand there is a connection between braille print and real objects.

J. Roe et al (2014) suggests that throughout the school there could be displays of work from children with visual impairment, including work produced in braille, or starting a Braille Club, and so forth. He further notes that sighted children are often being very interested in braille and can be involved in decoding messages; by playing treasure hunt games where they need to use an alternative code. Alternatively, an educator may have a small team of professionals supporting the individual child more directly and also a larger team working towards the creation of the right environment. This may include the head, deputy, governors, special educational needs coordinator and any adult who may come in contact with the child (e.g., playtime or mealtime supervisors, librarian, etc.). For example, lunch menus could be provided in braille and mealtime supervisors could facilitate the use of these.

Swenson and Cozart (2010) encouraged to create *braille-rich* environment for all students in mainstream classroom settings by creating braille name tags, braille names attached to signs, calendars, posters, print-braille books, braille centers and starting a braille club in
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She observed that the moment students who are sighted, see their first braille dot, it fascinates them. Learning braille also develops self-confidence among students’ as they acquire new skills.

Just as students with vision are encouraged to scribble on paper to practice their writing skills, young students who will learn braille should also be encouraged to scribble on their braille writer, imitating the braille writing. The student with visual impairment should be provided with opportunities to model writing behaviour, where they can pretend to write something in braille, and then read it back to someone in a same way a student with sight would read back his squiggly lines (Teach Vision, n.d).

J. Roe et al. (2014), also advocates for the need to develop early writing skills of students with visual impairments— children who are blind can pretend that they are writing just as children with sight scribble on a page. Other researchers concluded, “The entire classroom community benefits when braille literacy activities are an integral part of classroom learning” (Swenson & Cozart, 2010).

Teacher of Students who are Visually Impaired (TSVI)

Gevers and Murphy (2002) define a teacher of the visually impaired as someone “who is trained in teaching students with low vision and/or blindness. Mostly, these teachers have degrees or extra university credit hours in special education, vision, and the expanded core curriculum. Many teachers of the visually impaired have special certifications to become a specialist teacher and they can work in several schools or school districts.” Johnson (1996) remarks that teachers of visually impaired students have to pass braille proficiency tests to complete their college training. He further discusses the workload of TSVI as providing support to 25 to 30 students who are learning braille and seeing them once a day, three times a week, or
less often. Because of the heavy workload the TSVI does not have enough time to spend with each student to teach them to read, therefore, students are given tapes to enable them to keep up with the curriculum.

J. Roe et al. (2014) advocates that students with visual impairments require a high level of support from Qualified Teachers for the Visually Impaired (QTVIs), who visits a number of sessions per week determined by the local authority according to the level of support required by the student who is learning Braille. Spungin (1996) also advocates that if a child with visual impairments has to be taught braille literacy skills, it should be taught by a certified teacher competent to teach braille (Spungin, 1996). “Braille instruction must be conducted by trained personnel, usually the Itinerant Teacher for Students who are blind or Visually Impaired” (Division of Student Support Services of Newfoundland and Labrador, 2011, pg. 5.5). Swenson (2008), believes that the TSVI is initially accountable for laying the foundation of literacy skills which will foster strong and motivated readers. However, the American Foundation for the Blind advocates the importance of receiving specialized in-service training for all individuals working with the student who is visually impaired as in a mainstream classroom setting a TSVI does not have enough time to work with the student (AFB, n.d.).

Toronto District School Board addresses the duties of TSVI as “a large part of what Itinerant Vision Teachers do is help classroom teachers develop appropriate teaching strategies and accommodations for learners who are visually impaired”. The Vision Program of TDSB also hires Orientation and Mobility Specialists (O&M) who are licensed to train students who are visually impaired to travel within and to and from school independently and safely, with or without a white cane or dog guide (TDSB, Special Education Report, 2013, p. 66).
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Mainstream Classroom Teachers

Frieman and Maneki (1995) have indicated that “although classroom teachers are not expected and trained to teach braille to the students with visual impairments in their class, they should be able to support the work of those who do” (p. 137).

It brings a unique challenge for a mainstream classroom teacher to have a student in her class who is learning braille if she has never come across braille (Roe, Rogers, Donaldson, Gordon & Meager, 2014). By learning alphabetic braille, general education staff, peers and family members become a member in a braille reader’s literacy life. The knowledge of alphabetic braille will help the general education teacher while checks braille materials when the itinerant vision teacher is not present (Miller, 2001).

A Classroom Teacher’s Guide (2008), on Reading Strategies for Students with Visual Impairments outlines the practices and considerations when teaching braille. The classroom teacher should be informed that navigation and locating information on a Braille page require longer time than sighted peers reading print. It is also important to understand that when ordering and creating Braille, print for a student, extra time is required. The classroom teacher and TSVI must have good communication to ensure that materials are available when required.

English language learner Braille reader

Milian and Ferrell (1998) noted that the TSVI who are English Language Learners (ELL’s) lack the knowledge and understanding of the educational needs of those students. The author found that insufficient research is available in the area of teacher training and successful teaching strategies for ELL’s with visual impairments (as cited in Conroy, 2005). However, Wormsley (2004) identifies that ELL braille readers can benefit from the functional approach as compared to the traditional approach.
Role of others’ in promoting braille literacy

Teachers observe parents’ attitudes play a significant role in the degree to which children who used print accepted braille. In order to introduce braille successfully to the child with visual impairments; teachers, parents and educational assistants need to display the positive attitude towards braille (McCall, McLinden & Douglas, 2011).

In a mainstream classroom setting, the TSVI often has limited time for a student with visual impairment. This entails the development of a support team which includes professionals, classroom teachers, educational assistants (EA’s), peers, and parents with a consolidated philosophy and strategies for supporting the student to learn and develop (Staff Development, Including a parents section, para. 3).

“All of us who interact with these students-teachers of students with visual impairments, classroom teachers, parents, orientation and mobility instructors, and others-have a role to play in their literacy development” (Swenson, 2008).

Teacher’s Assistant

TA’s should be confident when using braille and not let their difficulties in learning the braille give a negative message to the student. They need to support the use of braille to others (J. Roe et al, 2014).

Parents

The researchers consider TSVI as the primary support person who provide resources for parents of children who are learning braille. The lack of braille books and materials for parents who
speak English as a second language is considered as one of the reasons why parents may not actively take part in their child’s braille literacy experience. Parents can experience the braille literacy experience of their child if they have access to braille books in their native language, therefore an itinerant vision teacher must play an active role in providing the resources (Cheryl & Zell, 2012).

Webster and Rao (1997) suggest that some schools have a parent volunteer program and parents can play an important part in their child’s life by volunteering in literary and extracurricular activities. Therefore, the extent to which parents’ understands and participates child needs impacts on his social adjustment (Webster & Rao, 1997).

The researchers argue that families and support staff are often not equipped with the necessary skills and knowledge of braille to help the student with braille reading because the TSVI has focused instruction to Braille reader. If family members’ are provided with the knowledge of braille and the right equipment, they can play an important part in fostering the development of appropriate and meaningful early emergent literacy experiences (Harrison, Cooch & Alsup, 2003).

It has been reported by the Division of Student Support Services (2011) of Newfoundland and Labrador that the parents of children with visual impairments are often dealing with grief and feelings of loss about their child’s vision and during this difficult time they should be supported by professionals who are working in this field (Division of Student Support Services, 2011).

Research has demonstrated that when parents and teachers shares the same goal of helping children and work in partnership, everyone benefits, students attain higher grades, better
performance on tests, attend school with punctuality, display proper behaviour, and show a positive attitude towards themselves and school (Canter, 1996).

Hannan, Cheryl and Sacks (2012) also advocates for the support required by family members and caregivers for the acquisition of braille literacy skills.

A Classroom Teacher’s Guide (2008), on Reading Strategies for Students with Visual Impairments recommends that the knowledge of braille for other students’ in the class who are sighted will help them in understanding and creating an inclusive environment for students who are learning braille. Likewise (J. Roe et al. 2014) encouraged the whole school to embrace braille and identify it as a valued means of communication.

**Braille Literacy Approaches and Programs**

Lorimer (2000) reported that the method of teaching people who are blind has been a contentious issue throughout the centuries. As the braille code has developed over the years, so have the methods of teaching braille reading and writing for children. Koenig and Holbrook (2000) found that young children need consistent Braille literacy instruction designed according to their individual needs (as cited in Farnsworth, 2007).

Miller (2001) recognizes that every student is a unique individual, and one single method of teaching literacy will not work for all students. It is essential to use different approaches according to individual student needs, especially for students with exceptionalities (Miller, 2001). A very similar response was given by Anna Swenson in response to the same survey conducted by Miller (2001) as Anna said, “I continue to feel that there is no ‘right’ way to teach Braille, given the many variables involved. Teachers should select the approach that best meets the needs of an individual child in a specific educational setting”.
Lamb (1998) advocates that when young blind children learn to read and write using Braille, the importance should be on developing literacy skills, with braille being considered as the medium.

Cunningham (2000) found that children are more motivated to learn to read words that are meaningful to them than words that are arbitrarily chosen by the teacher or that appear in a reading series as ‘high frequency” or “power words” (as cited in Wormsley, 2011).

As with all reading instruction, the optimum goals are reading for understanding, learning, and interest. In the early grades, with most students, the focus is on understanding the meaning after ensuring that students have foundational skills such as phonemic awareness, phonics, fluency, and vocabulary. The expansive goals of reading are the same for all students (Thompson & Vaughn, 2007).

**The individualized meaning-centered approach to Braille Literacy Education (I-M-ABLE)**

The researchers, Rex, Koeing, Wormsley, and Baker (1994) defines “the meaning-centered approach to teaching reading focuses on the reader’s knowledge and experience. The emphasis is on deriving meaning from what is written” (as cited in Wormsley, 2004, p. 4).

Wormsley (2011) describes the I-M-ABLE approach as the selection of the "organic Key Vocabulary." In this approach key Vocabulary words are chosen after conferencing between the teacher and the student about what is most important, meaningful, captivating, and fearful to the student, provoking a strong response. Wormsley (2011) mentioned that selection of the key meaningful words for students’ cause excitement, engagement, and emotion in students. As defined by Warner (1963), these initial vocabulary words should be emotionally significant to the student. Instead of a single letter that is not meaningful for the student, the student is taught
to read a self-chosen word that he or she is already familiar with. He further describes this approach as starting first as a child centered, but it also focus on the curriculum.

Pearson, Raphael, Benson, and Madda (2007) discussed reading instruction and advised a balanced between meaning and code learning as well as a balance between instruction that is curriculum and child centered. In the beginning I-M-ABLE concentrates on meaning, rather than code breaking and later on lessons include code or phonics instruction that is based on teaching letters of meaningful words that the child has learned to recognize (as cited in Wormsley, 2011).

**The language experience approach**

“The language experience approach is an approach in which the student’s own language and experiences are used to create meaningful reading material. This approach allows the student to observe how writing is produced and read words with which he/she is familiar” (Sarah, 2013). The researchers (Lee & Allen, 1963) define this approach as an activity-based writing lesson that helps students see the connection between experiences, what is spoken, and what is written. Following an experience such as a field trip, the teacher involves the students in a discussion of their experience. As they talk about what they did, the teacher records their words on large chart paper and shows the connection between sounds and written letters by sounding out the words as she writes them (as cited in Paula, 2005)

Similar to what other researchers said, Wormsley (2011) explains that the language experience approach (Dixon & Nessel, 1983) can also be used to make stories. In this approach, the TSVI and the child jointly write a story using the child's words about an experience that the child had or about a topic of significance to the child. Once the story is completed, the TSVI and student read the story together several times until the student mentions that he is able to read the story on his own. The teacher assists the student in making a notebook to hold the stories that the
student and teacher have written and reads them several times with the student (Wormsley, 2011).

**The functional literacy approach**

Statistics Canada and Organization for Economic Co-operation and Development (OECD) defines functional literacy as, “the ability to understand and employ printed information in daily activities at home, at work, and in the community—to achieve one’s goals and to develop one’s knowledge and potential” (as cited in Canadian Council on Learning, 1997, p. 14).

Wormsley (2004) also elaborates on the functional approach to teaching braille literacy as the use of literacy in daily life in performing everyday tasks such as making grocery lists, reading recipes, using automatic teller machines, paying bills, filling out job applications, reading instruction manuals and other tasks. Teachers choose with the student a key vocabulary word from a list of words that student is familiar with. Motivation to learn and read the word greatly depends on how much the student is emotionally attached to that word; therefore it is very important to respect the choice of words that the student wants to learn (Wormsley, 2004, p. 8).

**The skills-centered approach**

Rex et al. (1994) described “the skills-centered approach focuses on decoding print symbols into words and emphasizes the component skills in reading” (Wormsley, 2004. p. 4).

**The literature-based approach**

Rex et al. (1994) defines “the literature-based approach is a meaning centered approach that utilizes interesting and challenging children’s literature and focuses on the meaning, interpretation, and enjoyment” (Wormsley, 2004. p. 4).
The balanced approach

Wormsley (2004) explains “the balanced approach is an interactive approach that selects from all of the various approaches according to the needs of the learner and the context of instruction” (p. 4).

Order of teaching Braille alphabets

Hampshire (1975) notes that “one of the earliest skills for braille literacy development is the ability to name individual characters correctly”. Struggle in learning this foundational skill hinder in the acquisition of learning more complex braille-reading skills later on, such as producing and joining the letter sounds. The researcher further highlight the significance of naming braille letters correctly as an antecedent for braille reading, however, not enough research is available on effective methods for teaching this skill and it is rarely incorporated in the Braille curriculum (cited in Toussaint & Tiger 2010).

Swenson (2008) remarks that there is nothing wrong about the "letter of the week," which is a frequently used approach in kindergarten (KG) classes, nor is it essentially the most successful practice to introduce the letters of the alphabet in order. The researcher notes that besides using both approaches, the KG students may be more interested and invested in their learning as they choose the letters and words with which they have an emotional connection with the support of TSVI (Swenson, 2008). And as soon as they learn few alphabets and words, they start to read and write sentences about people, places and activities that they understand (Swenson, 2008).

McCall, McLinden & Douglas (2011) stressed the importance of the order in which braille symbols are taught to minimize the confusion of reversals and inversions etc. (McCall et. al, 2011).
The Mangold Braille Program of Tactile Perception and Braille Letter Recognition

Sally Mangold (1973), designed “The Mangold Braille Program of Tactile Perception and Braille Letter Recognition,” which is used to teach tracking and beginning Braille. It teaches the tactile perception, recognition of symbols, surfaces, geometric shapes and braille alphabet to children. The students gain the ability of recognizing tactile symbols by touch and read letters, in a right way without any confusion. D’Andrea (2009) describes the program created by Mangold as a series of 29 lessons to improve braille reading habits and letter recognition, which indicated that 90% of braille readers in Mangold’s study benefited from this approach.

The following is the order of teaching letter names:

- Teaching g, c, and l.
- Review the previous letters and introduce the letters d and y.
- Review the previous letters and introduce the letters a and b.
- Review the previous letters and introduce the letter s.
- Review the previous letters and introduce the letter w.
- Review the previous letters and introduce the letters p and o.
- Review the previous letters and introduce the letter k.
- Review the previous letters and introduce the letter r.
- Review the previous letters and introduce the letters m and e.
- Review the previous letters and introduce the letter h.
- Review the previous letters and introduce the letters n and x.
- Review the previous letters and introduce the letters z and f.
Use of technology in braille literacy

Johnson (1989) argues that it is important to realize that when interacting with the sighted world, children who are blind or visually impaired will not use Braille; mostly, they will use computer word processors to produce print (as cited in Farnsworth, 2007). Itler (2009) encouraged the use of technology is in all curriculum areas, mainly in the discipline of language instructions. He also added the benefits of using technological devices as developing the feeling of liberation, determination and encouragement they need for becoming literate (Itler, 2009). Additionally, Samuels (2008) elaborate on the technological devices that are used by students who are visually impaired. He described the use of portable devices which are similar to laptop computers enabling the student with visual impairments to type notes and read them back through a braille display. The use of the software is saving the time in producing materials for braille readers, such as textbooks (Samuels, 2008).

The special education report (2013) of the Toronto District School Board informs that assistive technological devices will be used by some students with visual impairments to access the curriculum. The TDSB Vision Program staff will demonstrate how to use these assistive technological devices, such as, a laptop computer with screen enlargement program and/or speech output, a braille embosser (printer), a scanner, a portable braille note-taking device. The special education report (2013) also acknowledges that the advancement in assistive technology benefitted the students with visual impairments to access the curriculum quickly and independently.

Inclusion

Kenyon (2010) reported that forty years ago in Canada there were several residential schools for the students with visual impairments, where all students were expected to learn
braille but now there is only one school: W. Ross Macdonald School for the Blind and Deafblind in Brantford. Several researchers (Chandler, 1980; Garcia, 2003; Liddle, 1991) indicated that children who attended residential schools for students who are visually impaired had an isolating experience because had to live away from their homes (as cited in Boman 2006).

Education Committee, National Coalition for Vision Health (2003) pointed out that “In Canada, with only one traditional residential school for the blind, approximately ninety-five percent of students who are blind or visually impaired, including those with additional disabilities, are enrolled in inclusive educational settings” (p. 1).

On the other hand, there are several researches that indicate the disadvantages of integrating students with visual impairments in a mainstream classroom setting. National Braille Press reported that the decline in learning braille literacy for school-age children can be attributed to their integration into the public school system, where less time is assigned for learning braille.

Bygone (2010) also suggests that the integration of children who are blind in the mainstream classroom settings provides less one-on-one time between teachers and students and therefore, less consistent braille instruction, resulting in many students as being functionally illiterate.

Webster, Alec, and Roe, Joao (1997) research suggest that when a child with visual impairment is integrated in a mainstream classroom for the first time the way his peers react is also important. There is the probability of overprotection, of teasing, of social exclusion or of bullying. Some children with sight may have difficulty in understanding to how or what people see, leading to some confusion when attempts are made to integrate a child with reduced vision in activities dependent on clear sight (Webster et al., 1997).
On the other hand, there are several researches that suggest the activities and indicate the benefits of integrating students with visual impairments in a mainstream classroom setting. A research conducted by Sacks, Hannan, Erin, Barclay, and Sitar (2009) suggested the use of literacy activities to promote inclusiveness in a mainstream classroom for developing and strengthening friendship, social acceptance, communication skills and problem-solving for students with visual impairments (Sacks et al., 2009). One of the activities for inclusion presented by J. Roe et al. (2014) is peer evaluation, means that children can share their work orally or in braille or written in print so that everybody in the class can contribute in peer evaluation.

Sacks et al. (2009) found that by scheming a strong integrated literacy base curriculum which focusses on social experiences (such as social stories or dialogues reading), creates positive outcomes for students.

J. Roe et al (2014) research further clarifies the meaning of inclusion as, to include a child means that they have an opportunity to develop the skills they need to be able to fully engage, it does not mean doing the same thing what their peers do. The researcher notes that too much focus is placed onto adapting and modifying everything sighted peers are doing so that the child using braille does the same. The emphasis needs to be more on the outcomes we are hoping for, for the child using braille.

Student Support Services (2011) of Newfoundland and Labrador states that students with visual impairments must have the same discipline rules as for other students in class. Otherwise, other students in the class will notice that the student with visual impairment is treated differently and they will do the same (Student Support Services, 2011). But in terms of extra-curricular or recreational activities for students with visual impairments Canadian National
Standards (2003) reported that recreational activities provide the same experiences and benefits for students who are visually impaired as they do for their peers who are sighted. However, when the activities are not modified for the students who are visually impaired, they can be frequently excluded from such activities. Johnson (1996) believed that the concept of integrating visually impaired students into regular classrooms is a good one. He concluded that most of the students with visual impairment function well in a fully integrated program.
Chapter 3: METHODOLOGY

Nature of this Research

When conducting research, it is very important to choose the most appropriate method for what is being investigated. Marshall and Rossman (2006) claimed that in qualitative inquiry, initial curiosities for research often come from real-world observations, emerging from the interplay of the researcher’s direct experience, tacit theories, political commitments, interests in practice, and growing scholarly interests. All of the above reasons for conducting qualitative research particularly my direct experience formed the selection of my topic. Strauss and Corbin (1990) claim that qualitative methods can be used to better understand any phenomenon about which little is yet known. They can also be used to gain new perspectives on things about which much is already known, or to gain more in-depth information that may be difficult to convey quantitatively. Locke, Spirduso, and Silverman (1993) argue that “every graduate student who is tempted to employ a qualitative design should confront one question, ‘Why do I want to do a qualitative study?’ and then answer it honestly” (p. 107). From the researcher’s experience of working in the field of education with a visually impaired student and learning Braille at the same time, there are several unanswered questions that I am interested in investigating. Qualitative research can sometimes provide a better understanding of the nature of educational problems and thus, add to insights into teaching and learning in a number of contexts (Anderson 2010).

The research began with my initial compilation of a literature review focusing on strategies used in teaching braille followed by interviewing two itinerant teachers face-to-face, subsequently proceeding with an in-depth data analysis of their interview transcripts.
Procedure

Instruments of Data Collection

The primary means of data collection were through interviews to gain insight on selecting braille literacy approaches used by the itinerant vision teachers, the role of others’ in promoting braille literacy and inclusion of student with visual impairments in mainstream classroom settings. The additional questions for the interview were developed and tested with my research professor, MTRP supervisor and peers. Creswell (2013) indicated “refine the interview questions and the procedures further through pilot testing” (p. 164).

Both interviews were conducted at a time scheduled by the participants and myself, at a location of their choice. The interview protocol was handed to participants on the day of the interview. In each interview 15 semi-structured questions (see Appendix B) were asked and each interview approximately took 35-45 minutes. The interview was audio recorded for the purpose of clarity and not missing on any information. By audio recording the interviews, I was able to focus on listening to the responses and asked for further clarification.

Participants

In order to develop my research and collect data on the Braille literacy strategies that teachers use, and other factors involved in promoting braille literacy, it was important to find participants who qualified as a teacher of students who are visually impaired (TSVI) and who practiced teaching braille to students in mainstream classroom settings. Through my interviews with my participants, I gained data regarding braille literacy strategies and what other measures were adopted by TSVI and other personnel to create inclusive learning environments for students with visual impairments.
Two itinerant vision teachers who had several years of experience working as an itinerant vision teacher who were willing to speak about their experiences were selected for this research study. Both participants in this study were discussed under assigned pseudonyms.

One of my participants Karen, has been teaching as an Itinerant vision teacher and Orientation & Mobility Instructor. She has been with the board for 34 years. First, she started teaching as an unlicensed teacher to adults who are blind and deaf-blind. Later on, she became a Specialist Teacher of the Blind and an Orientation and Mobility Specialist (O&M). She has been travelling around Toronto to different schools where children who are blind and deaf-blind are integrated into regular schools. She has two main jobs, to teach Braille to students with visual impairments as well as to teach them orientation and mobility skills. I became acquainted with Karen, during my time spent as a Special Needs Assistant (SNA) in a kindergarten classroom with a local school board. Karen was an itinerant vision teacher in that class, who was teaching a child diagnosed with Lebers Congenital Amaurosis (LCA). I knew that as an itinerant vision teacher, she would be very knowledgeable about braille literacy and would be able to draw upon a wealth of experiences. When asked to consider this research study, she readily agreed.

The second participant, Cathy was selected based on a referral from my other participant. Cathy has been working as an itinerant vision teacher and Orientation &Mobility (O&M) instructor in the Vision Program with a different school board for 32 years. Cathy graduated from the teacher’s college with a combined degree in teacher education and teacher of the blind program. Presently, she holds a senior position in her department and performs other duties. Her job also involves teaching students with visual impairments in mainstream classroom settings in different schools.
The expertise of participants has provided me with useful information in formulating my research and practice as well as advice for setting up programs when working with students with visual impairments.

I found both extremely knowledgeable and helpful. At the moment, both participants are taught at different schools. Once my research topic was finalized, I contacted the participants and they agreed to participate in my study.

**Data Collection and Analysis**

Data for this study was collected in a number of ways. Throughout this research process, I took notes from previous literature reviews, during my interviews with the participants and other information used for the purpose of drafting the final report.

I interviewed two itinerant vision teachers, by using semi structured and unstructured questions that were handed to them in a questionnaire form on the day of the interview. The questions were intended to minimize bias, and allow teachers to express themselves without feeling intimidated or judged. Please refer to Appendix B to view the list of interview questions.

Both interviews were audio-recorded using iPad and cell phone, then transcribed by hand. The transcribed texts were read several times, and important information was underlined. Relevant quotations from the transcripts were circled, color-coded, cross-referenced, and organized visually in groups according to themes and sub-themes. This re-organization developed the basis for the conclusions drawn from the data, as parallels were drawn and patterns became clear. Transcript data were then analyzed in connection with the literature review and evaluated.
Based on my research process and content of the research study that I gathered, I was able to draw limitations to the study, recommendations for further study, implications for practice, and conclusions.

**Ethical Review Procedures**

I followed the ethical review procedures of conducting research for the Master of Teaching program by giving participants a consent letter and a consent form (see Appendix A for Letter of Consent) prior to the interviews in which they were required to read and sign if they agreed to participate in the interview. One copy of this consent was provided to the participant, and the second copy was kept in the records of this study.

In the letter, I have provided all the necessary information regarding the data collection, confidentiality regarding identity, time required, and the right to withdraw from studies at any time. I strictly followed all the procedures outlined in the consent letter during the course of my research. When introducing and discussing the participants, I excluded any personal information. I used pseudonyms for both participants and institutions involved in my research study. Once I completed the interviews, I transcribed the audio recording, read over the results and compiled my findings. My research supervisor has reviewed all results prior to being finalized, of which each participant has been made aware of and has given consent. For answers to any questions and concerns, participants were informed to contact myself or my research advisor.

**Limitations**

There were limitations to the research, affected by a number of factors. For instance, the number of interview participants was limited. Interviews with a greater number of itinerant vision teachers may have provided with the detailed insights into certain areas of this research
that were lacking information such as, additional support offered to students with visual impairments.

Another limitation factor of my study was not to observe the itinerant vision teachers and students during the process of braille acquisition. Much information could have been gathered if I observed them in class and finding out their perspectives in adapting to teaching strategies.

Also, in my research and the literature cited I did not focus on a specific age group of students or teaching divisions, the findings and the literature review both gives the general idea of braille literacy strategies used overall. Despite all of the above limitations, I feel that the research is still valuable.
Chapter 4: FINDINGS

In this section, I will be analyzing the statements made by my participants, Karen and Cathy, which were given the same interview questions (please see Appendix B for a list of interview questions) and analyzing how they relate to the major themes of my study by discussing them within the confines of a specific sub-heading related to that theme. Each theme will be analyzed as a separate entity, and the participants’ comments will be quoted and referenced throughout the analysis as I delve into each of the themes. Due to the broad nature of the topic, there is a lot of overlap between the sections, and a number of the subsequent or preceding sections may be referenced within each individual section. Discussions of the themes themselves, and how they relate to my overall research question and my literature review, are left for Discussion section of this paper, the fifth chapter. Within this chapter, the statements of my participants are collated and compared to each other with reference to the relevant themes that have been categorized to present the ideas in a more cohesive manner. The thematic groups are arranged as follows:

- Professional growth for a teacher of braille.
- The support offered to students.
- Factors to consider in setting up a braille literacy program.
- Key literacy approaches considered when teaching braille literacy.
- Importance of the knowledge of braille language for other people.

Professional Growth for a Teacher of Braille

*Teaching experience and training received:* The two participants in this study were asked about the number of years of teaching experience as a regular teacher and as an itinerant
vision teacher. I found out that both participants are highly experienced. My first participant, Karen has been teaching for a total number of thirty-four years and she started teaching as a unlicensed teacher to blind and deaf-blind students. In order to get a teaching license, she went to Teacher’s college in Ontario fourteen years ago. My second participant, Cathy has been teaching for twenty-seven years and she went to Teacher’s college in British Columbia.

To become an itinerant vision teacher and a Braillist, Karen took four levels of braille certificate and three additional qualification courses. Besides an itinerant vision teacher, Karen is also a certified Orientation and Mobility (O&M) Specialist with the largest school board, therefore she performs the role of itinerant vision teacher and O&M with her students. She defines an O&M Specialist as qualified personnel who teach blind people how to travel safely and independently with the white cane. Having qualification of O&M proved to be beneficial for Karen because when teaching reading braille literacy to students, they use their hands, arms, shoulders and understands how their body works. Karen further explained that every board is different in terms of hiring policies for itinerant vision teachers. Some boards only hire teachers who are dual certified as an itinerant vision teacher and O&M Specialist and some boards hire for both positions separately. If a teacher completed AQ Part-1 Teacher of the Blind, she can start working as an itinerant vision teacher in Ontario.

Cathy first started as an O&M instructor for five years. In 1987, Cathy attended a two year combined program in teacher education and teacher of the blind, which doesn’t exist anymore. She elaborated that, in Ontario just by taking AQ Part-1 Teacher of the Blind, is not enough for itinerant vision teachers to perform their jobs. After completing her specialized teaching degree from British Columbia, she took a course to get an Ontario teaching certificate and granted AQ Part 1, 2 & 3 Teacher of the Blind. To complete all the requirements to become
an itinerant vision specialist in Ontario, she also took a Braille exam within her first two years of teaching.

**The Support Offered to Students**

**Number of students:** When asked about the number of students both itinerant vision teachers have in different grades the responses varied as both of them works in different school boards and holds various job titles and responsibilities. Karen has twenty-five students in different schools starting from Junior Kindergarten to grade-12 and all of them are working at developmentally delayed level whereas Cathy, who is a lead itinerant vision teacher and performs administrative duties as well, has six students from grade 8 to 12 all in different schools in Aurora, Newmarket and Woodbridge. As both itinerant vision teachers have their students in different schools, their job demands a lot of travelling.

**Criteria for the given instructional time:** Both participants mentioned that the number of instructional hours they spent with their students depends on many factors. The amount of the instructional time Karen spent with each student is determined by the coordinator, depending on the kind and severity of visual impairment. If a student is blind, he gets more braille instructional time, which could be between 6 to 10 hours as compared to the student who has low-vision.

Cathy thinks it is unfortunate that she has to prioritize the students according to their needs and recognizes that the students never get enough time. She spends more time with younger students and with students whose vision is deteriorating versus older students who are dual users, using braille and print. Also, when her student receives a new technology, she spends more time with him until he familiarizes himself how to use it. Overall, the students who are completely blind gets the most instructional time. In Cathy’s words, “everybody is getting different levels of service. Daily instruction really takes it. You put it in when they are young and
then you back-off as they get older. The reason for teacher to back-off is to promote a sense of independence in students.

**Factors to Consider in Setting-up a Braille Literacy Program**

There are several factors that are kept in mind when setting up an individualized braille literacy program for students with visual impairment as all of them have different needs as indicated by both participants.

*Parents’ acceptance of braille literacy:* Karen said that when planning braille literacy program the first thing she does is to educate the family about the importance of learning braille as most of them believes that *braille is dead*. If the family is not supportive, the child would not be inclined towards the acquisition of braille and might want to use whatever vision has left. She added, “…you have to sell it to the family.” Sometimes family thinks that in this technological age there is no need to learn the braille and their child should use the computer and other assistive technology. Karen tries to make the family understand that since their child can’t see, most of his learning is going to be through ‘touch’ and in order for their child to be literate and to use the computer, he needs to know how to read and write braille. Family’ acceptance made it easier for an itinerant vision teacher to set-up a literacy approach that they will be using for their student.

*Braille environment:* Both participants create braille enrich classroom and school environment by putting braille everywhere, so that student can feel and understand that everything has a name, meaning and a label. To attach the symbolic reference to the objects, Cathy investigates the words, and objects that are meaningful to the students and makes braille label for each. Initially student in early grades just pretended to read braille by running his fingers but he got an idea that people with vision read a book or look at the pictures with their eyes and braille readers
are actually using their fingers to read and touch the tactile book. Cathy shared an example of the importance of creating braille enrich the environment for her JK student, “even though he was not reading it, but he learned that there is a word associated with that thing.” Cathy believes that creating braille enrich environment is not only beneficial for the student himself but also for other students in his classroom who developed an interest in learning Braille.

Once they created braille enriched environment, both participants work on teaching braille writing by providing brailler to their students from the very beginning. Even though students’ in early grades were not able to read and write braille but they got an idea that what is in their hand is coming on to the paper by pounding the brailler keys. Just like other kids who scribble on paper with their pencil, kids with visual impairment scribble by pounding randomly on the keys or sometimes on their brailler itself. The use of brailler at an early age strengthens the muscles of the fingers and hands which they have not developed at this stage.

At the same time when the student is practicing on writing braille literacy, Karen also teaches him the sound of the letters using a kind of multi-faceted scaffold approach followed by the reading and writing words, making sentences and telling stories. To enhance braille environment and learning, Cathy stressed on the use of flash cards, word boxes and tactile recognition.

**Differentiated instruction**

Whether to use a manual or an electronic brailler depends on students’ need. Cathy talked about differentiated instruction when one of her JK student who was a dual user throughout her school years was provided an electronic brailler as she was very small and petite with very weak muscular development. When using an electronic brailler, the student does not have to press keys hard as on manual brailler so it requires her to use less force and strength. Also, when students’
are practicing on manual brailler, the braille printing might be uneven or they miss a dot but when using electronic brailler the print is even. Even though it is an electronic brailler, it follows the traditional braille instruction of correcting the errors which is to take the paper out and use the tool or start all over again. One of the disadvantages of using an electronic brailler is that if the power goes out, it will stop working. Eventually her JK student did not like working on the electronic brailler so Cathy got her off of using an electronic brailler. She also talked about one of her student who was completely blind and very good in writing. The public library was having a writing competition all based on the poster which Cathy thought was unfair to her student. Therefore, she spoke to the librarian and asked for differentiated instruction for her student. The librarian agreed and gave a written synopsis for the student about what the poster should like. The student had lots of friends who gave him ideas, so he got 10 to 12 interpretations of the poster and finally won the competition.

**Inclusion in the mainstream curriculum**

Both participants emphasized that they try to follow as much as they could what the other students are learning in class. Cathy further elaborated, “we try to as much as we could to follow what regular class was doing. It didn’t always work, but when they had printing time that’s when we had braille time and when they have reading time that’s when we had reading time”. The student with visual impairment may not be learning the same letter that everybody else in the classroom is, but an itinerant teacher tries to mimic that as much as possible. It is very important for the student to know what the other students in his class are learning and the reason as stated by Cathy is, “…if he (student with visual impairment) doesn’t have a clue, then socializing with his peers is going to be really hard.” The expectation from every teacher is to include all of the students’ in everyday learning, depending on students’ needs. One of the roles
of the itinerant vision teacher is to give suggestions and support to the classroom teacher in terms of providing differentiated instruction to the student with visual impairment.

To integrate the student in the gym and art classes, the itinerant vision teacher speaks to the subject teacher ahead of time to find out what they are going to teach and suggest the ways in which the student can be accommodated. Karen further explained an example of accommodating her student in art class when teaching the colour wheel by saying, “if you (classroom teacher and other students) are working on the colour wheel, we (itinerant vision teacher and the student with visual impairment) are not doing the colour wheel, what we need to talk about is what colour are objects…” The student needs to understand how the colour attaches to an object to give it meaning rather than knowing its placement on the colour wheel. She added that in art class, she does not expect that her student who is blind will be drawing or in a gym he will be playing badminton.

In addition, both participants emphasized that they expect their student will be included in all aspects of the classroom in some way. Just like other students, their student will be a part of any group work. Karen observed how fascinating it is to watch students’ figuring out the ways to be a part of a group or acquiring new skills. One of Karen’s students, a 10 year old girl wrote a play and wanted to act in her play as well. The students came to Karen and asked her to put the play script in braille. In her own words, “…so I transferred it into braille but then they were trying to figure it out how she would know when it’s her part, so then we put stickers beside her name, so that when her part comes, she is reading along.” Karen further added, “…that is a very good example of inclusion as the other students’ were asking the itinerant vision teacher to include braille part so that their friend can participate as well.”
Flexibility and understanding between the classroom teacher and an itinerant teacher is very important to deliver a successful program, for example; if the braille reading material is not available, the teacher would read-aloud and transcribe the answers.

**Key Literacy Approaches and Order of Teaching Braille Alphabets**

Several factors are kept in mind when choosing braille literacy approaches such as; students’ proficiency of the English language, how much vision and hearing they have, and if they have other disabilities.

The findings indicated that both participants implemented functional approach when teaching braille. One of the reasons for using the functional approach is that it can be personally centered towards the child. Using this approach has surprised the teacher in terms of students’ ability to learn braille as in this approach, those things are taught that are meaningful to students’. Functional approach is beneficial for the students who had other exceptionalities as well. Once the student is familiar with the braille instruction, the teacher expands traditional braille literacy approaches into her lessons. Right from the beginning, the phonemic approach is used so that it is embedded in the learning, but the use of phonemic approach also depends on how much knowledge of the English language does the student have.

As mentioned earlier, under the subtheme of braille environment, Karen acknowledged the use of multi-faceted scaffold approach followed by the reading and writing words, making sentences and telling the stories and also pointed out that learning all these skills is a slow process. Similar to Karen, Cathy has used her imagination, creativity, following classroom lessons to teach braille literacy.

In addition to using different literacy approaches in teaching braille, both participants used different braille programs. The Mangold tactile recognition is nearly 200 pages of braille
program that Cathy used with most of her students. She describes it as a very descriptive program that teaches the mechanics of reading braille before it teaches the ability to read the individual letters, such as; tracking, identifying the same and different. The pushpin board and pins are used to track the lines and student is taught to find the ones that are different by using a pushpin on that letter. The student can do the exercises independently and learn to develop the tactile awareness and self-confidence. Once the student develops tactile awareness, then the next step is to introduce braille letters. When asked about the order of introducing braille letters, Cathy touched first on teaching the braille letters which are closely related in terms of dot placement in a braille cell. Once the student learns the letters with the similar combinations of dot, they moved towards the instruction of teaching the reversal order, such as letter E and I. She also mentioned a program on Braille Fundamentals, which is designed by The Texas School for Blind and Visually Impaired (TSBVI).

Kathy briefly touched on the research that has been done on the guidelines to introduce letters in order which is really helpful. She used a program from Royal National Institute for the Blind, called the Infant Braille Program and supported the use of her program because it teaches the letters in order that are placed according to the braille dots placement in a cell, very similar to what Cathy said about the order of teaching braille letters. She elaborated the sentence by giving an example of a letter A which is dot 1, and then B is dot 1&2, moving on to letter L which is dot 1, 2 &3. Teaching letters based on their placement of dots reinforce counting skills as well. When using the Infant Braille Program to teach letters, Karen use the words that a child might like. One of her student really like the word ghost and as Karen explains, “The word ghost in braille is very hard to read but they learn how to distinguish the feel of the word ghost compare to the word ball, because ghost is longer, more complex, ball is very simple and linear.”
Therefore, the first step is to understand and distinguish the difference between the two words and then practicing to break it down. In Karen’s own words, “we start to break it and understand and find the letter A, because it’s only dot 1, find the letter G that looks like a box, so you kind of abandon A, B, C, D, E, F, G. You have to go by how the letter feels.” This concept is easy to understand by someone who is just developing his literacy skills based on the feeling of touch, which involves lots of practice.

**English Language Braille Learners**

When deciding on braille literacy, an itinerant teacher looks into the English language knowledge of the student. If a student can speak and understand English language, the braille literacy approach for that student would be different than for the student who comes to school without any English at all.

**Use of technology**

In the past, when technology was not readily available, it was a time consuming task to prepare the braille materials manually. Nowadays, technology plays an important part in the acquisition of braille literacy. The use of computer software to produce Braille materials is also an efficient way. When the itinerant teacher does not have enough time to produce braille, or if the student does not have an internet access at home, the teacher scans the material in braille, transfer it on a USB for the student to take it home. An MP3 player is also widely used for teaching listening skills.

The use of technology for learning braille literacy have made things easier for the students, such as; the use of electronic brailler for student with weak muscular development. As the society is progressing towards a paperless environment, teachers are incorporating more use of the technology when teaching braille literacy; the use of talking books or other kinds of
assistive devices is another example. However, with all these technological advances, Cathy commented, “…so I think technology has made all of this easier. It has not removed all the barriers, but it made things much easier for me.”

**Importance of the Knowledge of Braille Code for Other People**

Both participants, Cathy and Karen, think that everybody needs exposure to braille and understands that it exists, what it does and what it means to the person who is learning it.

**Classroom teacher**

When asked about the importance of the braille code knowledge for teachers, both participants agreed that it is not important. However, they think it would be nice if they have some understanding of the braille code. Cathy offered teachers to learn braille from her during school hours, but none of them showed any interest. She justified her comment about the teachers by saying, “…but they don’t have time!” Even though the understanding of the braille code is not important, Karen further elaborated that the classroom teacher must come to her and ask for guidance if she sees that the student is struggling in completion of a task. The itinerant vision teacher demonstrates the strategies to use the classroom teacher to use in her absence.

The braille components that Karen explains to the classroom teacher includes; what the braille looks like, how it compares to print, what their print worksheet looks like compare to the braille worksheet, that braille takes a lot more space and that it takes longer to read.

Cathy shared an example of a teacher whose son was diagnosed with Retinoblastoma, a rare type of eye cancer and she learned braille to support her son.

**Other school personnel**

Educational Assistant (EA’s) are usually the ones who learn braille but they are not proficient enough. Cathy mentioned that some of her EA’s took a braille course from Mohawk
College or learned it by using Duxbury software in which letters or words are typed in regular print and then it translates into braille which can be seen on the computer screen.

Karen added that she usually talk with other teachers and staff, including, librarian, computer teacher, cafeteria and lunchroom staff to let them know what the braille looks like and how it is valuable for the student. The computer teacher can provide differentiated instruction to the student by putting braille keys on the keyboard. This awareness teaches the school personnel how much effort and costs is involved in producing the braille content.

*Other students*

Both participants started a *Braille club* in school for other students’ as they believe that peers in class needs to understand what the braille can do for that child with visual impairment. To inform other students’, they put up posters and made little puzzles in braille. This also provided an opportunity for social interaction with each other as they learn together. Karen observed, when seeing other students’ learn braille, it developed interest among other teachers’ to understand what it means. By joining the *Braille club*, other students’ value braille as a literacy medium and they acknowledge that the child who is learning in braille is different and it is okay to be different.

*Family members*

Karen and Cathy, both agreed that it would be nice if the family have a knowledge of braille but it does not mean that they need to understand the braille code. Karen emphasized what the family needs to know is why learning braille is important and to give support. By understanding braille, the parents will realize that their child needs more space in the house to put his braille materials away.
**Equity and Inclusion of Students with Visual Impairment**

Both participants declared that their boards practice the mainstream policy for equity and inclusion of students with visual impairment inside and outside the classroom. The teachers cannot say that they do not want that student in her class because of his exceptionalities.

Karen and Cathy, both strongly identify the advantages of integrating student with visual impairment in a regular classroom. Inclusion of these students’ teaches other peers in class to respect the differences in them. When all these students will step-out in real life and see other people with disabilities, they will accept them as who they are. Karen emphasized that a part of her job is to teach her student from an early age how to accept themselves and how to deal with other people who are not very nice to them. One of her students cried for months and Karen finally said to her, “…if you are crying all the time, will anyone want to be your friend? So she has to learn how to be a bit tougher.”

Integration in a regular classroom teaches the life skills to students with visual impairment. It is a reality that most of their life, they will be around people who are sighted, so they might as well get practice how to cope with the feeling of being different. Besides all the positive outcomes of integrating student with visual impairment in a regular classroom, Karen shares that, “sometimes in the older grades, grade 7, 8 & 9, that’s the terrible time because nobody wants to be different and a lot of children get bullied and it’s not an advantage.”

Cathy touched on an option for the students’ to attend a specialized school for the children who are visually impaired, blind and deafblind. She commented that for some students, it is the right place to go. She shared her feelings by saying, “I just can’t! At age 6 sending your
child out the door on Sunday afternoon and seeing them again on Friday evening because they have to stay overnight. I can’t imagine!”

**Role of teachers and support staff**

The students with visual impairment are equally provided with the resources and opportunities they need to succeed. To create an equitable learning environment the collaboration between the classroom teacher and an itinerant vision teacher is very important. The classroom teacher needs to understand the job of an itinerant vision teacher. If the other students in class are doing a worksheet and the classroom teacher wants a student with visual impairment to do the same thing, then she has to provide it ahead of time so that it is ready on time for the student. If the classroom teacher is using a textbook for the whole class, then the same book is ordered in Braille ahead of time. The itinerant vision teacher taught the student how to open and find the right page number in his braille textbook so that when the classroom teacher is reading from a regular textbook, the student can follow her. To provide equitable learning experiences for the student, the classroom teacher needs to understand that the student with visual impairment needs extra time to complete the task as well as need different supplies. Cathy spoke about one of her students who was gifted and lacked peer-group at his school. To provide him the right kind of learning environment, he attended a program for gifted students once or twice a week.

Student’s with visual impairment needs more time with the itinerant vision teacher and if not possible, they should be provided with an extra support of an educational assistant. Cathy elaborated this with an example of deaf-blind students’ who are accompanied by a sign language intervener, so that they can interact with the world as they cannot do this on their own. However, she clarified this by saying that, “I’m not saying that our kids need that much, but the more
support they get at a younger age, the less they need as they get older. They just need more support.” One of the participant said that until about grade 3 or 4, there is usually a special needs assistant in the classroom to provide support. She also believes that the teachers must treat her student like anyone else, especially in terms of dealing with his behaviour or when he is disruptive in class.

Extra-curricular activities

To involve students’ in regular activities, the participants agreed that their school boards look into ways of how it can make things happen for the student. The suggested outcome could be different than other students, but there will be some way to make learning equitable. During gym and field trip, there is always someone to support the student. If planned ahead of time and depending on itinerant vision teacher’s schedule, she or O&M specialist might accompany the student, otherwise someone else or a parent from the community is invited to go on a trip. The reason for accompanying an adult is to ensure that someone is describing to student what is happening around and also for safety on the field trip. Cathy shared an example of when the class was going on a skiing trip and she requested for a volunteer from the Canadian National Institute for Blind (CNIB) ski club. Cathy proudly talked about the opportunity when her students’ went on a school field trip to Chicago and New York.

Interestingly, both participants mentioned that parents can always help on a field trip, but it is good if someone else beside the student’s parent would accompany on a field trip especially if the student is in older grades. The student’s parent can go, but it is preferable if the parent stay with the other group and a different parent supports the student with visual impairment. In Cathy’s words, “it wouldn’t be cool!”
**Parent’s involvement and awareness**

In order to provide equitable and inclusive environment for the student, Karen believes that it is important for the parents to understand what their child can do and she makes it a priority to build a rapport with the family. She felt that sometime parents’ do not want an itinerant teacher to have influence on them, as they want to keep their lives separate from school, and she has to respect that.

She thinks that more work should be done to provide emotional support for the parents. A large number of parents emotionally struggle with the fact that their child will not be able to drive, or if their child will get married as they do not know what the future holds for him. Especially this whole experience is painful for the parents who come from a different culture as they might not have enough services in their country for people who are blind. As an itinerant vision teacher, she tries to get through the families explaining them that the child who is blind can do whatever he wants. They inform parents that the expectation for their child is to lead an independent life and perform life skills effectively.

Parents are also told that they have a choice to enroll their child in a specialized school for blind children only. Cathy identified that one of her students who was in early primary grade was sent to the school for the blind children because the family was not very positive about the whole situation. She shared some experiences of people who attended the specialized school in 60’s and 70’s, as they could not attend the regular school at that time by saying, “…they still have scars that my parents sent me away.”

**Other resources available:**

The participants expressed their concern that parents are not provided with enough support and training to help their child with visual impairment. In the past, CNIB used to provide
services for parents, but they do not have the facility for those services anymore. They also agreed that there are still some programs available for the parents and they need to be informed about them.

When asked where the student gets a brailler from, Cathy mentioned that the Assistive Devices Program under Ministry of Health contributes 75% and parents pay 25% towards the purchase of a brailler.

In addition to the services offered, they both talked about W. Ross Macdonald School for students who are visually impaired, blind and deafblind in Brantford, Ontario. It is a Ministry of Education, Kindergarten to grade 12 boarding schools for girls and boys, where parents can send their child for free. The school prepares its students’ with specialized skills and training which builds their self-esteem. In addition, the student feels more confident when they move back to the regular school. Karen added that some parents want their child to attend this specialized school, but she also has questioned, “…if they are being isolated how they will advocate for not being that way. People sometimes are just cruel and they don’t know that they are being cruel, so they have to learn how to cope with that.”

Besides W. Ross Macdonald School, Cathy mentioned two other specialized schools for the people who are blind, one in Vancouver and the other in Halifax. The specialized school in Vancouver was closed down in the 70’s because the parents’ said, “we don’t need that, shut it down. We want our kids integrated.” Whereas, the school in Halifax is now used as a resource center which also runs short-term programs. The students from other cities can go to this school and they are taught technology and intensive braille. Moreover, they do not have to stay there for a long time as in the other school in Brantford. The student come to this school, gets intensive support they needed and once they finish they go back. In contrast to her opinion about the
specialized boarding school, Cathy sees the school in Halifax as a positive model. She commented by saying, “I would have loved to have some of my students had an opportunity to do something like that where they could meet other students’ who are blind and have low vision. Cathy thinks that she is very fortunate in terms of receiving support and services from her board. Her office once resided in the same building as the school superintendent and she had a direct line to her office. Whenever, Cathy needed help to support her students, she would call the superintendent and gets what she wanted which was not possible if she was working in a big school board.
Chapter 5: Discussion

Introduction

The following chapter continues the discussion of the previous chapters in several ways. First, the chapter begins with a further examination of both the literature review (Chapter 2) and the findings of the interview (Chapter 4). Both chapters are compared and contrasted with one another in order to determine any connections between the two. Second, the findings are summarized and I present the reader with some literacy strategies for braille reading and writing. Third, the recommendations and implications of this study towards the educational community and the researcher are discussed. Finally, the chapter concludes with a discussion of the limitations of this study and potential areas for further examination.

Reflections: The Literature and the Data

Qualifications and Teaching Experience

Both participants went to Teacher’s College, took Additional Qualification (AQ) courses and completed Braille certificate courses to become a Teacher of Students who are Visually Impaired (TSVI) or a Vision Itinerant Teacher. They have been working for more than two decades as an itinerant vision teacher. The participants are also qualified as an Occupational & Mobility Specialist (O&M), thus performing the job responsibilities of both. The research (Johnson, 1996; J. Roe et al. 2014 & others) also confirms the requirement to become a specialist teacher is to take braille proficiency tests and receive special training.

Number of Students and Instructional Time

Both itinerant vision teachers were assigned different number of students that they teach. Karen has 25 to 30 students in different grades. Johnson (1996) mentioned the workload of an
itinerant teacher as of 25 to 30 students. However, Cathy had less students because of her other administrative responsibilities. Both the participants and research indicated that number of instructional hours spent depends on several factors. The *Special Education Report* by TDSB (2013) declared that the extent of support depends on the severity of the eye condition and the results of the Functional Assessment of the student. Both participants spent more instructional time with students who are blind and in junior grades as compared to dual users of braille and print. Mani (1998) said that children who are in primary grades should be given direct support of a specialist teacher. No matter how much time was given to each student, both participants felt that it was not enough. *American Foundation for the Blind* mentioned the number of instructional hours for these students depends on the age and development of students.

**Braille Environment**

There are many interesting correlations that can be found between the findings of the review of literature (Chapter 2) and the findings of the data collection (Chapter 4). Both participants provided their students’ with an opportunity to explore braille right from an early grade. They created “braille-rich” environment for their students, their peers, general education teachers and other staff members by organizing braille clubs and other activities. Several researchers (Wormsley, 2000; J. Roe et al., 2014; Swenson & Cozart, 2010) encouraged to creating a “braille-rich” environment for all students in mainstream classroom settings by displaying braille materials, braille centers and starting a braille club in school.

**Braille Literacy Approaches and Programs**

Both the researchers in the literature review and the participants of this study mentioned that several factors are kept in mind when selecting braille literacy approaches such as; student’s
proficiency of the English language, assessment of vision and personal interests and needs of the student (Koeing & Holbrook, 2000; Swenson, 2001).

The findings from the data collection revealed that both participants begin teaching braille by using functional approach as it can be personally centered towards the child. By using this approach the participants feel that their students’ are motivated and eager to acquire braille literacy as the words and sentences were personally selected by them. Cunningham (2000) also found that children are motivated to learn to read words that are meaningful to them as compared to the words that were chosen by their teacher. Once their students’ become familiar with the braille instruction, both participants bring in other traditional approaches.

The other literacy approaches that were outlined in the literature review but were not addressed by the participants were: language experience approach, skills-centered approach, literature-based approach and balanced approach.

In addition to using different literacy approaches, both participants used different braille programs to teach reading and writing. Karen briefly touched on a program called the Infant Braille Program when teaching order of braille alphabets which was very similar to what Cathy used with her students called “The Mangold Braille Program of Tactile Perception and Braille Letter Recognition”. Both programs prepared students’ to understand tactile symbols by touch and read letters in a right way without any confusion. The research also stressed the importance of the order in which braille symbols are taught to minimize the confusion of reversals and inversions etc. (McCall et al., 2011).
Role of others’ in Promoting Braille Literacy

There were several links between the findings of the literature review and the data in regards to the role of others, including teachers, support staff, students and parents to promote braille literacy. The research and findings both indicated that everybody who interacts with students who are visually impaired play an important part in his life. The researchers (McCall, McLinden & Douglas, 2011) observed that in order to introduce braille successfully to the child with visual impairments; teachers, parents, and EA’s needs to display the a positive attitude towards braille.

Both participants agreed that it is not important for the general education teacher to have knowledge of the braille code. However, they think it would be helpful if they have some understanding of the braille code. The literature also state that, “although classroom teachers are not expected and trained to teach braille to the students with visual impairments in their class, they should be able to support the work of those who do” (Frieman and Maneki, p.137). Classroom teachers also play an integral part in creating equitable classroom environments when they implement the suggestions given by an itinerant teacher to provide accommodation and modification for the braille learner’s needs.

There were several links between the findings of the literature review and the data in regards to role of others, including teachers, support staff, other students and parents. The participants acknowledged the important role of parents in promoting braille literacy but they expressed their concern that parents do not have enough support and training to help their child. Cheryl and Zell (2012) argued that if parents have access to braille books in their first language, they can take active part in developing their child’s literacy; therefore an itinerant vision teacher must play an active in providing the resources.
Inclusion

The participants strongly addressed several advantages of integrating students with visual impairments in a mainstream classroom setting. They think that by integrating in a mainstream classroom, the student will learn the functional skills that are necessary for their survival when they step into the outside world. Both participants emphasized that they try to follow as much as they could what the other students in class are learning. To integrate the student with visual impairments the itinerant vision teacher speaks to the subject teacher ahead of time and suggests the ways in which the student can be accommodated. Both participants shared an example of how they accommodated and modified the poster competition and drama script for their students’. A recent research conducted by J. Roe et al. (2014) highly supported the response of both itinerant vision teachers.

The researcher (J. Roe et al., 2014) clarifies the meaning of inclusion as, to include a child means that they have an opportunity to develop the skills they need to be able to fully engage, it does not mean doing the same thing what their peers do. Both participants expect that their students will be included in all aspects of the classroom in some way. While the participants and several researchers mentioned the benefits of integrating student with visual impairments in mainstream classroom settings, there are several researches that indicated the disadvantages of integration.

Bygone (2010) noted that integration of children who are blind in a mainstream classroom settings provides less braille instructional time. Both participants briefly reported that there is only one residential school in Canada and it is up to the parents if they want to enroll their child in residential school settings. They also shared some experiences of people who once attended the residential school and called it as an isolating experience. Several researchers
(Chandler, 1980; Garcia, 2003; Liddle, 1991) indicated that children who attended residential schools had an isolating experience because they had to live away from their home (as cited in Boman, 2006).

**Implications**

This study has several implications for the field of teaching. Firstly, it advocates for the importance of learning about students with visual impairments, since they are a part of a mainstream classroom setting. As teachers of students with exceptionalities it is imperative that we look into all aspects of learning with the school community and the outside world for the success of our students.

Through this research and the application of strategies identified and supported by research to improve results, students with visual impairments who use Braille as their primary learning medium can improve their reading and writing literacy. The increased challenge of integrating students who are visually impaired in a mainstream classroom setting requires a general education teacher, support staff and other students to have some background knowledge of braille literacy.

This research also explores the backgrounds and training required to become an itinerant vision teachers and it can be helpful for teacher candidates who are interested in working with students who are visually impaired.

**Further Study**

As previously stated, the goal of this research project was to examine braille literacy strategies and gain insights for my own practice when working with students who are visually impaired. My goal was not to discover findings that are common across both research
participants, but to give me the chance to relate the information I acquired to data that has been collected by other researchers in the past. As this research paper has focused on students with visual impairments, further research on students with visual impairments and other exceptionalities would be valuable. It would also be beneficial to conduct research on literacy strategies when teaching contracted and uncontracted braille to English language braille learners as I experienced firsthand the problems encountered by them and itinerant vision teachers. Not enough research is available on the significance of naming and ordering of teaching braille letters and punctuations, and the assistive technological devices available for braille learners, further research in both areas would be beneficial.

Lastly, a research on the process of becoming an itinerant teacher would be extremely helpful for teacher candidates like myself, who would like to become an itinerant teacher or a teacher of students who are visually impaired (TSVI).

Anna Swenson (2001) summed up the exploration of this topic well by stating, "I continue to feel that there is no 'right' way to teach braille, given the many variables involved. Teachers should select the approach that best meets the needs of an individual child in a specific educational setting. There are certainly anecdotal success stories on both sides of this debate. While further research may clarify best practice in certain situations, expanding, rather than narrowing, the range of options will enable teachers to make the best instructional decisions for their students” (as cited in Miller, 2001).
References


Appendix A: Letter of Consent for Interview

Date: ___________________

Dear ___________________,

My name is Rooma Nadeem, a Master of Teaching student at the Ontario Institute for Studies in Education of the University of Toronto (OISE/UT). I am researching about “Teaching reading and writing literacy approaches in uncontracted braille for students with visual impairments” for the purposes of a graduate research project. I think that your knowledge and experience will provide insights into this topic.

I am writing a report on this study as a requirement of the Master of Teaching Program. My research supervisor who is providing support for this assignment this year is Geraldine Burns. The purpose of this requirement is to allow us to become familiar with a variety of ways to do research. My research data collection consists of a 30 to 40 minutes audio recorded interview. The recordings of the interview will be transcribed, and the data will be analyzed and incorporated into the research paper. I would be grateful if you would allow me to interview you at a place and time convenient to you, outside of school time.

The contents of this interview will be used for my research project, which will include a final research paper, as well as informal presentations to my classmates and/or potentially at a research conference or publication. I will not use your name or anything else that might identify you in my written work, oral presentations, or publications. This information remains confidential. The only people who will have access to my assignment work will be my research supervisor and my course instructor. You are free to change your mind at any time, and to withdraw even after you have consented to participate. You may decline to answer any specific questions. All data will be erased five years following the conclusion of this study. There are no known risks or benefits to you for assisting in the project, and I will share with you a copy of my notes to ensure accuracy. Please feel free to contact myself, or my research supervisor, Geraldine Burns, should have any questions.

Please sign the attached form, if you agree to be interviewed. The second copy is for your records. Thank you very much for your help.

Yours sincerely,

Rooma Nadeem                                                                   Research Supervisor: Geraldine Burns

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Principal Researcher
Principal Researcher
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Consent Form

I acknowledge that the topic of this interview has been explained to me and that any questions that I have asked have been answered to my satisfaction. I understand that I can withdraw at any time without penalty.

I have read the letter provided to me by Rooma Nadeem, and agree to participate in an interview for the purposes described.

Signature: ______________________________________

Name (printed): ___________________________________

Date: ______________________
Appendix B: Interview Questions

Research Question:
What literacy approaches are used by teachers of students who are visually impaired (TSVI) when teaching braille to students with visual impairments?

Sub-Questions:
1. What are the steps in setting up a braille literacy program?
2. What is the recommended order of teaching braille alphabets?
3. What is the importance of the school personnel and family members to have a knowledge of braille code?
4. How a student with visual impairment is integrated during mainstream classroom activities?

Interview Questions
1. What is your teaching experience and how many years have you been teaching as an Itinerant Teacher/Vision Specialist?
2. Which courses and training have you taken and what is required to become an itinerant vision teacher?
3. How many students with visual impairments are you working with at the moment and what are their grade levels?
4. How do you determine the amount of time that you give to a student who is visually impaired?
5. Identify and describe some key literacy approaches when teaching braille literacy.
6. What are the steps in setting up a braille literacy program?
7. Please describe the recommended order of teaching Braille alphabets, numbers and punctuation order, if any?
8. In your opinion, what is the importance of the classroom teacher to have a knowledge of the Braille code and why?
9. What is the importance of the school personnel to have a knowledge of the Braille code and why?
10. Who else do you think should have a knowledge of braille code and why?
11. Please describe how does a student with visual impairment is integrated during regular classroom activities in your absence?
12. What access does the student with visual impairments have to the activities that are performed by other students in class in terms of assignments, books and course materials in braille?
13. What are the advantages of integrating students with visual impairments in a regular classroom in terms of academic, and physical support?
14. What expectations do you have for the classroom staff during the classroom activities for students with visual impairment?
15. What additional support you think should be offered to students with visual impairment?