How Elementary School Teachers Adapt their Classroom Environment and Instructional Strategies in General Classroom Settings for Students with Visual Impairment

By

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A research paper submitted in conformity with the requirements For the degree of Master of Teaching Department of Curriculum, Teaching, and Learning Ontario Institute for Studies in Education at the University of Toronto

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Abstract

This qualitative study examines how elementary school teachers adapt their classroom environment and instructional strategies in general classroom settings for students with visual impairment (VI). Three elementary school teachers from district schools in the greater Toronto area and in Northern Ontario were interviewed about their experience teaching students with VI. The findings from the three interviews are presented in three case studies where four emergent themes are closely examined. A cross case analysis is also presented. The findings suggest the importance of promoting a safe and inclusive learning environment where students with VI can learn in a positive, welcoming space and feel a sense of belonging. All three participants emphasized the importance of differentiated instruction by incorporating Gardner’s’ Theory of Multiple Intelligences. All participants made ongoing efforts to encourage students with VI to advocate for themselves in order to strengthen their educational independence. The findings from this research study and from the literature related to how students with VI learn suggest that teachers have made it a priority to establish inclusive learning environments, making the necessary accommodations to classroom materials and instructional strategies, and the use of assistive technology to support the needs and abilities for these students in general classroom settings.
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CHAPTER ONE: INTRODUCTION

Introduction to the Research Study

Having the capability to use all your senses is truly a gift, but many people do not appreciate these abilities as much as one should. Imagine having suddenly lost the sense of sight or only having partial vision. People who are visually impaired face many challenges every day in an attempt to live their lives to their fullest potential (NICHY, 2004). Visual impairment (VI) exists when a person has partially or completely lost their sense of sight (vision loss) and additional assistance is necessary for these individuals to continue on with their daily lives (NICHY, 2004). Causes of visual impairment may result from natural causes, disease, trauma, or congenital/ degenerative conditions that cannot be corrected by conventional means (RightDiagnosis, 2014). It is also known as an impairment that, even with correction, would affect a person’s educational performance (Ontario Ministry of Education, 2001).

Partially sighted, low vision, legally blind, and totally blind are all terms that are used to describe people with visual impairments (NICHY, 2004) (Sahin, 2009). An individual who is partially sighted requires special attention and additional assistance (Kumar, 2001). Individuals with low vision find it difficult to read anything from a reading distance (i.e. reading a newspaper or a novel) and usually use the combination of their senses to learn, but adaptations in the lighting in a room, the size of the print, or even the need for Braille may be necessary (Wormsley, 2006). An individual who is legally blind has very limited vision and blind persons have completely lost their sense of sight (NICHY, 2004). The rate at which visual impairments occur in individuals under 18 years of age is 12.2 per 1,000 (NICHY, 2004).
In the Ontario Ministry of Education document for special education, five different categories of exceptionality are listed and explained (Ontario Ministry of Education, 2001). Visual impairment falls under the category of physical exceptionality, which is defined as exhibiting a condition of severe physical limitation where special assistance is required to support students with educational achievement that is equitable with that of other students without exceptionalities at the same grade levels (Ontario Ministry of Education, 2001).

Students who are visually impaired may have the same range of cognitive and intellectual abilities as students with the sense of sight. These students do not necessarily have a learning disability, but they do require more time and patience to learn the same material as other students (Sahin, 2009). However, the problem that creates more challenges in learning for students with visual impairment is the increased dominance of visually-oriented learning (Kumar, 2001). School courses that include more conceptual material, such as in science and math courses, may be inaccessible to students with visual impairments (Kumar, 2001). For instance, many educational curricula include the use of microscopes in science classes for students to closely examine the cells and their structures (Kumar, 2001). The use of this equipment and models to demonstrate content is highly dependent on vision which makes it difficult for students with visual impairment to use. According to the Ontario Ministry of Education, it is crucial for all students with exceptionalities to have special education programs and services provided to them without additional costs by parents or guardians living in Ontario (Ontario Ministry of Education, 2001). Since students who are visually impaired are identified as having an exceptionality, an Individual Education Plan (IEP) is developed to help identify their strengths and needs and how instructions will be delivered in order to support their learning (Ontario Ministry of Education, 2001).
Whether students with visual impairment experience learning in a special education department or inclusively learn in a general classroom with other students, they require modifications in the educational curricula, accommodations and alterations to instructional strategies to help these students enhance their participation in class and to help maximize their learning potential (NICHEY, 2004).

*Purpose of the Study*

Many schools within North America have a special education department for students with special needs (NICHEY, 2004). However, not all of these schools share the same curricula or teaching strategies so their effectiveness may vary (NICHEY, 2004). To analyse the teaching strategies and any programs implemented on students with visual impairments, I conducted semi-structured interviews with elementary school teachers that teach students with visual impairments in a general classroom setting with sighted students. The purpose of this study was to learn about the teaching strategies implemented for students with visual impairments. It was also important to achieve a heightened understanding of effective teaching strategies for students with visual impairments that can be implemented in general classroom settings that promote inclusiveness where these students have the opportunity to maximize their learning.

*Research Question*

How do elementary school teachers adapt their classroom environment and instructional strategies in general classroom settings for students with visual impairment?

*Background of the Researcher*

There are a few reasons based on my own personal experiences as to why I chose to focus my research topic on how students with visual impairment learn. The first reason takes me back to my experiences as a student in elementary and high school. I clearly remember students
being called out of the room during certain subjects, especially math and language, but never really understanding why. On one hand, I felt bad for these students thinking they may have been called out of the classroom for constantly getting into trouble and on the other hand, I thought maybe they were asked to leave the classroom to be given more homework and complex problems. Having sometimes assumed the latter instance, I did my best to behave in class to avoid being called out and assigned to complete more homework. It was not until grade 8 when I realized that some students who were classified as gifted would be absent one day from my school to attend a school for gifted students. It was also at this point in time when I realized that some students were also called out of the classroom during particular subjects to receive extra help and one-on-one learning. The removal of students requiring extra help and more attention was also prominent in my high school experiences as a student and I always wondered how these students are taught compared to how students learn in a regular classroom. As a student at the Ontario Institute for Studies in Education at the University of Toronto, I have learned how important it is as an educator to establish a positive learning environment for students of various abilities and to accommodate lessons to incorporate differentiated instruction and equity in the classroom.

Learning about and the many ways to accommodate for students of various abilities lead me to think back to and reflect on my experiences as a student in terms of seeing students be removed from their homeroom class to learn in a different classroom. Then I began considering students who are visually impaired. Although these students have a physical barrier in that it is difficult for them to maneuver themselves around without guidance from another person, animal, or even a device, they are not necessarily mentally impaired. In other words, they may well in fact have the same learning abilities and learning levels as student of average abilities. So I was
interested to see what elementary school teachers do to teach students with this type of disability and achieve inclusiveness in a regular classroom setting.

Overview

The information provided in this research study is divided into five different chapters. The first chapter is an introduction which includes a general introduction to the topic of the study, the purpose of the study, the research question, and background information about the researcher and why I chose to conduct a research study with a focus on how students with visual impairment learn in general classroom settings. Chapter 2 contains a literature review with focus on how students with visual impairment learn, instructional strategies implemented, accommodations, assessment practices, and the use of assistive technology as a means of promoting educational independence. Chapter 3 provides the methodology used to conduct the study, specifically the procedure, how data was collected, duration of data collection, ethical review, and limitations of conducted study. The findings from the interviews and a cross-case analysis examining the findings and literature are found in Chapter 4. Chapter 5 concludes the research paper where implications for teaching, recommendations, areas for further research study, a conclusion, and how this study has strengthened my teaching practice on how to support students with visual impairment in general classroom settings.
CHAPTER TWO: LITERATURE REVIEW

This chapter provides a review of literature relevant to my research topic on how students with VI learn in general classroom settings. The opening paragraph for this chapter provides definitions for terms related to the topic which are prevalent throughout the research paper. The chapter provides literature on the four emergent themes for this study where literature on what inclusive learning environments include, teaching strategies implemented for students with VI, educational independence, and assessment practices. Challenges that may arise from teaching and supporting students with VI are also provided.

Definitions

In order to provide clarification for terms throughout the research paper, the following definitions are provided:

Exceptionality

Subsection 1(1) of the Education Act, an exceptional pupil is defined as:

“A pupil whose behavioural, communicational, intellectual, physical or multiple exceptionalities are such that he or she is considered to need placement in a special education program by a committee…” (Ontario Ministry of Education, 2001).

The Ontario Ministry of Education document for special education (2001) describes five different categories of exceptionalities. Visual impairment falls under the category of physical exceptionality, which the Ministry of Education defines as a student exhibiting a condition of severe physical limitation where special assistance is required to support students with educational achievement in a way that is equitable with that of students without exceptionalities at the same grade levels (Ontario Ministry of Education, 2001).
Vision Impairment (VI)

VI occurs when a person has partially or completely lost their sense of sight (NICHY, 2004). It is defined as any of the several types of vision loss which can exist from birth or develop due to medical issues (RightDiagnosis, 2014). A few types of vision loss are blurred vision, blind spot, cataract, and blindness. Causes of visual impairment may result from natural causes, disease, trauma, or congenital/ degenerative conditions that cannot be corrected by conventional means (RightDiagnosis, 2014). It is also known as an impairment that, even with correction, would affect a person’s educational performance (Ontario Ministry of Education, 2001).

Individual Education Plan (IEP)

Since students who are visually impaired are identified as having an exceptionality, an Individual Education Plan (IEP) is developed to help identify their strengths and needs and how instructions will be delivered in order to support their learning (Ontario Ministry of Education, 2001). The Ontario Ministry of Education (2001) states that an IEP is a work in progress where changes can be made if necessary for the benefit of the student’s educational achievement. The Ministry of Education (2001) also emphasizes the importance of collaboration between all educators involved with the exceptional students to ensure everyone is aware of their needs, abilities, and where the student needs the most support. In terms of expectations, the ministry document states that these students should also be given the opportunity to achieve the same learning expectations provided in the Ontario curriculum but for educators to make modifications based on the students’ needs, strengths, and abilities.
Assistive Technology

Specialized technological devices and software used to help support student learning and achievement as well as improving teaching instruction (Zhou et al., 2012). Researcher Zhou et al. (2012) state that assistive technology helps students with disabilities develop literacy and numeracy skills in order to improve their overall learning experiences.

Inclusive Learning Environments

In order to establish a learning environment that promotes inclusiveness and a sense of belonging for all types of learners, students need the opportunity to be themselves and feel comfortable to participating and learn to the best of their abilities. Additional support for students with VI is beneficial to ensure they are able to follow along with class material, provide support on how to participate in class activities, and to touch base with them about their comprehension and for assessment. Cox and researcher Sahin also argue that a vision specialist can be a valuable and helpful source for the student with VI where they can have support when needed and maximize their learning along the way (Cox, 2001)(Sahin, 2009). Both researchers explain the importance of having a vision specialist working in collaboration with the teacher as well as other specialists, if needed, that help support students with VI to work towards maximizing the learning in general classroom settings (Cox, 2001)(Sahin, 2009).

Researchers Cox and Dykes wrote an article that provides suggestions on effective classroom adaptations for students with VI. They argue that teachers of students with VI can teach these students in general classroom settings by first ensuring they have a good understanding of what visual impairment is, the student’s level of visual impairment, and how it affects their learning (Cox, 2001). This article acts as a resource to support educators on their
understanding of what VI is, the different categories of VI, and suggestions on how to begin to accommodate for students with VI (Cox, 2001).

Everyone is capable of acquiring and strengthening social skills, which is part of our everyday lives. It is important for students to feel comfortable communicating with other students and learn through discussion and listening. Authors Koenig and Holbrook (2000) explain the acquisition of social skills by students with VI is an ongoing process because these students cannot rely on sight for social cues but rather they rely heavily on using their auditory, olfactory, and tactile skills. These authors state that in order for students to progress in social contexts, they need to be encouraged and feel comfortable doing so (Koenig et al., 2000). They also communicate the need for continuous feedback from peers and teachers about how they engage in social contexts and the opportunity to practice using their social skills to strengthen them (Koenig et al., 2000). This would lead to a strengthened sense of oral communication especially during class discussions and group work. When students with VI feel excluded or do not have the opportunity to practice engaging in social contexts in class, these students become less willing to take risks and may become more dependent on others for explanations (Koenig et al., 2000). The importance here is to promote belongingness by given students with VI the opportunity to feel comfortable being themselves in the classroom to communicate their understanding (Koenig et al., 2000).

When a student with visual impairments is present in a classroom the teacher does not necessarily have to modify the educational curriculum or standards, but rather modifications in the teaching strategies are necessary to integrate students with visual impairments and other students in classrooms (Dion, 2000). Modifications can also be applied to classroom activities, items, equipment, or classroom environments. The purpose of making such small alterations is to
maximize the participation of students with visual impairments without having to make drastic changes (Dion, 2000). Researchers Cox, Kumar, and Sahin and their colleagues argue that it is important for students with VI to move around throughout the school community and to have support from a mobility specialist to become more familiar with the layout of their schools, including the layout of classrooms, exit doors, library, the cafeteria, and restrooms (Cox, 2001) (Kumar, 2001) (Sahin, 2009). With mobile and orientation training, these students can achieve safe and efficient movement and independent movement within any type of environment whether it is indoors or outdoors (Cox, 2001) (Kumar, 2001) (Sahin, 2009).

**Teaching Strategies**

Students with VI lack the ability to achieve incidental learning, which is learning achieved through the interactions with the environment (Cox, 2001). On a similar note, Sahin, and Yorek as well as Kumar et al. argue that some subjects include content that is more concrete and complex in nature, such as science and mathematics, which may be difficult for students with VI to comprehend (Kumar, 2001) (Sahin, 2009). Sahin and his colleagues conducted a qualitative research study to examine how students with visual impairment learn science content at a school for the blind in northeast United States (Sahin, 2009). Their findings included suggestions of effective teaching strategies that can help support students with VI. Educators can provide instructions in writing but also orally in order for the students with VI to understand the content and follow along (Sahin, 2009).

Kumar et al. provide an article that emphasizes on the importance of effective science instruction and suggestions on ways teachers can modify their lessons to accommodate for students with VI (Kumar, 2001) (Sahin, 2009). These authors address the importance of auditory cues rather than relying heavily on visual cues to gain the attention of all students in the class and
to communicate instructions, content, and discussion (ETFO, 2007)(Kumar, 2001). In the Elementary Teacher’s Federation of Ontario document *Special Education Handbook*, many instructional strategies to support students with VI are listed, including the consistent use of clear verbal communication during lesson instruction, when assigning work, and when explaining content to the class (ETFO, 2007). Researcher Dion suggests that educators should refer to everyone and objects in the classroom by their names rather than pointing at them and ensuring these students have photocopied lessons and class material to prevent them from straining their eyes in an attempt to read material presented on the blackboard or overhead projector (Dion, 2000). Providing enlarged copies of text, handouts, lessons, class material, and assignment outlines is also beneficial for students with VI since this also can avoid them from straining their eyes to read smaller text and information shown on the board or overhead projector (Dion, 2000)(ETFO, 2007). In accordance with this, Dion et al. (2000) suggest that students with VI will be more likely to follow the subject material if it is presented in an organized manner, such as the teacher preparing lesson plans in advance and providing a copy for these students.

As an educator, if you feel certain concepts that rely heavily on visual materials may be difficult for students with VI to comprehend the first time it is instructed in class, a suggestion would be to teach the concept before class to ensure they have a general sense of what is going to be discussed in class and the opportunity to ask questions during or after class as well (ETFO, 2007) (Koenig et al, 2000). Encourage students to ask for clarification when necessary and to ask for help when they are confused with class material (ETFO, 2007).

**Educational independence**

Based on the literature, students with VI can achieve educational independence in a few ways. One way is through self-advocacy. Dion (2000) and Chang (2002) and their group of
colleagues suggest an important point that teachers can help encourage students with VI to advocate for themselves by being patient, open-minded, and showing interest in their opinions and in their suggestions on how they lean best. Sahin (2009) also argues the importance of encouraging students to advocate for themselves in order for educators to gain insight to their level of comprehension, any confusion, strengths, areas of support, and for these students to enhance their communication skills (ETFO, 2007).

Students with visual impairments have the opportunity to be independent and build on their knowledgeable not only through alternations with classroom instruction but also through the use of assistive technology. Assistive technology functions to provide students with VI the ability to be successful in school by assisting with effective communication and providing tools for independent access to information (Dion, 2000). The advancement of technology, especially computer technology, has contributed to increasing the potential for students with visual impairments to gain access to the expanding online information (Smith, 2004).

Dion et al. (2000) and Smith et al. (2004) propose that optical magnifiers, optical scanners, closed-circuit televisions, audio computers, and computers with magnification programs and images are devices that have helped improve learning for visually impaired students. Some examples of assistive technologies suggested by Kumar et al. (2001) and Smith et al. (2004) for science classes are talking thermometers, voltmeters, timers, glassware labelled with Braille, labelling poisonous chemicals with sandpaper, and computers with an audio component or Braille output. These could help increase the level of independence for students with VI and help improve their learning experiences in school in more engaging ways (Smith, 2004).
Researchers Cox et al. (2001) also slightly touch on technological adaptations for students with visual impairments that can be incorporated in the classroom. They mention the existence of devices that can be used for the input and output of information, such as converting braille to printout copies (Cox, 2001). These authors also argue the importance of the careful consideration of teachers of students with VI when deciding on what devices will efficiently and effectively help improve these students’ learning (Cox, 2001). In their article, Sahin et al. (2009), also mentioned that students with VI can use computer software that enlarges text and images to provide higher resolution and enhanced materials (Sahin, 2009). Author Brown (2003) discussed the release of the newest version of assistive technology software called ZoomText. This software has two key features where text can be enlarged to make reading easier and a screen reading option where text on the screen is read aloud (Brown, 2003). In his article on assistive technology, Fenner (2011) also suggests a computer software called SmartDrive which includes a text-to-speech program that could be used by students with VI to listen to text as it is read aloud which would allow them to follow along during lessons and to be able to stay up to date with the content discussed in class.

There are many companies within North America that manufacture and provide products for low vision individuals. Optelec is one of the largest companies in the U.S. that specializes in manufacturing electronic equipment for blind and visually impaired persons (The New York Institute for Special Education, 2007). TeleSensory and OVAC are also large companies that manufacture electronic products, such as video magnifiers, computer screen and scanner magnification devices, for people with visual impairments. Innoventions is a company that also provides magnifying products that can be connected to televisions and computers (The New York Institute for Special Education, 2007). The rise in electronic products for students with
visual impairment seems to point out that more and more manufacturers are playing an important role in enhancing their acquisition of knowledge.

**Assessment Practices and Accommodations**

Literature indicates a strong emphasis on observations, checklists, and oral communication to assess the comprehension of students with VI. Observations of how these students participate, comprehend class material, engage in class activities, and how they feel are vital (Koenig et al, 2000). Koenig et al (2000) also strongly recommend the use of checklists to assess students with VI and to identify where their strengths are and where they the most support. Teacher-student collaborations would not only focus on incorporating students’ interests but would also benefit the teacher’s understanding of how these students learn as well as helping the student feel comfortable communicating how they learn and where they need assistance (Koenig et al, 2000). It is important for educators to provide comfortable and inclusive learning environments for students to feel safe enough to advocate for themselves (ETFO, 2007) (Sahin, 2009).

Since students with VI cannot rely on their sense of sight, it is important for educators to make accommodations in general classroom settings to help maximize the learning of these students. The common accommodations for students with VI that was evident in the literature are based on the use of more orientation and mobility, tactile, auditory, and verbal skills (Cox, 2001) (Kumar, 2001) (Sahin, 2009). All authors argue that it is important for all students to move around during the school period and it is just as important for visually impaired students to do so as well (Cox, 2001) (Kumar, 2001) (Sahin, 2009). Some examples of small alterations would be ensuring the physical environment and set up of furniture in the classroom remains in a
permanent position in order for students with VI to create a mental image of the classroom so it would be easier to move around (Dion, 2000).

Sahin et al. (2009) argues that lessons and class activities should have a strong focus on the use of auditory skills and sense of sound. Any visual materials used in the classroom, such as maps, graphs, diagrams, should be modified for students with VI to be able to read them by using their sense of touch and can be communicated orally not only in writing (Sahin, 2009). Cox et al. (2001) suggests a teacher can accommodate a map by having string taped to it to outline a specific trail or regions and communicate instructions orally in order for these students to learn about by touching the string and communicate orally what they learned with the teacher. These authors argue that manipulatives, models, and even equipment being used to teach class material can also be used by students with VI by using their tactile and kinesthetic senses to learn how these objects relate to the class material (Cox, 2001) (Kumar, 2001) (Sahin, 2009). Sahin and his colleague (2009) also suggest the importance of assigning students with visual impairments classroom seating that is closest to the instructor to ensure they are hearing the material communicated loud and clear. Students with VI require more time to process information and develop an understanding for it compared to sighted students so an accommodation to address this is to provide them with more time to learn the same material and complete school work (ETFO, 2007) (Sahin, 2009).

**Conclusion**

The literature discussed indicates several important aspects when it comes to teaching and understanding how students with VI learn. The important points to highlight here are teachers need to be aware what VI means, how to alter instructional strategies to ensure they are
able to follow along and participate in class, how to accommodate for these students in a classroom setting to support and strengthen their learning.
CHAPTER THREE: METHODOLOGY

In this chapter, the methodology used to conduct the research study is discussed. Explanations of the procedure that was used to conduct the study and the instruments of data collection that were used are provided. A description of the three participants that participated in this study is also provided. Explanations of the data collection and analysis and the ethical review procedure are then provided and the chapter ends with a description of the limitations of the study.

Procedure and Instruments of Data Collections

The data for this research study was collected from three semi-structured interviews with elementary school teachers. Examining existing literature on this topic provided a stronger and more in-depth understanding on teaching practices within general classroom settings.

Following the qualitative methods used by Sahin and Yorek (2009), one-one-one semi-structured interviews were held with two to three elementary school teachers who taught students with VI in general classroom settings with sighted students. The duration of each interview was approximately forty-five minutes. A list of fourteen open-ended questions on my research topic were prepared and used during the interviews with each participant. A few examples of the questions included “What does an inclusive learning environment with students of average ability and students with special needs look like?” and “As an educator, what do you do to help students with visual impairment learn and how do you modify your assessments for these students?” (see Appendix B for interview questions). Data was obtained during a face-to-face interview with one of the participants and through Skype conversations with the other two participants. A program called G-recorder was used to record the Skype interviews. After the
interviews were held, they were transcribed onto a Microsoft word document (Sahin, 2009). A problem occurred with one of the Skype recordings where only half of the conversation was recorded. I kindly asked the participant if they would consider participating in the interview once more, but because of her busy teaching schedule, she preferred to respond to the interview questions in a word document and email it to me. No personal information was collected during the course of the research study and the participants received a copy of the final research report.

Participants

The participants I interviewed were three elementary school teachers who are all employed by district school boards. Two of the participants worked in a district school within the greater Toronto area and the third worked in a school district in northern Ontario. All three participants have taught and are currently teaching students with VI.

Data Collection and Analysis

Once all three interviews were conducted, the audio versions of the interviews were transcribed on paper. Once the interviews were transcribed, the analysis process began where transcripts were read and audio recordings were listened to several times in order to identify emerging themes from. Once the four emergent themes were identified, the transcribed interviews were coded for key words and phrases that support the major themes. These codes were re-examined several times to ensure they support the themes identified. After completing the coding process of the transcribed interviews, the final decision on the emergent themes was made based on their reoccurrence throughout all three transcribed interviews. Based on the findings, only data that supported the four emergent themes were used in this research paper and compared to the literature review.
Ethical Review Procedures

Upon agreement by the participant to participate in the qualitative research study, I provided each participant with a letter of consent before conducting the semi-structured interviews (see appendix A for letter of consent). At the beginning of each interview, I introduced myself, the school I attended, the purpose of the study, why I conducted it (upon successful graduation completion of the masters of teaching program at OISE), and introduced the topic to each participant. I also asked permission from each participant again and informed them that they could withdraw from the study at any time if they felt uncomfortable or if they did not wish to answer the interview questions prepared.

Limitations

There are several limitations to this study. The majority of them are a direct result of the parameters and limitations of the MTRP process. These limitations are found within the literature review, the number of interview questions and interviews, the duration of the interviews, the completion of the research paper, and research interpretation.

When I worked on the literature review for this study, I noticed I was selective when choosing research articles to include in my literature due to page limits and time constraints for this paper. Due to this narrow selection and small sample size, the findings are not reflective of larger population sizes, but the study provides a look at current teaching practices of students with VI, which has helped to support and improve my teaching practices in classroom setting.

Although I felt confident that my interview questions were relevant to the purpose of this study, I felt that more in-depth responses to each question could have been obtained if time constraints were not an issue. I would have liked to have the opportunity to have participants expand on their responses and gain a deeper insight about how they teach students with VI in a
general classroom setting, however due to the parameters set out by the MT program, I was limited in the amount of time I could devote to interviewing each participant.

The final limitation of the study is researcher bias. It is important to address its possible occurrence because my interpretation of the data and literature review may be different from another person’s interpretation of the same information.
CHAPTER FOUR: FINDINGS

Introduction

This chapter presents the findings in this qualitative study of three participating elementary school teachers who were interviewed over the course of two weeks in 2014. Two participants work in a school district within the greater Toronto area and the third participant works in a school district in northern Ontario. All three participants have experience working directly with students with visual impairment (VI) and one has even had the opportunity of observing a student’s growth and progress from child to adolescent for nine years. The transcripts of all three interviews were closely examined and four themes emerged: Inclusive learning environments, teaching strategies, educational independence, and assessment practices. A cross-case analysis is provided as a closing for this chapter where comparisons, contrasts, and connections to literature will be discussed.

Case Study 1: Claire

Background

Claire is an elementary school teacher who works in a school district in northern Ontario. She is currently a learning resource teacher where she teaches reading recovery in the morning and works with small groups of students for language and math support in the afternoon. She has thirteen years of teaching experience where she stated not having learned about how to support and teach students with exceptionalities in her pre-service program. However, she did complete a course called ‘inclusive learning’ and completed her certification to become a Special Education Specialist, which she feels helped her begin to understanding how to meet the needs of students with different exceptionalities. Claire started teaching Matthew, a student with VI in many of her classes, nine years ago when he was in junior kindergarten and the third grade and she is now
currently working in collaboration with a few other teachers to plan his transition into high school this coming September. Claire stated that her background knowledge, teaching experiences, and certification in teaching students with different exceptionalities have strengthened her understanding and confidence on how different types of learners both in small group settings with her and in their general classroom settings.

*Inclusive Learning Environments*

When it comes to considering how to support the needs of students with VI, Claire carefully considers how to set up her classroom environment to ensure these students as well as the others have the opportunity to comfortably participate and engage in learning. Claire says she kept Matthew’s desk close to the front of the classroom to be in closer proximity to information written on the board and to clearly hear her when she taught lessons and discussed content with the class. She would also check any devices and equipment he used during class, such as the ELMO document camera, smart board, and his own computer, to ensure they were all in working order. Since she is currently a learning resource teacher, Claire is responsible for ensuring that the needs of students with different exceptionalities are being met within their own classrooms. She says “Two weeks before September, the teachers and I meet to discuss what the special needs students’ physical classroom should look like. For example: Where Matthew’s desk should be in proximity to the Smart board, whiteboard, group work table etc.”

When it comes to the classroom and school community, Claire states that Matthew feels welcomed and comfortable to be himself. She says “…He has a great sense of humour and always does so in a respectable, funny way.” She explains that because he feels welcomed and accepted by his peers regardless of his abilities, he feels he can be himself. She says this helps
him gain a sense of his own identity but also to feel comfortable learning in his general classroom settings.

Teaching Strategies

Gardner’s Theory of Multiple Intelligences plays a large role not only in how Claire presents class material to all her students but it is also a school wide approach where many other teachers also focus on implementing the multiple intelligences in their lessons and activities. Claire explains that she focuses on using at least three of the following five multiple intelligences throughout her lessons in order to cater to more than one learning style and a time and to ensure that the student with VI is able to participate: kinaesthetic, interpersonal, and verbal/linguistic, mathematical, and intrapersonal. She finds value and depth in student understanding mostly when they engage in small group discussions but also when they participate in presentations. She finds that the student with VI is given the opportunity to communicate his thoughts and understanding when he can communicate with his peers and the teacher as well as when he has the opportunity to present and express his knowledge. She also makes time to speak with each student during one-on-one interviews in order to gain a sense of how they orally communicate their understanding and concerns as well as how they are working for each subject area. She says she uses the one-on-one conferences also because it helps students become more aware of their own understanding when they communicate with others as well as preventing the student with VI from feeling singled-out. One challenge Claire explains she encounters is “Not every strategy works for every student so you need a balance.” She says although some strategies may not turn out to be helpful in terms of strengthening students’ understanding, she often tries different strategies based on her students’ needs and abilities with a strong emphasis on including multiple intelligences to ensure the student with VI is also given the support to strengthen his learning.
Educational Independence

As a learning resource teacher, Claire always motivates all her students to advocate for themselves and take on the responsibility to advocate for themselves. She continuously tells them that you are your best advocate for yourself. In regards to the student with VI, she explains “We have always taught Matthew to advocate for himself. If he does not understand something, or we have forgot to present in a way that he can access it, then we need him to be accountable and let us know.” She is confident that Matthew will be successful when he takes the initiative to communicate his understanding, concerns, and whether or not he has all the necessary materials he needs to support his learning.

Based on the access and use of assistive technology for students with VI, Claire says the school she works in is a small but fairly technologically advanced school. The school community has helped fundraise enough money to provide a smartboard in every classroom and a cart of 25 macbooks that are used all throughout the school. She explains that what helps support Matthew’s participation and learning is the “Big screen in the gym so presenters can enlarge what they are presenting.” She explains that this helps Matthew follow along during presentations but it is also great for all types of learners. Other types of assistive technology that are provided for Matthew to use include an ELMO document camera to allow him to zoom in text and images and a SEA, a ministry funded computer, which he uses on a daily basis. Claire along with Matthew’s other classroom teachers check the devices regularly to ensure they are all working properly. The school also provided a computer software program called Kurzweil that Claire says “Allows text to be read to him to ensure he is getting all the information presented.” She explains that this he does take advantage of using this software and he has communicated with her that he finds it helpful to learn and follow along.
Assessment Practices

Students with VI are on an Individual Education Plan (IEP) which list specific alterations to help students meet their academic needs, such as accommodations, modifications, as well as physical needs to consider. Claire explains that Matthew has an IEP that lists his physical and academic needs with minor accommodations to be made within the classroom environment. A few examples of accommodation made for Matthew include “Where Matthew’s desk should be in proximity to the smartboard, whiteboard, group work table etc….We enlarge Matthew’s assignments with the photocopier, but for assessments sometimes we scribe for him.” Claire explains that in a situation where he is unable to write, he has the opportunity to provide responses for schoolwork through oral communication where a teacher would then scribe his response and use that to assess his understanding.

A challenge Claire shares when it comes to assessing students with VI and their comprehension of class content is that there is always some level of uncertainty. It is important for the teacher to encourage oral communication with the students about how they feel, how they understand the class material, and to voice any confusion they may have so that it could be addressed as soon as possible.

Case Study 2: Tracy

Background

Tracy is an elementary school teacher who is employed by a school district with the greater Toronto area. She is currently teaching the fifth grade. She has been teaching for seven years, primarily junior grade levels including the fourth grade. During her pre-service training, she did not learn about how to support students with visual impairment. Her understanding of how to support these students occurred when they were in her classroom. She has two years of
experience working with students with VI with a third grade and a fourth grade student at different schools. Her two years of teaching experiences with students with VI consisted of one-on-one teaching experiences where she met with that particular student three times a week for forty minute periods as well as teaching in a general classroom setting among other students in the class.

Inclusive Learning Environments

When it comes to considering how to support the needs of students with VI, Tracy shares how she and other teachers set up their classrooms to support students with visual impairment. Tracy explains that the homeroom teacher of the student with VI Tracy worked with one-on-one had his desk at the front of the classroom to ensure he could easily see the chalkboard. When Tracy had a student with severe VI, diagnosed as being blind, in her own classroom, she had students sit pairs rather than in groups because this student’s desk was designed in a specific way for him to easily sit and with more space for his materials and devices. Her emphasis on the importance of making the student with VI feel comfortable and included is evident when she says “They can sit in partners so that they won’t say why is he not in a group and the rest of us are and even for him why am I being treated differently?”

In terms of student support, Tracy explains that during the first few visits, a mobility specialist would walk around the school to identify how accessible and safe the school environment was for students with VI as well as visit the school once a week to provide support for these students in their classrooms. For the blind student in Tracy’s homeroom class, a Braille specialist would also visit once a week to assist the student with work in class as well as create brailled items around the classroom and the school, such as work materials, the room numbers on classroom doors, and the washroom signs. Tracy explains that she is thankful for the support
from the Braille specialist because "If you know what you are going to teach ahead of time you can get things translated for the student". There was also a vision specialist provided by the board who would come in a few times a week and support the student with VI in his classroom throughout the entire day. Tracy also explains that the student with VI had support from her as well as educational assistant if he was struggling in any way and continuously communicated their support to him so he would always know they were there if he needed help.

Tracy states how wonderful it was to clearly see inclusiveness among the students with VI and their peers both within the classrooms and during recess. She says "they were very sensitive to his needs and I find they went out of their way to make sure he was included" and she explains that they enjoy being his partner during class activities and even in gym class. She also mentions the importance of ensuring these students feel safe and comfortable in class among their teachers and peers and during recess.

Teaching Strategies

Gardner’s Theory of Multiple Intelligences plays a large role in how Tracy creates and implements her lessons in class. She explains how helpful everything she learned in teachers college was and how she often refers back to teaching methods that will help her engage in differentiated instruction with a strong emphasis on the multiple intelligences based on her student’s needs and abilities. She explains “You see the difference when you start moving away from the pencil and paper tasks to more conversation tasks… I’m working on focusing on three learning styles at a time and the big ones are the kinesthetic, the visual learner, and the auditory learner.” She explains by focusing on these three multiple intelligences she is able to strengthen the understanding of all students to a certain degree. So in the case of the students who are and
are not visually impaired, Sarah focuses on making sure her lessons always cater to students with different learning styles.

As a means to help strengthen the participation and understanding of the student with VI in her class, Tracy explains that she tries to incorporate hands-on activities, movement around the classroom, and oral-based activities. In order to implement hands-on activities, she provides students with items they can touch and feel when working with the content in class as well as combining this with group work to engage in structure building, experiments, and projects for various subjects. In terms of the student with VI, Tracy explains how his sense of touch and exploration in that way can occur in the classroom when she says “For example, when learning about medieval times, touching a model of a castle”. Tracy implements movement for students during class by using activities such as four corners, where students are instructed to walk in pairs to the corner they choose. They may change their mind as to which corner they choose but having them walk in pairs ensures that the student with VI has someone to assist him if he needs that assistance and to avoid having him be singled-out from others in the class. With an activity like this students are given the opportunity to move around instead of being seated all day. Tracy explains that both movement and discussion occur during activities like this and involve deep thinking where students then need to explain their choices and communicate their understanding through discussions. Tracy explains the importance of incorporating oral-based tasks during lessons and class activity to ensure that the student with VI is also able to understand the lessons and the content being shared among his classmates. She explains that she ensures her voice and the voice of other students is loud and clear during lessons, presentations, group, and partner work as well as providing as much detail as possible about the content and for instructions for
class activities and schoolwork. In the following quote, Tracy refers to the importance of critical thinking questions and the depth in discussion and student understanding they reveal:

[… ] The types of questions that lead and carry-on a conversation where students converse, allowing them to lead the conversations too because this would help to identify how much of the content they understood and maybe where some of the gaps are in their learning as well […] like I said with the Medieval Times, well why is Moats important, why is it important to have Moat around a castle? He explained it to me but that doesn’t necessarily tell me that he really understands it […] So, taking that conversation a little bit further to converse about why this is important.

She explains that not only do critical thinking questions and discussion help her as an educator identify the level of understanding of the student with VI when she circulates the class, but they also help him gain a better insight of his own awareness of the content and strengthens his understanding of it by communicating his thoughts. On a weekly basis, Tracy also touches base with all her students during a one-on-one conversation to see how they are doing in each subject area, which she says is especially important for the student with VI since she is able to directly converse with him and hear him communicate his understanding as well as any confusion he may have.

Based on how students respond to implementing lesson with a focus on the multiple intelligences, Tracy explains “I feel that they respond very positively because they I don’t believe they feel singled-out because everyone else is involved in those tasks as well.” She explains that students have the opportunity to work on their oral communication skills when the engage in class discussions and this in particular is beneficial for the student with VI since he has
the opportunity to hear and share different points of view and experience different aspects of conversation that would not be possible for him with a paper and pencil task.

A few challenges Tracy mentions include safety concerns for the students with VI as well as time constraints during lessons that need to be considered when planning activities that involve hands-on tasks, movement, and discussion. She communicates her concerns about having enough time for students to have enough time to completely engage in the tasks from start to finish and the importance of everyone having the time to participate and communicate their thoughts and understanding. She explains there were always times when she used new activities that had students very engaged and some that were not successful in doing so but “You learn from it and you figure out why it did not work or why it they did not like it. You move on and try new things.”

**Educational Independence**

When it comes to self-advocacy, Tracy holds a strong belief that independence and even the attempt to be independent comes from the comfort level of students with VI:

If they are not comfortable in the classroom, they are not going to feel safe to take those risks and they won’t want to work on their own…some may not necessarily ask for help or you may even have students who go in the opposite extreme where you have the one student would is always asking for help with every little thing, how do I do this and how do I do that.

Tracy explains she did her best to make all students including the students with VI feel comfortable to be themselves and share their thoughts and understanding during class. She shares another experience she had when she was covering a maternity leave and had a student with VI in her class. She had the sense that many teachers prior to her teaching him “Babied him”
because he would constantly say “Oh, I don’t know how to do this” to the point where teachers may have just completed work for him. Tracy explains she did not do his work for him, but instead would try to identify why he did not know how to do a specific task, where he was struggling, and to inform him that they could work on his tasks together. She demonstrated for him the importance of communicated his understanding and concerns rather than trying to rely on someone else doing his work for him, which would strengthen his independence. Tracy says she would encourage him to be more independent by reminding him that he is now in fourth grade and he is capable of doing a number of things on his own such as “Getting on the computer, he knew how to log-in, he knew how to type.” She says that because of her constant reminder of positively communicating to him the things he was capable of doing, he start developing and fostering that independence.

When it comes to assistive technology for students with VI, Tracy remembers these students having limited devices to support their learning. She does remember there being an ELMO document camera in her classroom for the student with VI which would enlarge text for him to make it appear larger and easier to read. He would have a sense of independence even during literacy class when students are silently reading by placing the book under the ELMO device where the text would appear larger and clearer. The school Tracy taught in had access to a television and a projector where she would show descriptive videos related to class material because they would provide more detailed descriptions about what is being shown on the screen.

Tracy’s thoughts on the limited amount of technology the school could provide for students with VI are “When you don’t have that access to technology, yes they can succeed, but you almost wonder, if they have the proper tools and resources, how much more successful could they be.”
Assessment Practices

In regards to assessment practices, Tracy provides an in-depth explanation as to how she accommodated for and assessed the two students with VI. When it comes to accommodations, Tracy says both students had an IEP. The third grade student with VI did not need to be modified but the fourth grade student was modifications to be assessed for curricular expectations at a few grade levels lower because of his comprehension level. Tracy explains she taught the third grade student with VI drama, social studies, and music and in order to support his learning, she provided him with the same content information but just in larger font on bright paper with dark letters. She explains “I put together a social studies package for the class, he got the same package but his was on bigger paper… he was able to see well on that yellow paper.” When it came time to complete a quiz or test, Tracy assessed his understanding of content materials based on his responses through one-on-one conversation with him.

For the fourth grade student whose visual impairment was more severe, Tracy used his IEP to help support how she would assess him. As previously mentioned, his curricular expectations were modified because his comprehension was at a few levels lower than the fourth grade. Tracy explains that the accommodations made were beneficial for him because they allowed him to continue learning and participate in class activities and discussions. Tracy explains that because the student with VI knew how to read braille, she had a Braille specialist through the school district transcribe all class materials into braille so he could also following along and participate with the rest of the class. Tracy says “If you know what you are going to teach ahead of time you can get things translated…It was more like ok we are going to read these pages, so everyone else is going to read these pages and you will as well because you have them in Braille and you have a copy with you.” She also explains the beneficial use of descriptive
movies related to class materials which provided more details about what appeared on the screen. Not only were these types of movies helpful for the student with VI but also for the rest of the students in the class.

In regards to assessment methods for the student with VI, Tracy relied heavily on using conversations with him alone and conversations he had in small groups with other students, using observations as well as checklists. Tracy explains she that she relied on using her observations to assess the student with VI when he worked independently and during small group discussions because they helped her gain a sense of his comprehension level and comfort level within the classroom environment. A large amount of her assessment of the student with VI was based on the conversations held within the classroom. When Tracy had students engage in small group discussions, she provides critical thinking questions to enrich the conversations students have. What Tracy says about using critical thinking questions is “This would help to identify how much of the content they understood and maybe where some of the gaps are in their learning as well”. She finds that critical thinking questions would add value to the conversations as well as challenge all students, especially the student with VI, to strengthen their communication skills as well as their thoughts and understanding of the content. When Tracy engages in one-on-one conversations with the student with VI, she relies on using checklists to help identify his comprehension level in different areas of learning. She provides a specific example of how she used a checklist to assess his understanding when she had students learn the history behind the Medieval Times:

Ok so what is the purpose of the moat, why in the medieval times do they have that, and he could tell me oh well you know it keeps people out or whatever, so I can checklist yes
he understood the functions of a medieval castle and that was you know really breaking
down the tasks.

One challenge Tracy explains she encountered when assessing students with VI is there
always having been some level of uncertainty as to whether or not the student understood the
content. In order to minimize this uncertainty as much as possible, Tracy continuously relied on
checking in with the student with VI, her observations of his participation, behaviour and facial
expressions, and especially on her conversations with them.

Case Study 3: Sarah

Background

Sarah is an elementary school teacher who is employed by a school district within the greater
Toronto area. She is currently teaching a split junior and senior kindergarten class and has the
support of an educational assistant in the classroom on a daily basis. Sarah has four years of
teaching experience and this year is her first time experiencing teaching a student with VI and he
is also non-verbal. She has no prior experience or training in pre-service programs on how to
support students with VI. She states that it is a learning process and she is thankful for all the
support by the board and the school community.

Inclusive Learning Environments

The classroom set up of a junior and senior kindergarten classroom is quite different from
other primary classrooms as well as junior and intermediate classrooms. Sarah explains that a lot
of the learning is done in small groups as well as on the carpeted area so the student with visual
impairment can also be included. The classroom itself is very spacious and easy to freely move
around so it creates a safe environment for the student with VI to explore and become familiar
with. Sarah explains that he student with VI is diagnosed as having severe visual impairment so
he can only see shadows and loves light because this helps him try to rely on his sight of shadows as well as his cane. The school district Sarah is employed by provides support for students with VI by providing mobility, vision, and Braille specialists for these students on a weekly basis. This board is the only board in Ontario that provides a Braille specialist to support students with VI. Sarah explains the mobility specialist comes in twice a week to help the young boy learn how to use his cane, to become familiar with the doors, washrooms, tables, and the classroom and school environments in general. Sarah explains the amazing support from the Braille specialist who also comes in a few times a week to support him during class lessons and to teach him how to Braille. She has also brailled many items in the classroom, such as the alphabet, student name cards, the bins in the classroom, coat rack, and the number line in order to help him become more familiar with it as well as helping all the students in the class learn Braille and better understand what being visually impaired means.

On the basis of the classroom environment, Sarah explains how loving and caring the other students in the class are towards the student with visual impairment and how they always want to work with him during class activities and take walks with him in the hall. She explains the uncertainty and confusion among his peers at the beginning of the school year when they would approach him to say hello which would scare him away. They did not understand what his condition was until Sarah explained it to them and also showing them by having everything in the classroom Brailled. She explains that he just recently began to feel comfortable having a peer rather than a teacher help him walk to the washroom or to another part of the classroom, which shows a higher level of comfort within the classroom environment. The student with VI creates excitement and happiness among his peers when he attends school and Sarah says they shout out “He’s here today”. Sarah explains an emotional moment when she experienced a true
example of inclusiveness and caring by one of the students in her class that created a story book for the student with visual impairment. Sarah says “This one little boy wrote a book during the day and he drew dots on the page and he was like *I wrote Braille for Marcus.* We all were crying and it was the most lovely thing…” Sarah also communicates the importance of touching and listening for the student with VI with the entire class and they have even began to say “*Oh, we have to let him touch it, we have to let him see it.*” Sarah also explains the inclusiveness of the school community and the welcoming remarks in the hall when the student with VI goes for walks to practice using his cane. A few other teachers of primary grades have taken interest in explaining to their students the concept behind what visual impairment is and had their students create a Brailed alphabet.

**Teaching Strategies**

As you may recall from the section on background information, Sarah teaches a split junior and senior kindergarten class and has arranged her students to be seated in small groups based on their literacy comprehension levels. She works with each small group at different points in the school day and literacy instruction would vary from group to group based on their comprehension level and needs. Most of the time, student work in small groups, but Sarah says if she has lessons and activities, such as a short math lesson or reading a story, that require a short period of time then she would have student engage as a whole class. Her teaching strategies do focus on Gardner’s Theory of Multiple Intelligences especially on bodily/kinesthetic, auditory, and verbal/linguistic. She focuses on incorporating all three of these multiple intelligences for all her students especially for the benefit of the student with VI. Sarah shares an example of a math lesson on understanding amounts on graphs which has a focus on bodily/kinesthetic style of learning:
If I’m doing we’re doing graphing, how can I when we’re graphing with people, you know we line up. So, we’ll have him stay with me and we’ll count together all the people that he can physically feel them or we’ll create little tactile things, cube links together to figure out which one is more or less.

She explains that little changes in her lessons that provide a component of movement and touch makes a strong impact on a student with visual impairment since they have the opportunity to listen to the information shared as well as count by touching the students in the different rows. She also provides the student with VI with a mini-version of the concepts they discuss in class so he could hold it, feel it, and to just have the opportunity to explore the object with his sense of touch. In terms of support his ability to hear, Sarah provides him with objects he can link together as well as exploring with the sense of sound and understanding what differentiates sounds from one another. She explains “It’s mostly he does things to get the sound feedback. So, you know, he’ll put his hands in a bin of things and make lots of noise and that’s how he gets purpose…so you bang on the floor and if you bang on the carpet they sound different right.”

During the instruction of her lessons as well as during one-on-one conversations with the student with VI, Sarah focuses heavily on verbal communication and tries to be as explicit as possible with her instructions and discussions. She says she uses “A lot of prompting, like verbal prompting, lots and lots and lots of talking and walking him through it, and just lots of reminders and supporting him through it.” A challenge she experiences when teaching her student with VI is that he is non-verbal so she finds it challenging to identify how best to support his learning when it comes to preparing lessons and activities. She does ensure that her lessons cater to different types of learning styles, especially the ones previously mentioned so that he can follow along by touch, movement, and listening. Also, because he is non-verbal, he does not work on
literacy with the other students in the class as his literacy comprehension level is uncertain. However, because he is diagnosed as being blind, the Braille specialist works one-on-one with him during literacy instruction to read to him as well as teach him how to Braille. On a positive note, Sarah explains he is still very young and has many opportunities to strengthen his understanding and learn how to rely more on his sense of touch, his sense of sound, and continue to learn how to use his cane to move around. Sarah explains that she constantly encourages and praises him when he works in class and moves around and that little steps will hopefully help him progress in the future.

**Educational Independence**

In regards to encouraging students with VI to advocate for themselves, Sarah finds it challenging to teach and encourage her student with VI to achieve this because he is only three years old and non-verbal. She does attempt to encourage him to explore the classroom on his own as a way to practice using his cane and touch objects and the brailled items. She explains how she encourages him to move in the direction of trying to be independent in the following quote:

“I think it’s just going to take a really long time and just a lot of encouraging and praising especially when he’s this little, when we make those little steps of progress to praise it and to point it out to him and hopefully he’ll get to a point where he can be independent.”

The school Sarah teaches at does not provide many technological devices that would help assist students with visual impairment. The only device the student with VI has is a brailler which he can use to learn how to Braille. The Braille specialist has begun teaching him how to use it and Sarah encourages him to explore with it by pushing the buttons and becoming familiar
with what Braille feels like and the sounds the brailler makes. She explains that at this moment in
time, the use of the brailler is a work in progress.

Assessment Practices

When it comes to assessing students in the primary grades, especially kindergarten, it is
different from other divisions since assessments at this level all come from a teacher’s
observations and anecdotal notes. The student with VI in Sarah’s class has an IEP which is
always taken into consideration when she plans lessons and prepares activities for the students.
Sarah emphasizes on the importance of “Being observant and watching… So it’s all just
observing and seeing how he is responding to what we’re saying and what’s happening around
him.” Sarah says the number of expectations the student with VI has have been reduced because
he is only in junior kindergarten and he starting to figure out his classroom environment.

Sarah encounters a few challenges when assessing the student with VI because there
happens to be some level of uncertainty with whether or not he understands the class material
because he is also non-verbal. She explains “We don’t know necessarily what he is
understanding. So it just makes it harder for us to figure out where he is at so assessment is a bit
difficult... We don’t know what he knows what an A is in braille.” She explains that assessing
him is a work in progress and that she continuously uses verbal prompting to encourage him to
participate and engage with other students, praise him when he does, and encourage his to speak.

Cross-Case Analysis

After a close analysis of teaching experiences, understanding, and attitude towards
supporting students with VI, it is evident that all three participants have a good understanding on
how to support these students but also that it is a work in progress. It is possible for a student
with visual impairments to participate in a classroom with other students if the teaching
strategies implemented are altered to support their needs and abilities. Students with visual impairments tend to create concrete concepts rather than abstract ones and learn by heavily relying on their senses of hearing and touch to engage in verbal communications and strengthen their understanding and awareness of their surrounding environment (Dion, 2000). When a student with visual impairments is present in a classroom the teacher does not necessarily have to modify the curriculum expectations unless required, but rather to alter their teaching strategies in order to ensure their needs are met as well as the other students in the class (Dion, 2000). The purpose of making such small alterations is to maximize the participation of students with visual impairments without having to make drastic changes (Dion, 2000). Some examples of small alterations would be changing the physical environment of the classroom, changing the teaching method, reducing the complexity of the course material, and providing assistance when necessary (Dion, 2000).

When it comes to the setup of the classroom environment, Claire and Tracy both had their classrooms oriented in a way where the students with VI were seated closer to the front of the room in pairs to avoid having these students feel singled-out from everyone else. This notion of the classroom environment is discussed in an article by Dion et al. (2000) where they suggest that classroom furniture, i.e. the desks and chairs, tables, should remain in a similar if not permanent orientation to help the student with VI create a mental image of the location of objects in the classroom as well as heighten his level of safety when moving around. As a way of promoting a safer learning environment for students with VI, these authors also suggest to tape down any wires or chords to the floor to prevent accidental trips and falls (Dion, 2000).

When addressing how students with VI learn, all three participants expressed the importance of incorporating Gardner’s Theory of Multiple Intelligences in their teaching
strategies in order to support different types of learners in their classrooms. They all stated that they altered their teaching instructions to ensure there were movements, hands-on activities, and oral communication through conversations with the teacher and with other students in the class. To further expand on the possible teaching strategies for students with visual impairments, Dion et al. (2000) and Wormsley et al. (2006) proposed a few teaching strategies that can help students with visual impairments learn, such as three-dimensional objects and moulded structures. These students can learn by tactually exploring objects by feeling the grooves and all the parts of the structure to help them become more familiar with it and relate the theoretical information they learn in class to actual models of it (Dion, 2000) (ETFO, 2007). They can also have someone help describe the structure to them or even describe it to another student or a teacher to strengthen their oral communication skills and understanding. Tracy and Sarah often provide their students with VI with models that represent concepts they discuss in class to give them the opportunity to strengthen their sense of touch while learning.

Tracy would often have her lessons prepared in advance in order to have certain pages from texts and school work translated into Braille for the student wit VI. In accordance with this, Dion et al. (2000) suggest that students with visual impairments will be more likely to follow the subject material if it is presented in an organized manner, such as the teacher preparing lesson plans in advance and providing a copy for these students. Students with visual impairments may have the same cognitive and intellectual abilities as other students, but lesson plans focus heavily on vision-oriented learning, which creates additional challenges and makes learning difficult for them (Kumar, 2001). As an attempt to minimize the amount of confusion during lessons and instructions, all three participants communicated the importance of providing verbal instruction and explanation that was clear and concise. Khoenig et al. (1995) also agree that students with
visual impairment depend heavily on clear and concise verbal descriptions of material because too much information would only create confusion and difficulty in efficiently grasping the knowledge (Dion, 2000) (ETFO, 2007). These researchers argue that teachers should take this into consideration during lessons by reading material aloud and explaining what is written on the blackboard, on the overhead projector, or on a handout (Koenig, 1995). The teachers could also refer to everyone in the classroom and objects in the classroom by their names rather than pointing at them (Dion, 2000). All three participants also relied heavily on the use of oral communication during lessons, instructions, one-on-one discussions with the students with VI, and listening to how they communicate their thoughts and understanding during discussions with their peers (ETFO, 2007). This relates to the importance of observing and listening to student discussions which was evident among the interviews with all three participants. The importance use of observing was common among all three participants in that observing helps identify how students with VI communicate their thoughts and to identify their comprehension level in regards to the content being discussed especially during discussions that involve critical thinking. Koenig et al. (2000) also state that observations of how these students participate, comprehend class material, engage in class activities, and how they feel are vital to gain an overall sense of how students with VI learn.

Individuals with low vision find it difficult to read anything from a reading distance and usually use the combination of their senses to learn, but alterations to the lighting in a room, the size of the print, or even the need for Braille may be necessary (Wormsley, 2006). Claire and Tracy both provide enlarged text for the students with VI they teach and Tracy also uses bright coloured paper and large, dark font to make reading easier. Dion et al. (2000) argue that contrast is crucial for students with VI in terms of making text easier to read when the colour of the
background and the text are contrasting colours. Tracy and Sarah provide brailed items for their students and were fortunate to have a braille specialist visit the students on a weekly basis to help them efficiently read braille.

Students with visual impairments have the opportunity to be independent and build on their knowledgeable not only through alternations with classroom instruction but also through the use of assistive technology. Claire says the school she works for is a technologically-minded school and is fortunate enough to provide assistive technology for students with VI, such as the Kurzweil computer software. Bob Fenner (2011) also suggests a computer software called SmartDrive which includes a text-to-speech program that could be used by students with VI to hear text from a book, class materials and be able to stay up to date with the content discussed in class. However, Tracy and Sarah explain the school district they are employed by does not provide enough funding for assistive technology so their students with VI have minimal access to technology. There happens to exist a gap between technological advancements and actually applying them in schools (Smith, 2004).

If more schools and governments focused some attention on assistive technology and potential training to maximize the ability of students with VI to access information on a computer through Braille and even non-visual ways of retrieving information from a computer (Smith, 2004). It is also important to consider teacher training on how to use assistive technology in order to teach their students how to efficiently use them as well. After speaking with all three participants, they reveal that the mobility, vision, and braille specialists visit the students with VI on a weekly basis, which means students may not have support with their devices until the specialist return to help. This is why the teachers should have basic knowledge as to how to use assistive technology to support these students’ learning and prevent technical difficulties with the
devices from becoming a barrier to their participation in class and their learning. In reality, many schools funded by the boards may not have access to assistive technology for students with VI but there still remains the importance of promoting a safe and inclusive learning environment where teachers can help these students progress by expressing a positive, welcoming, and helpful attitude towards them and among all the students within the class. The three participants from this research study as well as findings from the various research studies referenced emphasize the importance of differentiated instruction in terms of incorporating Gardner’s’ Theory of Multiple Intelligences and to continuously encourage these students to advocate for themselves in order to strengthen their educational independence Chang et al. (2002).
CHAPTER FIVE: DISCUSSION

This final chapter provides an overview of the purpose of the study, implications of the findings for how students with VI learn, recommendations for possible further studies, and my own personal growth as an educator upon completion of this research.

Purpose of the Study

The purpose of this study was focused on gaining insight into how three practicing elementary school teachers adapt their classroom environment and instructional strategies for students with visual impairment in general class settings. Four major themes emerged from participant interviews and a review of the literature: 1. Inclusive learning environments, 2. Teaching Strategies, 3. Educational independence, and 4. Assessment Practices.

Implications

Implications for the Researcher

Dion et al. (2000) and Chang et al. (2002) suggest an important point that teachers can help encourage students with VI to advocate for themselves by being patient, open-minded, and showing interest in their opinions and in their suggestions on how they learn best. They can make suggestions to teachers as to what they would like them to do differently, such as use more audio components, textbooks with larger print and images, and incorporating the use of three-dimensional structures. As a researcher myself, I have learned how valuable and effective the incorporation of addressing multiple intelligences in instructional strategies and this positively impacts how students with VI learn in general classroom settings. The important point here is providing these students with the opportunity to feel comfortable to express how they feel and communicate their thoughts freely. The importance of establishing an inclusive learning environment was present in all three interviews and they were all able to establish these type of
learning environments for all types of learners by ensuring students feel welcome and accepted based on their abilities and for who they are. I have learned the importance of establishing a positive space to promote educational independence among students with VI and where they can also feel they belong, comfortable being themselves and to learn in a way that is most effective for them. Assistive technology can also help students with VI follow along during lessons and discussions while providing an increase in their educational independence and strengthen their ability to achieve their maximum potential.

My teaching practices will be different after conducting this research study because I have gained a stronger understanding of how to teach students with VI. I have learned how to support these students, how to alter teaching strategies, accommodate, and assess these students to ensure they are also following along during lessons and participating during class activities. I have also learned about the importance and value in addressing at least three multiple intelligences within each lesson to ensure differentiated instruction is implemented for students with VI and to cater to various types of learners in a classroom. I have gained a stronger understanding of the importance of communicating with students with VI in more than one way including orally, through sound, and touch as in hands-on activities to understand content material in various ways. This research is useful to refer back to for effective instructional strategies and how to achieve inclusiveness within the classroom for educators who may have a student(s) in their classrooms.

Recommendaions for Possible Future Study

Based on the findings from this study on how students with VI learn, a few questions arise in terms of how to further strengthen the support for these students. In terms of assessment, there seems to be a level of uncertainty that exists on the overall comprehension of students with
VI so it seems that further study needs to be done to identify how to enhance assessment practices to minimize the amount of uncertainty in the comprehension of students with VI. Teacher-parent relationships can also contribute to supporting how students with VI learn and gain educational independence so further studies on the communication between parents and teachers can be essential to ensure there are no gaps in the students’ behaviours and learning at school and at home. Further research on how to strengthen this relationship and how to involve parents in the learning process can be benefit to motivate these students to learn and strengthen their ability to advocate for themselves.

Further study for understanding how assistive technology can support students with VI is also crucial for their learning. Despite all of the assistive technology devices and software shared throughout the study, a current challenge exists, which is to provide sufficient instructions, training and the correct tools for students with VI (Kumar, 2001). Many variations of assistive technology exist but many schools have minimal funding towards providing assistive technology for student with VI. It is necessary for further research to be completed on how to reduce the division between technological advancements in assistive technology and their availability and practical use in schools (Smith, 2009). There is also the need to identify how much teachers of students with VI know about assistive technology and how we can provide them with the support they need to assist these students in order to avoid technical problems from becoming a barrier to student learning.

Conclusion

Upon learning about the role of the school community, classroom environment, and the supportive educators and specialists, I was able to gain a strong appreciation for the dedication, the hard work, and the positive attitudes these teachers express towards their students and their
openness to be flexible when changes need to made in order to positively contribute to
strengthening the learning of students with VI. It is important that teaching strategies
implemented for students with VI include hands-on activities, tactual learning, a lot of verbal
communication and prompting, and mobility and orientation to help these students progress in a
school environment and ultimately in their daily lives (NICHY, 2004). I have gained a stronger
awareness about what visual impairment means, how to accommodate for these students in a
classroom setting, and how to actually put theory into practice in order to modify my teaching to
help these students maximize their learning in an inclusiveness learning environment that
welcomes learners of various needs and abilities.
REFERENCES


*American Foundation for the Blind.* Retrieved from:


Date: ___________________

Dear ___________________,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. I am studying how students with visual impairments learn and how they are supported within regular classroom environments for the purposes of investigating an educational topic as a major assignment for our program. 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 course instructor who is providing support for the process this year is Arlo Kempf. My research supervisor is Shelley Murphy. The purpose of this requirement is to allow us to become familiar with a variety of ways to do research. My data collection consists of a 45 minute interview that will be audio recorded. I would be grateful if you would allow me to interview you at a place and time convenient to you.

The contents of this interview will be used for my assignment, which will include a final paper, as well as informal presentations to my classmates and/or potentially at a 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 group, 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. I will destroy the audio recording after the paper has been presented and/or published which may take up to five years after the data has been collected. There are no known risks or benefits to you for assisting in the project.

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,

Researcher name: Pamela Khaouli
HOW ELEMENTARY SCHOOL TEACHERS ADAPT THEIR CLASSROOM ENVIRONMENT AND INSTRUCTIONAL STRATEGIES IN GENERAL CLASSROOM SETTINGS FOR STUDENTS WITH VISUAL IMPAIRMENT

Phone number, email: ____________pamela.saab@mail.utoronto.ca____

Instructor’s Name: _______________ Arlo Kempf ___________________
Phone number: ___________________ Email: arlo.kempf@utoronto.ca

Research Supervisor’s Name: ___________ Dr. Shelley Murphy _____________
Phone #: _________________________ Email: shelley.murphy@utoronto.ca

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 __Pamela Khaouli____(name of researcher) and agree to participate in an interview for the purposes described.

Signature: ______________________________

Name (printed): __________________________

Date: ___________________________
Appendix B: Interview Questions

Potential Interview Questions

Professional Background:

1. For how many years have you been teaching?
2. What grade are you teaching this year?
3. Have you had any support or training either in your pre-service program or during in-service professional development and how to support students with visual impairments?
4. How many years of experience would you say you have in terms of teaching students with special needs? In terms of students with visual impairment?

Inclusive practices for students with visual impairments:

5. Can you talk about how you set up and inclusive classroom for your students?
6. What teaching strategies do you use to teach students with visual impairment?
7. As an educator, what do you do to help students with visual impairment learn and how do you modify your assessments for these students?
8. Does the school use technology to enhance the teaching of students with visual impairment? If so, how is this made possible?
9. How do you know if students with visual impairment are really comprehending the material?
10. What strategies do you use to teach students of various learning styles and abilities?
11. How do students with visual impairment in your classroom respond to the teaching strategies you use to teach them class material?
12. Does the school provide specific programs for students with visual impairment?

Additional Questions if time persists

13. How can students with visual impairment achieve educational independence?
14. Is assistive technology for students with visual impairments available at the school? If so, do you incorporate or encourage their use in the classroom and how so?