This Way or That Way: A Multiple Intelligences Approach to Differentiated Instruction

By

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Abstract

The theory of Multiple Intelligences (MI) was proposed by Howard Gardner in 1983 and has since been recognized as a valuable tool in the world of teaching. Research that has been conducted since its inception has explored how MIs are developed and identified, the social and academic benefits to MI theory, strategies for applying the theory in classrooms, as well as teacher efficacy in using the theory. However, there is currently a lack of data exploring how MI theory and approaches are actually being applied in Ontario classrooms. This qualitative study uses an extensive literature review to discuss existing research, as well as three semi-structured interviews with Ontario teachers from different school boards, grades, and years of teaching experience. The study serves to investigate what teachers in Ontario know about MI theory and how they incorporate it into their differentiated instruction (DI) strategies. Analysis of the data reveals a lack of knowledge of MI theory, a notable focus on MI assessment over instruction, an alarming amount of expressed challenges to applying the theory, as well as a lack of support and resources for further professional development. Most of these findings support the existing literature. This study has significant implications for the academic community regarding student achievement and delivers recommendations for improvements and future research, the key recommendation being more and better professional development opportunities.

Key Words: multiple intelligences, differentiated instruction, achievement, teacher efficacy.
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Dedication

To all of those fish who were told to climb a tree.
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Chapter One: Introduction

1.0 Introduction to the Research Study

“Teachers bring enthusiasm and varied teaching and assessment approaches to the classroom, addressing individual students’ needs and ensuring sound learning opportunities for every student” (Ontario Ministry of Education, 2005, p. 5).

Although this opening statement was taken from the Ontario mathematics curriculum, it can be found in all Grades 1-8 curriculum documents in Ontario. The mathematics curriculum also recognizes that students do not learn mathematics in the same ways and require the use of variety in instruction and assessment (Ontario Ministry of Education, 2005). Additionally, the health and physical education curriculum for Grades 1-8 states that elementary schools in Ontario strive to give every student opportunities to learn in ways that are suitable to their unique needs and strengths (Ontario Ministry of Education, 2015). What these statements suggest is that educators in Ontario are aware of the diversity that exists among their learners, as well as the need for differentiation in the ways in which they instruct and assess their students’ learning. Levy (2008) describes differentiated instruction (DI) as flexibility in instruction and assessment strategies with attempts to meet all students’ individual needs. Educators in Ontario are expected to use DI in their teaching to address all students’ needs, which not only include a range of learning styles in their classrooms, but also a range of intelligences, or multiple intelligences (MI). While students must be recognized for their learning preferences (surrounding environments, timing, etc.), teachers must also understand individual students’ learning capacities in a variety of categories, meaning their MIs (Prashnig, 2005).
Howard Gardner (1983) defines intelligence as “the ability to find and solve problems and create products of value in one’s culture.” This is the definition of intelligence that is used throughout this study. In the early 1980s, Gardner proposed his theory on MI, initially identifying seven intelligences that individuals can be classified by: verbal/linguistic, logical/mathematical, spatial, bodily/kinesthetic, musical, interpersonal, and intrapersonal. However, Armstrong (2009) notes that since this time, an eighth intelligence has been added to the theory: naturalistic intelligence. Gardner believed that individuals possess all of these intelligences, but to differing degrees (Armstrong, 2009).

Each type of intelligence has its own unique qualities. Verbal/linguistic intelligence includes effective use of oral and written words, sounds and phonology, semantics and syntax, and other language forms such as persuasion and descriptions. Logical/mathematical learners effectively use numbers and are able to reason well, and understand patterns and relationships. Students who have a strong sensitivity to colour, shape, space and the relationships between these elements possess visual/spatial intelligence. Bodily/kinesthetic intelligence entails expressing feelings and ideas using the entire body, as well having great balance, strength, and flexibility. Sensitivity to rhythm and pitch, and the ability to transform and express musical forms are characteristics of musical intelligence. Interpersonal intelligence involves understanding the moods and feelings of others, sensitivity to expression, and effective responses to perceived cues. Intrapersonal learners possess much self-knowledge, have an accurate self-image, and a strong sense of self-regulation. Lastly, naturalistic learners enjoy observing their surrounding environments and focusing on nature and natural phenomena.
MULTIPLE INTELLIGENCES APPROACH

(Armstrong, 2009). All eight of these intelligences have been considered in the literature review and in this study.

Teachers who differentiate their instruction to accommodate for MIs provide students with multiple opportunities to retain academic information and understand it (Campbell, 1992). Campbell’s research suggests that usage of MI theory allows students to develop responsibility and independence, improve behaviour problems, gain and apply new skills, and improve in academic achievement. Despite the literature stating the need for teaching to MIs and the benefits of doing so, it is unclear as to whether all teachers implement the MI philosophy in their teaching practices. Noble (2004) discusses research that has shown that regardless of experience, teachers are often disinclined to differentiate their instruction and evaluation with their diverse students. Thus, teachers could be missing a critical opportunity to help their students achieve academic success.

1.1 Purpose of the Study

The purpose of this study was to examine how teachers were incorporating MI theory into their lesson designs and assessment procedures. A literature review was conducted, examining the ways in which MIs were developed and identified, how they were accommodated for, the impact that teachers and teacher training had on MI theory, and the perceived benefits and criticisms of the theory. The most significant issue that arose in this literature review was that many teachers had a lack of understanding of MI theory as well as inadequate training to implement it. Noble (2004) states that teachers have significant control over the way in which they teach the curriculum; however, did teachers choose to use MI theory as a guideline and what resources did they access to do this? More precisely, in this study teachers from different school boards, of different
grades, and with differing years of teaching experience were interviewed to find any possible differences in MI theory usage and resources. Ultimately, the goal was to discover if a stronger emphasis needed to be placed on teacher training and education on differentiating instruction for MIs in Ontario.

1.2 Research Questions

The objective of this study was to learn if teachers had the proper resources and confidence to implement MI strategies within their classrooms. Research was directed towards learning if there is a need for more teacher training to build educators’ confidence and efficacy in teaching to MIs. Another aim of this study was to find which resources teachers used, and be able to share this information with other educators who may have less information about MIs. The main question of this research study was: How are teachers addressing elementary students’ MIs to help them achieve academic success? More specifically, it investigated:

1. What do teachers know about MI theory?
2. What are teachers’ experiences with addressing a range of MIs with their elementary students?
3. What resources do teachers have to support them in applying MI theory?

1.3 Background of the Researcher

My initial interest in Gardner’s (1983) MI theory originated in my undergraduate program in child and youth studies. From this point I was able to build upon my understanding of the theory by reflecting on my past experiences and holding on to my knowledge in my upcoming experiences in work and further schooling. When I first learned about MIs in my undergraduate program, this theory really resonated with me and
I was very intrigued at this way of understanding knowledge. I always felt that out of the many theories I was taught, this theory most applied to me. I was able to recognize my more developed intelligences and compare them with my peers’ and classmates’ from my experiences as a student. It was when I learned that this theory is encouraged for classroom planning that the idea for this study emerged.

When I think back to both my elementary and high school years, I do not recall a significant level of MI implementation in lessons and assessment. Much of my work in elementary school was pencil-paper, especially with regard to assessment. Even when given the opportunity to do project work, the guidelines for the product did not provide much flexibility and there was often still a test for the corresponding unit. As I am a verbal/linguistic and logical/mathematical learner, these methods worked for me; however, some of my peers may have succeeded much more through recognition of their MIs. As it has been more than ten years since I have been an elementary school student, I was interested in investigating whether teaching strategies have changed since that time.

As I moved from a student to an educator role, I also saw a lack of MI theory implementation, which was surprising to me since these experiences were more recent. I often saw significant repetition in the ways in which teachers presented their lessons and assessment without much differentiation for students who would have succeeded through other measures. All of my experiences led me to question whether the limited use of MI theory was due to a lack of knowledge or an under appreciation of the value it could provide. I further questioned whether this was due to a lack of resources for teachers to use for differentiating instruction and assessment to accommodate for MIs. I believe MI
theory is important because children should have equal opportunities to learn and express their knowledge, and they do not all accomplish this in the same way.

**1.4 Overview of the Whole Study**

This study is arranged in five chapters. Following this introductory chapter, chapter two presents the literature surrounding MI theory and makes connections to this study. The literature review outlines how individuals develop varying intelligences and how teachers can identify these intelligences. Then the numerous benefits of applying MI theory are discussed, as well as some alternate viewpoints on this theory. Next, strategies for implementation of MI theory are explored. Lastly, knowledge of why MI theory is important to teachers is explained, and how their attitudes can impact its effectiveness.

In chapter three, the methodology for the research is discussed and a description of each of the research participants is provided. Interviews were conducted in three different elementary schools. The schools were all part of different boards in Ontario and the teachers selected for the interviews had differing years of teaching experience. Data was collected from open-ended questions and the interviews were audio recorded with the consent of each participant.

In chapter four, the findings are reported. Each theme that emerged from the interviews is discussed in detail, including personal experiences of the educators, their strategies for using DI to recognize MIs, their perceptions of the theory, and the supports that were available to them. Connections are made between the literature and the research findings.

Lastly, in chapter five, conclusions are drawn from the collected data and limitations of the study are reviewed. Indications for further research are made and
research conclusions are used to provide suggestions for practicing teachers, administrators, and the Ontario Ministry of Education.
Chapter Two: Literature Review

2.0 Overview of Chapter Two

Gardner’s (1983) theory of Multiple Intelligences (MI) is a complex concept that educators have differing attitudes and education on. Several sources have been compiled for this literature review that discuss MI theory in many contexts. This literature review is made up of both primary and secondary sources, as well as a combination of qualitative and quantitative studies. The selected sources discuss MI and differentiated instruction (DI), and provide analyses and evaluations of their usage in schools and classrooms. They also provide insight into the perceived benefits of these approaches as well as critiques of the concepts. This literature review is organized into four sections. First, the development of varying intelligences is discussed as well as strategies that teachers can use to identify these intelligences in their students. Second, the numerous benefits of applying MI theory are described, as well as some alternate viewpoints on the theory. Next, strategies for implementation of MI theory are outlined, including both instructional methods as well as assessment techniques. Lastly, the reason why knowledge of MI theory is important to teachers and how their attitudes can impact its effectiveness are discussed. Much of the research included in this review is relevant to the investigative topic of this study, and thus was helpful in narrowing the research process. The literature in this review was built on through investigation of the resources and experiences that teachers had for employing MI methods in their classrooms.
2.1 Identifying Multiple Intelligences in Individuals

2.1.1 Development of intelligences.

Perhaps the first step in identifying an individual’s intelligences involves understanding how they develop. In his book entitled *Multiple Intelligences in the Classroom*, Armstrong (2009) explains some factors that may affect the development of particular intelligences. These include, but are not limited to, familial factors and influences, socio-cultural factors (such as funding for programs like mathematics), access to materials or resources needed to develop an intelligence, and geographic factors such as where an individual lives (p. 29). Additionally, Gouws (2007) discusses Gardner’s (1983) MI theory and notes that all individuals possess each intelligence, and explains how it is the responsibility of a teacher to assist in developing them. Therefore it is crucial for a teacher to understand that although children have their strengths and weaknesses, there is still potential for them to build on their less developed intelligences, which relies on the identification of each individual’s intelligences.

2.1.2 Strategies for identification.

There are numerous ways in which an educator can identify various MIs within their students. With regard to academics, Armstrong (2009) discusses several ways in which a teacher can isolate a student’s most developed intelligences. Some of these include looking at school records, discussing the student’s abilities and disabilities with other teachers and their parent(s), and setting up assessment activities. An example of an activity provided by Armstrong is to teach fractions in eight ways (one way for each intelligence) and observe the ways in which various children respond (p. 39). In an article reviewing methods of DI and assessment strategies, Levy (2008) further suggests the use
of questionnaires early on in the school year to determine students’ varying intelligences. It is clear that there are many ways that an educator can discover a student’s intelligences and that they have a wide range of options to choose from.

Armstrong (2009) further provides a strategy for recognizing students’ more developed intelligences, which involves looking at situations in which the child misbehaves. For example, Armstrong explains that a highly linguistic child may misbehave by talking out frequently when it is not their turn to speak and a highly bodily-kinesthetic student may fidget often (pp. 33-34). Armstrong further proposes that observing what a child chooses to do in their free time may offer some implications of their more developed intelligences (pp. 33-34). This suggests that observing habits and behaviours in students in addition to their academic abilities is critical to understanding their intelligences.

Conversely, in a study by Bordelon and Banbury (2005), an instrument named “The Multiple Intelligences Inventory for Teachers” was developed. This included an extensive list of questions for groups of teachers to answer based on their students. The purpose was to identify students’ more developed intelligences. However, Bordelon and Banbury’s findings actually indicated that Gardner’s (1983) MIs cannot be identified by themselves, but rather as multifaceted intelligences. Therefore, this information could be an indication that although finding an individual’s more developed intelligences is possible, isolating them may not be.

If a teacher would like to implement MI strategies in their classroom, being able to differentiate between students’ varying intelligences and understand why children learn differently is essential. It is critical for a teacher to understand that their students
have the potential to build on all of Gardner’s (1983) intelligences and that they are responsible for providing opportunities to do so. There are numerous ways in which a teacher can pinpoint students’ most developed intelligences, regardless of if they are identified in isolation or in combination with other intelligences. This information was significant to the development of this study because it looked to see if teachers had enough resources to feel confident in identifying their students’ MIs and the ways in which they do so.

2.2 Benefits of Multiple Intelligences Theory

2.2.1 Social benefits.

It is undeniable that there are countless benefits to MI theory. Noble (2004) found in his research that just over half of his participants stated that MI theory helped students become aware of the best ways in which they learn. Laughlin and Foley (2012) also advise that understanding one’s own intelligences can help an individual develop strategies for coping with situations in which they are not as strongly skilled at. Likewise, in his study of one classroom that implemented MI strategies, Campbell (1992) found that through this method of teaching, students became more responsible and independent. They increasingly became skilled at creating their own work according to their strengths. It also became evident to Campbell that through the use of centres and individual-choice projects, students became more skilled at cooperative learning and appreciating their peers’ similarities and differences in learning. Levy (2008) additionally states that students of varying intelligences can benefit from each other by demonstrating and sharing their individual ways of solving problems. These sources imply that if a student can understandably classify their more developed intelligences, they can better appreciate
the value of MI theory, as well as improve in their individual and collaborative performance. This may in turn increase their motivation to participate in school activities.

Freedman (2015) explains that students are more engaged in their learning and motivated when MI and DI are integrated into the classroom structure. Campbell (1992) similarly found that students become more motivated when MI techniques are employed, and suggests that this is a result of heightened self-confidence. For example, as part of the MI implementation, the teacher in Campbell’s study used centres for each intelligence. Campbell found that by the end of the school year, each student in the class identified approximately six centres that they felt confident using. In comparison to the beginning of the school year, most students only identified one centre. All students should have confidence and motivation in their classroom environment, and it appears as though MI methods are an effective way to achieve these elements.

2.2.2 Academic benefits.

With regard to academic benefits, Mettetal, Jordan and Harper (1997) found in their research that the school in their study had increased test scores after the first year of MI implementation. In another study by Mokhtar, Majid, and Foo (2007), researchers investigated MI teaching approaches in the subject of information literacy. Mokhtar, Majid, and Foo found that homogenous clusters of intelligences displayed the highest achievement for group projects. Several other research studies showed improved academic success as a result of MI implementation, including Campbell (1992) and Noble (2004). Evidently, improved academic achievement appears to be a trend when MI theory is implemented in some way in classrooms.
Alternatively, Kornhaber (2004) stresses the limitations to analyzing the benefits of MI implementation. Although schools using MI in her study showed improvements in student achievement and standardized tests, Kornhaber mentions that improvement of any sort as a result of MI theories is dependent upon the teaching practices that were previously in place before the introduction of MI. It is therefore important to consider prior circumstances in determining the effectiveness of MI methods. Moreover, Gouws (2007) states that not all lessons can incorporate each intelligence; however, he stresses the importance of still incorporating as many intelligences as possible. Gouws proposes that even if every intelligence is not addressed in a particular lesson, there will still be potential for more learners to benefit, rather than using just one approach.

Lastly, Campbell (1992) found that the incorporation of MI theory in his classroom of study positively influenced behaviour problem students. In Kornhaber’s (2004) study of MI implementation, roughly 80% of the schools showed improved behaviour in students as well. She suggests that this is a result of being more engaged. Kornhaber also found improvements in students with learning disabilities in association with MI. Noble (2004) had this finding as well. Many teachers in his study saw MI as a helpful tool for students with learning difficulties and students who were learning English as a new language. These findings show the vast range of students who benefit from MI methods. It is therefore clear that everyone can benefit from MI theory in one way or another.

After reviewing several sources to understand the benefits of MI theory, it can be concluded that through the use of the theory, improved academic achievement is likely. It was also found that students of all abilities and disabilities can benefit from the approach,
including children with behavioural and learning difficulties, as well as English language learners. Improved social skills were another common finding within these research studies, and many researchers found that the use of MI theory can help both teachers and students identify their own strengths and weaknesses. With this knowledge, students can learn what they need to build on and thus become more confident in these areas. This was significant to the present study because it looked to see not only what resources teachers had for learning about MI theory, but also if they saw the value of it.

2.3 Implementing Multiple Intelligences Theory

2.3.1 Instruction strategies.

Just like the identification process, varying intelligences can be accommodated for in a variety of ways. Gouws (2007) states that it is possible for an individual to achieve success if the educator challenges varying intelligences in their lesson planning. While examining a school in its implementation process of an MI curriculum, Mettetal, Jordan, and Harper (1997) found some methods that teachers use. These include letting students choose from a list of activities as their way to be assessed as well as providing time in every school day to teach according to each of Gardner’s (1983) MIs. Moreover, in her interviews with several teachers, Freedman (2015) found that a common way that teachers apply MI theory with their classes is by combining subjects in single lessons such as art and science or music and math. Teachers in Freedman’s study also stated that centres or stations for different intelligences are used. Lastly, a chart adapted from Armstrong (2009) in Table 1 lists some ways that each intelligence can be acknowledged (pp. 60-64). It is apparent that instruction strategies come in many shapes and forms.
Teachers can choose which strategies best suit their students’ needs and use methods that they feel most comfortable implementing.

Table 1

*Activity Examples for Gardner’s Multiple Intelligences*

<table>
<thead>
<tr>
<th>Linguistic</th>
<th>Logical-mathematical</th>
<th>Spatial</th>
<th>Bodily-kinesthetic</th>
<th>Musical</th>
<th>Interpersonal</th>
<th>Intrapersonal</th>
<th>Naturalist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainstorming</td>
<td>Classifications and categorizations</td>
<td>Graphs and charts</td>
<td>Classroom theatre</td>
<td>Background music</td>
<td>Board games</td>
<td>Choice time</td>
<td>Aquarium or class pets</td>
</tr>
<tr>
<td>Journal keeping</td>
<td>Logic puzzles and games</td>
<td>Diagrams and maps</td>
<td>Crafts</td>
<td>Percussion instruments</td>
<td>Community involvement</td>
<td>Reflection periods</td>
<td>Portable ecosystem</td>
</tr>
<tr>
<td>Storytelling</td>
<td>Calculations and quantifications</td>
<td>Videos</td>
<td>Field-trips</td>
<td>Memory music</td>
<td>Conflict mediation</td>
<td>Interest centres</td>
<td>Nature walks</td>
</tr>
</tbody>
</table>

Additionally, Armstrong (2009) offers alternative ways in which MI can be used within the classroom. For instance, Armstrong states that a teacher may foster musical intelligence when she/he uses a song during a transition from one activity to another. She/he may use spatial intelligence to form a group by instructing students to find others wearing the same colour as them (pp. 112-119). Other classroom activities that could incorporate MI theory as mentioned by Armstrong include getting students’ attention, describing classroom rules, and behaviour management (pp. 112-119). Gouws (2007) also offers some suggestions on the use of MI theory for other purposes. Some of these examples include using gestures while speaking (bodily-kinesthetic) and pausing after speaking to allow time for reflection (intrapersonal). These sources highlight the importance of variety not only in instruction and assessment (which is discussed in the next section), but also in any other activities that take place in the classroom.
2.3.2 Assessment strategies.

Options for assessment follow the trend of identification and instruction strategies. There is a vast array of methods that an educator may use. However, according to research, this variety of strategies is not always utilized. Bordelon and Banbury’s (2005) research focused on assessment of student abilities and found that there is a large focus on verbal and mathematical skills. Other studies had this same finding, including Freedman (2015) and Campbell (1992). Although students who have more developed verbal and mathematical intelligences may benefit from these approaches, students that are stronger in other intelligences are not recognized. This is indicative of a need for more acknowledgment of diverse learners through the use of alternative approaches to assessment.

On the topic of alternative assessment, Armstrong (2009) states that there are an increasing number of educators who are in favour of alternate ways to assess student achievement besides traditional pen and paper tests. He suggests that authentic assessment measures are much more efficient for assessing student achievement and their understanding of concepts. Armstrong describes “authenticity assessment” as realistic measures that keep the concepts in context – a similar environment to where the students would actually need to show what they have learned (p. 131). Similarly, the concept of authenticity also comes up in a book by Schwartz and Pollishuke (2013), where they suggest that alternative assessment methods to paper/pencil tasks allow students to see how what they are learning is relevant to their own world, and thus be able to apply their learning more effectively (p. 71). Gouws (2007) also touches upon the concept of MI with regard to assessment. While he does not oppose the idea of traditional tests, which are typically logical-mathematical, Gouws mentions the use of tests in addition to other
approaches that can be used at times as well. Gouws puts forward ideas such as assessment of cooperative groups for interpersonal intelligence and hands-on projects for bodily-kinesthetic intelligence. By comparing and contrasting these views on alternative options, it can be concluded that tests can be appropriate forms of assessment, but only in moderation, and teachers must recognize the multitude of alternative options that they can use to authentically gauge their students’ MIs.

Some alternative forms of assessment that are described by Armstrong (2009) include anecdotal records, work samples, audio files, videos, photographs, and student journals (pp. 131-143). Additionally, Mettetal, Jordan, and Harper (1997) found that teachers in some classes let their students choose from a list of activities as their way to be assessed. Likewise, when asking interviewees about their assessment strategies, Freedman (2015) found that teachers use various measures such as anecdotal records, informal observations and demonstrations of understanding. Similar to instruction, teachers can decide which strategies they want to use in their classrooms, and there are numerous strategies of alternative assessment to choose from.

These sources provide an extensive, yet not exhaustive list of the many ways in which teachers apply MI methods with their classes. It is apparent that the use of logical-mathematical and linguistic intelligences are the main focus when it comes to assessment, but teachers are beginning to move away from them, as well as focus on the idea of authenticity. Knowledge of both instruction and assessment strategies are critical to employing MI methods with students effectively. It can be concluded from the information provided that there is not one way to use MI theory, but it seems important that a teacher does incorporate it. All strategies provide students with a variety of ways to
demonstrate their academic knowledge. This was relevant to the study because it focused on seeing if the participants had resources for these strategies, and if they used any additional techniques that were not mentioned in this literature review.

2.4 Teacher Implications for Multiple Intelligences Theory

2.4.1 Teacher preparation and training.

A critical aspect in the adoption of MI theory is adequate training. Research conducted by Edwards, Carr, and Siegel (2006) involved teacher candidates answering questionnaires about their use of DI strategies as well as their prior training to do so. Participants’ answers showed that these teacher candidates needed better preparation to work with diverse learners than they had received. Edwards, Carr, and Siegel see this as an implication for a reviewed curriculum for teacher education courses, and Laughlin and Foley (2012) highlight the need for mentors or guides to educate teachers and teacher candidates in the learning process of MI. Although DI strategies are not exactly the same concept as MI strategies, both involve the concept of variety, and teachers need proper training and resources to be successful.

Regardless of prior training, Kornhaber (2004) looked at three major concepts including why teachers decide to use MI theory, whether or not it brings positive change, and how this change is occurring. Kornhaber found that educators within her study used practices that aligned with MI theory without purposely trying to do so. For example, some of these teachers used learning centres, hands-on learning, and project-based curriculum. This indicates that although teachers may be teaching according to MI theory, they may not be aware of it and are thus uninformed of its value and benefits due to a lack of preparation and training.
Moreover, Shore (2004) conducted a study that focused on teacher preparation programs. The purpose of this study was to have the teacher educators use MI theories during instruction and encourage their student teachers to use MI to display their learning. What Shore found was that most teacher candidates felt as though they could demonstrate their knowledge more effectively with MI. This suggests that importance is not only placed on educating teacher candidates about MI and allowing them ample time to practice with students, but also making sure they too know how to demonstrate their own knowledge through understanding MI.

Furthermore, in his study examining the outcome of a tool for curriculum differentiation using MI, Noble (2004) found that over 90% of the participants in his study feel that knowledge of MI theory expanded their ideas on how students in their classes can achieve success. It is therefore critical that teachers have the proper resources to adopt MI theory so that more students can achieve this success. Shearer (2004) also looked at MI theory implementation in terms of personal development for both teachers and students. Shearer found that a key factor in determining whether or not a teacher will adopt MI theory as a teaching approach is if they understand it. This could conceivably have an impact on the attitudes that teachers bring to education about the concept of MI.

2.4.2 Teacher attitudes.

Common sense would suggest that if an educator approves of a theory, they are more likely to adopt it or use it effectively. In the study conducted by Mettetal, Jordan, and Harper (1997), surveys and interviews were presented to parents, students, and teachers to examine their attitudes towards a new MI curriculum being implemented in their school. It was found that almost all participants had a positive outlook on this new
curriculum. Although this is the case in many instances of MI implementation, there is also much resistance to the application of MI theories in the classroom.

In attempts to understand this resistance, Edwards, Carr, and Siegel (2006) noticed that new teachers and teacher candidates occasionally experience opposition to MI because it is viewed as an unwelcome change from the practices of teachers who have been in the field for years. Freedman (2015) states that teachers may feel that putting MI and DI models to use can be tedious and time-consuming, but suggests that in the end, the models will be very beneficial to student success. Campbell (1992) also investigated the effects of a daily MI approach in classrooms. Campbell touches upon the issue of time constraints when it comes to incorporating MI into the classroom. He counters this by explaining that once a teacher has experience with using MI for some time, it becomes no more difficult than planning traditional lessons. One other explanation for resistance comes from Shearer (2004), who sheds light on the possibility that teachers may not be accepting of MI theory because it may come across as just another craze in education that will soon pass. In this case, many teachers feel that it is not significant enough to adopt. Therefore it is important to understand the underlying reasons for resistance to MI, and how they can be addressed.

Furthermore, Edwards, Carr, and Siegel (2006) found that instruction frequently does not translate into practice. They place a strong emphasis on teacher educators providing their teacher candidates with opportunities to practice the research-based methods they learn about. Shearer (2004) builds upon this idea by stating that teachers may not realize the potential benefits of MI theory if they do not have personal experience with it. Likewise, Mettetal, Jordan, and Harper (1997) found proximity to be a
key factor in the acceptance of MI methods by educators. This implies that modeling and time to practice would benefit teachers that are new to the MI curriculum.

Moving forward, with regard to teacher attitudes after MI theory is implemented, Noble (2004) found that teachers felt more positive about their practices when they started to observe the outcomes of their students’ learning. It is therefore evident that while implementing an MI curriculum is integral to student learning, resources and support need to exist in the school environment to warrant this implementation, and allow teachers the opportunity to develop their own opinions on the theory.

2.5 Chapter Conclusion

Numerous relevant sources surrounding the topic of MIs were reviewed for the purpose of the study. Through analysis of the literature, much insight was gained into the ways in which intelligences are developed and identified, the perceived benefits and criticisms of the theory, how they are accommodated for, and the impact that teachers and teacher training have on MI theory. This study examined the resources and experiences that teachers had with regard to implementing MI theory in their classrooms. More precisely, teachers with differing years of teaching experience were interviewed to find any possible differences in MI theory usage and resources. With the results, the goal was to be able to identify whether teachers needed to be more motivated and confident at using MI methods in their classrooms.
Chapter Three: Research Methodology

3.0 Overview of Chapter Three

In this chapter the research methodology for determining how teachers were addressing elementary students’ multiple intelligences (MI) is explained. It begins by outlining the research approach and procedures as well as the instruments of data collection. Then the participants and the recruitment process are described. Procedures for data analysis and the ethical considerations that were made for this study are discussed. The methodological limitations and strengths of this study are reviewed and lastly the chapter concludes with a short summary and rationale of the methodology.

3.1 Research Approach and Procedures

For the purpose of this research study, a qualitative approach was used, including a review of the literature surrounding the topic of MI theory and semi-structured interviews with three elementary teachers. A qualitative approach was used to provide a detailed and complex understanding of the topic; in order to understand the experiences of various teachers with regard to knowledge of MI theory, direct discussion was necessary. This gave the research participants a chance to share their stories in a flexible, open-ended manner, and in their natural setting (Creswell, 2013).

A literature review was conducted for this area of research to gain a deeper understanding of MI theory, its impact and benefits, and how the theory can be implemented in classrooms. Semi-structured interviews were conducted with three teachers in a face-to-face context to build upon the knowledge gained from the review of the literature.
3.2 Instruments of Data Collection

The research study employed three semi-structured interviews. Although all participants were asked the same set of pre-established questions as in a structured interview, the questions remained open-ended as in an unstructured interview (Fontana & Frey, 2000). The format of the interviews was not limited in the sense that respondents could speak about their values and experiences without the need to follow a strict guideline.

An interview protocol was created, followed by questions regarding teaching to MIs through differentiated instruction (DI), as well as teachers’ experiences and confidence in doing so. To create an effective list of questions, the wording of most questions was open-ended and neutral in nature, so that wording would not influence responses. Questions were asked one at a time to minimize confusion or the chance of overwhelming the interviewees (McNamara, 2009). Interview questions are included in Appendix B.

3.3 Participants

This section reviews the criteria used to choose participants, and the process of recruiting these participants. Each participant from this study is briefly introduced.

3.3.1 Sampling criteria.

There were several criteria that needed to be considered when selecting participants. In this study, three teachers were interviewed. All of the teachers had different years of experience (new teacher, teaching for 20+ years, and somewhere in between). Additionally, the three participants taught at different schools, and in three separate school boards. This variation was to provide a range of experiences in relation to
MI theory and its use. Lastly, all participants had to be willing to be open and honest in sharing their experiences. This would lead to the most accurate and valid information for the study.

3.3.2 Sampling procedures.

Participants were recruited by connections through past experiences. One of the participants was a teacher that was connected through a family friend, another was a past co-worker, and the third teacher worked at a school that I have previously volunteered at. Each of these teachers was directly contacted via email, where the proposed study and the reason for requesting their participation were explained. Each interviewee was provided with the participant criteria to ensure that it could be fulfilled. Additionally it was ensured that the teachers did not feel pressured to oblige and that participating was completely optional.

In this study, convenience sampling was used, which means that the selection process involved participants who were easily accessible. While this method was not costly with respect to time and money, the credibility of the results could be questioned (Marshall, 1996). This limitation is further discussed in the section on methodological limitations and strengths.

3.3.3 Participant biographies.

All three participants interviewed for this study were current educators teaching in three separate school boards within Ontario. The first participant, Mary, was a Grade 1 teacher for the Halton Catholic District School Board. She was in her 28th year of teaching when her interview took place. Her qualifications were primary/junior, but she
had remained primary throughout her entire teaching career. Mary had no particular specializations.

Kathy, the second interviewee was also a Grade 1 teacher, but for the Hamilton-Wentworth District School Board. She had been teaching for three years in occasional and long-term occasional positions, and mostly in primary grades. At the time of her interview, she did not have any specializations besides her primary/junior qualifications.

The third participant was a Grade 8 teacher named Amber, who taught for the Niagara Catholic District School Board. Amber had been a certified teacher for 15 years when she was interviewed. She had a specialization in religion and was working on her second specialization in special education. She had always taught junior grades.

### 3.4 Data Analysis

The data analysis for this research began with transforming the audio data into transcripts. Analysis proceeded by coding the data. Common phrases and ideas among the participants were first sorted into categories and then organized into four major themes (Creswell, 2013 & Kvale, 2007). The overarching themes included the personal experiences of the educators, their strategies for using DI to recognize MIs, their perceptions of the theory, and the supports that were available to them. Connections were made between the literature and the research findings, and implications of the findings and null data (information that was not received) were taken into consideration.

### 3.5 Ethical Review Procedures

A letter of consent was provided to participants and signed before their interviews took place. Many of the ethical considerations made for this study were included in this letter, which can be found in Appendix A. The letter of consent informed participants
about the topic and purpose of the research project, as well as their right to privacy and protection of their identities using pseudonyms. Participants were notified of their right to withdraw at any time, and ensured protection from any form of harm as a result of participating in this study (Fontana & Frey, 2000). Participants were informed that there were no known risks to participating in this study. They were also informed of how long the data from their interviews might be stored and who would have access to it.

In addition to the letter of consent, another ethical consideration made for this study was reciprocity with the participants. Each participant was informed of how meaningful their part in this study was and each was provided with a small gift as a sign of appreciation after each interview. When each interview ended, participants were given some time so as not to end without closure of any outstanding concerns or questions that they had (Creswell, 2013). An unbiased attitude was also maintained throughout the interviews to avoid expressing any personal values and opinions on the topic of MIs.

3.6 Methodological Limitations and Strengths

There were several limitations to this study that had to be considered when interpreting the findings. Firstly, only one method of qualitative data collection was approved for this study, which was a semi-structured interview. Therefore, data that could have been obtained from surveys, observations, and other forms of qualitative information was not permissible within the ethical review parameters established for the study. Further, this study was also only approved to interview educators. Parental and student input was therefore not included, which could have led to different results. It is also important to consider the generalizability of the research study. Given the small sample size, there is no intent that the results can be applied to the wider population
(Neuman & Robson, 2012). Moreover, the analysis of the data from the interviews could differ if done by another researcher. This could have an effect on the quality and effectiveness of the analysis (Creswell, 2007). Lastly, researcher involvement with the participants could have had an effect on their responses, since each participant was known from a previous experience (Fontana & Frey, 2000).

In spite of the limitations to the research, there were numerous strengths present as well. First and foremost, the qualitative interview approach to this study allowed participants to provide in depth details that other forms of data collection would not allow for. The perspective of each interviewee was grasped, as they could use whatever words they wanted to express their experiences, feelings, and opinions. Participation from the interviewees also provided them with an opportunity to reflect on their experiences and make meaning out of them. Lastly, this study opened the opportunity to generate new questions and prompt further research (Neuman & Robson, 2012).

3.7 Chapter Conclusion

This chapter has provided an overview of the research methodology in determining how teachers are addressing elementary students’ MIs. Qualitative methods were used for the purpose of obtaining deep, descriptive insights, and interviews were conducted with three teachers from previous connections. Interviews were transcribed and the data was coded to identify themes. Ethical considerations were made and the limitations and strengths of the study were discussed. Next in chapter four, the research findings are reported.
Chapter Four: Research Findings

4.0 Overview of Chapter Four

Each chapter leading up to this has presented the theory of Multiple Intelligences (MI) and how it can be used for differentiating instruction. Research questions were posed, and relevant literature was provided as background information. Then, the methodology used for obtaining primary data in this study was explained. This chapter presents the findings that emerged from the analysis of three interviews with Ontario teachers. Two of these teachers taught Grade 1, and the other taught Grade 8. The focus of the data analysis was to answer the main question of this study, which was, “How are teachers addressing elementary students’ MIs to help them achieve academic success?” The findings were organized into four main themes: personal experiences and background, strategies for using differentiated instruction (DI) to recognize MIs, perceptions of MI theory, and supports for learning about MI theory. Each theme was broken down into sub-themes to further organize the findings and discuss the specific experiences of each participant. Throughout each section of this chapter, connections are made between the literature in chapter two and the experiences of each participant in this study. Finally, the chapter concludes with a summary of the findings and the implications that this analysis had.

4.1. Personal Experiences and Background

Each participant in this study identified quite different teaching and educational experiences with regard to MIs. The first sub-question of this study was, “What do teachers know about MI theory?” In this section, each participant’s unique understanding
of MI theory is presented, as well as the differing lengths of time that they had been using the theory at the time of their interviews.

4.1.1. Understanding of multiple intelligences theory.

Perhaps the most surprising finding in this analysis was that none of the participants really knew about MI as a theory. Each participant was able to make an educated guess as to what it was about, but none of them had actually heard the name “Multiple Intelligences theory” before their interviews. Mary understood the theory to mean that students are wired in certain ways and that it is important for educators to tap into those predisposed areas of intelligence. Kathy and Amber more broadly described it as the different ways that people learn. What was common among all participants was their acknowledgment that they must try to meet the needs of all of their students. As a general understanding of what MI theory meant to these educators, Amber stated the following:

So to me, it means that when I look at my class of 20, to not assume that they are all going to learn the same way. So to understand that I have a child in the class who is perhaps musical, somebody who is mathematical that likes to think outside of the box like do problem solving, that there may be somebody else in the classroom who’s artistic and would rather draw out the problem. So, to understand that I need to try to meet all of those different kids’ desires. They’re not all the same.

Statements such as Amber’s from each of the participants indicated that they were able to describe DI effectively as well. For example, Mary knew that DI means setting up
your program to tap into all different learners and Kathy explained it as meeting the
needs of all of her students.

4.1.2 Educational experience and teaching timeline.

The most significant difference that was found among the participants from this
study was in their training for using MI and DI in their teaching. Mary, who had been
teaching the longest, had no training on MI theory or even DI in her teacher education.
She began teaching 28 years before the time of her interview, but she had only been using
DI for an estimated 15-18 years. However, at her interview, she claimed that it was now
embedded in what she did and that she did not think she could teach without it. Amber,
who had been teaching for 15 years, had also not learned about MI or DI in teachers’
college. She had only started feeling the push towards DI in the last five years before her
interview. It was only Kathy, who was a new teacher of three years, who learned about
DI and used it since she started teaching; however, even Kathy had not learned about MI
theory in her teacher training.

Edwards, Carr, and Siegel (2006) note the need for better preparation to use MI
theory and suggest a reviewed curriculum for teacher education courses. Their findings
aligned with both Mary and Amber’s experiences, who had completed their teacher
education before the time of the Edwards et al study. However, even though Kathy
completed her teacher education well after that study, she still had received no training in
MI, indicating that teachers may still have been underprepared in the area of MI.

4.2 Strategies for using DI to Recognize MIs

There are many components of education that require acknowledgment of MIs.
Teachers must be able to instruct and assess their students according to their varying
needs. However, before they can plan for instruction and assessment, teachers need to first identify the needs of their students. The second sub-question of this study was, “What are teachers’ experiences with addressing a range of MIs with their elementary students?” In this section, the participants discuss their strategies for identification, instruction, and assessment using their knowledge of MI theory and DI.

4.2.1 Identification.

With regard to identifying their students’ strengths and areas that need improvement, Mary and Kathy shared that it was very much about what the students could show them through diagnostic assessment. For example, Kathy used technology integration as a form of diagnostic assessment, where her students could take pictures and videos of what they were doing and post them on an app. She explained that some students used manipulatives, some talked concepts out in their heads, and some did not understand at all. Looking over the videos and pictures was a way for her to grasp what her students could do and what they needed to work on. Additionally, Amber found that it was really important to get to know her students, not only on a professional level, but on a personal level as well. This was done through Monday discussions about students’ weekends and through discussion of interests.

Some of the identification strategies described were focused on observing and listening to students. Armstrong (2009) discusses the importance of observing habits and behaviours in addition to academic abilities in understanding students’ intelligences, which Amber and Kathy demonstrated. Armstrong additionally suggests that teachers use school records as well as past teachers and parents as resources to identify students’ MIs. While it cannot be concluded that the participants did not use these resources, it can be
said that they did not mention them. It is therefore possible that more specific questions in this regard could have led to different responses.

4.2.2 Instruction.

When participants were asked about the ways in which they incorporated MI theory into their instruction, many of their responses were directed more towards the ways in which their students could demonstrate their knowledge (which fit more closely in the assessment category) rather than how they took in knowledge. Nevertheless, some strategies for instruction were shared such as the use of centres, which are suggested by both Campbell (1992) and Freedman (2015). Centres are a way of providing more than one option, where students can have some choice and differentiation in the activities that they participate in. Mary used centres to try to tap into as many MIs as possible, especially in literacy and math. Kathy also found the use of centres to be beneficial to her wide range of learners. For example, she used a daily five system for literacy where students rotated through different activities and had a say in where they wanted to go. Further, Mary acknowledged that the use of centres was not only important for letting students do what they were good at, but to encourage them to try others things as well:

You can’t really say, okay well you’re a really gross motor, therefore I want you to do this. They might not even choose that activity. So, even though they’re really, really strong, great eye-hand coordination, …they might not even choose to do that activity. They might prefer to do something that’s really quiet. Like I have one that’s very athletic. His favourite thing? Drawing. Cutting and paste… And that’s why you know, having them rotate through centres sometimes is, and not always giving them a choice, is actually a good thing.
Gouws (2007) discusses the importance of encouraging students to try other things, just as Mary pointed out. Gouws states that individuals have the capacity for each intelligence, but some areas are more developed than others. This is when it becomes the role of the teacher to encourage students to try these other areas. It is noteworthy that the participants in this study made little mention of MI implementation in activities other than academics. For example, Armstrong (2009) explains that MIs can be acknowledged through transitions, forming groups, getting students’ attention, behaviour management and more. However, it is again unclear whether the participants did not do these things or did do them and just did not realize they were considered MI strategies. More specific questioning on the part of the researcher may have been able to clarify this.

4.2.3 Assessment.

It appeared in the analysis of the data that each participant had the most to say about their differentiation in assessment. Mary discussed that, on tests, she ensured that there were several different portions – a part for describing, a part where objects could be manipulated, etc. She also stated that she occasionally provided students with the opportunity to verbally explain or show their thinking if they could do so better than writing it out. Kathy further explained that she used an inquiry model of learning where students could dictate the direction of their learning and choose how to demonstrate it. For example, she was open to letting her students create PowerPoint presentations, write stories, and more. Kathy also made further use of her educational app where she could look back on pictures and videos of activities and authentically assess her students’ learning. Similarly, Amber also mentioned giving her students options when it came time
for assessment. She explained that she ensured her students knew the learning goals and success criteria, and then left the format of the assessment relatively open to them.

It was this area of the data analysis that aligned closest with the literature. All three participants avoided paper-pencil assessment when they could, which fits the authentic assessment ideals of Armstrong (2009) and Schwartz and Pollishuke (2013). Additionally, Kathy made great use of Armstrong’s suggestions for assessment such as anecdotal records, work samples, videos, photographs, and more. Lastly, Mettetal, Jordan, and Harper (1997) suggest giving students a list of options for assessment, which each of these teachers utilized. It is evident that all of these educators put much thought into how they could differentiate their assessment to meet their students’ needs, and they strived to be as flexible as possible to allow for this to happen.

4.3 Perceptions of Multiple Intelligences Theory

Based on their experiences, education and personal opinions, each participant in this study brought differing and shared perceptions of MI theory and DI. To build upon the sub-question on teachers’ experiences with MI theory, this section discusses the benefits and challenges that each participant saw to implementing MI theory in their classrooms. Then they express their confidence levels in applying the theory as well as their motivation towards using it.

4.3.1 Benefits.

Kathy truly believed that without DI, she did not know how her students would learn and Mary similarly stated that she thought DI should be front and centre in education. Conceivably, one of the most important benefits to DI appeared to be the pride that students were able to have in their work. Amber explained that, when her students
were able to showcase their talents and still accomplish the same end, they were proud of their work. She stated that if they were always asked to write an essay, for example, they might not feel successful because it was not their strong suit. This pride also likely comes from what Mary explained as allowing students to work in their own comfort zones, which promoted confidence and understanding as students led up to their summative assessments. The prevailing commonality between educators with regard to the benefits of DI and MI was that, if implemented properly, in terms of content, “the [students] get it.”

The idea that all teachers shared about using DI and MI to help their students understand concepts is supported by Harper (1997), Mokhtar, Majid, and Foo (2007), Campbell (1992), and Noble (2004) who in their research all found improvements in academic success through incorporation of MI theory and DI. Further, Noble (2004) supports the sentiment of pride by stating that through DI, students become aware of the best ways in which they learn. Therefore, each participant was able to speak to both the social and academic benefits of using MI theory, as discussed in the literature.

4.3.2 Challenges.

While it is evident that each participant approved of MI theory, each was surprisingly able to think of many more challenges than benefits. The major challenge discussed by two of the participants was time. Mary discussed that, even though she used DI frequently, it took a lot of time to tap into every single need at once. She stressed this challenge even more so when there were several interruptions each school day. For instance, Mary and Amber both listed the many interruptions that they have experienced in trying to run lessons including assemblies, fire drills, liturgies, reading buddies, etc. In
addition to interruptions, Mary and Amber also discussed the pressures of curriculum coverage. They both expressed that sometimes they felt the need to move on, even if their students had not grasped particular concepts yet, simply because they needed to fit all of the curriculum expectations in to their teaching. Further, not only did Mary mention that it was hard to find time to teach to MIs, but it also took time to prepare. Amber additionally added the demands of having a split class and large class size, and how this took away even more time for her to set up and teach to MIs through DI. Alternatively, Kathy did not seem to have an issue with time, quite possibly because she had been using DI since she began teaching. Her biggest struggle was with figuring out how to assess, but she had since developed ways to do so, as explained in the assessment section. She explained:

I’ve never really had a time issue. I find if you’re really running an inquiry-based classroom, you don’t need to necessarily think of like four different lessons for the different groups of kids that you have because it’s all kind of natural and it just works. So, I find if you’re doing it right, time is not, …or at least for me, hasn’t really been an issue.

Mary undeniably had the most insight regarding challenges to incorporating MI and DI in her classroom. In addition to the many time constraints, she mentioned the challenge of actually knowing how to implement DI and MI in the classroom, and explained that, unless teachers were provided with very explicit information and strategies, coming up with ideas that actually worked was quite difficult. Another insight that Mary had was that, even when there were good ideas, sometimes it was hard to identify students’ MIs, especially with her primary-aged students. She additionally
brought up the problem of money and resources. As an example, she used a teacher with a long-term-occasional contract that was teaching the same grade as her. Even if that teacher wanted to tap into her students’ MIs, her classroom was essentially empty at the beginning of the school year; it was up to her to make sure that she had materials in her room that would enable her to address MIs. Mary also noted that another challenge is that teachers simply feel overwhelmed by everything they are expected to implement in the classroom:

A lot of times, we’ll get a binder, an outline in our mailbox, and you’re looking at this going, wow, what is this? And months later, six months later you’ll go to a workshop, but the workshop almost scares you into all these things… and people just look at it as, “Oh my gosh, I already don’t have enough time and now you want me to do this?” And so, I think that is kind of the death of it.

To attest to Mary’s statement, Shearer (2004) acknowledges that MI theory may often be viewed as a craze in education that will soon pass, especially with long-time practicing teachers who are unwelcoming of change (Edwards, Carr, & Siegel, 2006). Additionally, Campbell (1992) acknowledges the time constraints of using MI theory and DI but also declares, as Mary alleged, that it becomes easier with experience. Ultimately, the participants in this study expressed many more challenges than were found in the literature.

4.3.3 Motivation and confidence.

Despite the many personal strategies that each participant was able to describe with regard to using MI theory, only one stated that they were fully confident in their abilities to address MIs through DI, which was Kathy. Mary stated that she was
confident, but not as much as she should be. She explained that she could do more and that she wanted to do more, but there were many obstacles in her way, which she discussed as challenges. Likewise, Amber also mentioned that she felt good about her abilities and that she likely used DI more than some other educators; however, she also thought that there was still room for her to improve. Both Mary and Kathy acknowledged that they were open to change and that if something was not working, they would strive to be flexible and improve it. Kathy further mentioned that there were not many things that would prevent her from trying something, and each participant’s openness to improvement demonstrated their motivation towards understanding MI and using DI to the best of their abilities.

Based on the interviews, the main factors undermining Mary and Amber’s confidence in implementing MI strategies were time, class size, money, resources, training, and overwhelming amounts of expectations. Noble (2004) explains that knowledge of MI theory can expand teachers’ ideas on how their students can achieve success, which can include strategies for overcoming their obstacles. Thus, although not for everyone, confidence and motivation appeared to be heavily reliant on the supports that the teachers received and had available to them.

4.4 Supports for Learning About Multiple Intelligences Theory

The last sub-question for this study was, “What resources do teachers have to support them in applying MI theory?” Even though each participant in this study did not formally know what MI theory was, they still seemed to have some supports and resources to guide them in differentiating their instruction, which often addresses MIs. For example, Mary mentioned that workshops and meetings were helpful, especially
when DI was introduced. In these workshops and meetings, teachers were able to practice some strategies and had to show that they were implementing them in their classrooms. Mary also emphasized the importance of new teachers. She explained that these teachers came from new and different teaching environments where they could share their ideas with other, older educators. Kathy further mentioned her use of technology as a significant resource in implementing DI methods in her classroom. Lastly, Amber discussed that she had much support through her school board:

There’s always workshops and books and meetings and it’s brought up at staff meetings, and there’s always support through consultants. So, I would say that there’s actually a really big push in our school to make sure that it happens right from the board level through to making sure we have the resources and also the principal makes sure that it’s happening.

It is important to note, however, that besides Amber, resources appeared out of reach for both Mary and Kathy. Although Kathy used technology, it was her own efforts that made DI possible. For Mary, she had support initially, but since DI was not brand new anymore, her supports had begun to drop. Mettetal, Jordan, and Harper (1997) state that modeling and time to practice are key to understanding MI theory and DI, and Noble (2004) adds that teachers will feel more positive about the concepts once they see the outcomes in their students. Therefore, even though Kathy was entirely confident despite her lack of support, Mary was not. Amber was also not confident even with some supports in place, which indicated a persisting need for more or better resources.
4.5 Chapter Conclusion

Throughout the data analysis process, four themes and several accompanying sub-themes emerged. The first theme that emerged was each participant’s unfamiliarity with MI theory. Each participant had been teaching for a different amount of time, and although each of them incorporated DI into their teaching, it was only the newest teacher who had learned about it in her teacher education. None of the participants had learned about MI theory. Therefore, the participants did not realize that MI guided DI, and much more education was needed on MI theory.

Next, it was found that all participants strived to meet their students’ needs. Each participant was able discuss some strategies for identifying their students’ MIs. Nonetheless, many more assessment strategies were described than instruction strategies, indicating a strong need for more support in MI instruction.

The third theme that emerged was that, even though each participant saw the social and academic benefits to MI theory and DI, significantly more challenges to implementing MI theory were discussed than benefits. Many of these challenges were not mentioned in the literature and were thus new information. It was found that the participants’ confidence and motivation in terms of MI theory appeared to be related in part to the supports that they had available to them, especially in terms of overcoming challenges.

Finally, analysis of the data showed that all participants expressed that they had at least some support to guide them through DI and MI theory. Nonetheless, it was quite apparent that, for the most part, support for teachers for implementing and understanding MI theory was still lacking. The study as a whole indicates that a much stronger emphasis
needed to be placed on teacher education for DI and MI. In particular, teachers could benefit from a strong foundation in MI theory as well as practical strategies, not only to identify MI’s, but also to implement DI in their classrooms.

Overall, assessment was discussed in much more detail than instruction, and many more challenges than benefits for using MI methods were presented. Most importantly, it was made evident that teachers did not have enough information about MI theory or resources for incorporating it. Next, in Chapter 5, the findings of the study are briefly reviewed, and implications and recommendations for the educational community are outlined. Suggestions for further research are offered and lingering questions are proposed.
Chapter Five: Implications

5.0 Overview of Chapter Five

This research study was designed to explore how teachers were incorporating Multiple Intelligences (MI) theory into their lesson designs and assessment procedures. The findings served to support the existing literature pertaining to MI theory and differentiated instruction (DI), and to specifically indicate whether a stronger emphasis needed to be placed on teacher training and education on differentiating instruction for MIs. This chapter summarizes the research findings, presents this study’s implications for various stakeholders, provides several recommendations, and suggests directions for future research.

5.1 Key Findings

Following interviews with three elementary educators, a thorough analysis revealed four main themes: (1) personal experiences and background, (2) strategies for using DI to recognize MIs, (3) perceptions of MI theory, and (4) supports for learning about MI theory.

The first theme, personal experiences and background, served to highlight the fact that teachers in this study were relatively unfamiliar with MI theory. Regardless of years of teaching experience, all teachers knew about DI, but not about MI theory. Only the newest teacher of three years had learned about DI in her teacher education, indicating a need for a much stronger emphasis on MI theory’s benefits and strategies in teacher education and professional development.

The next theme, strategies for using DI to recognize MIs, showed that the participants had a relatively good grasp on how to identify their students’ MIs. However,
assessment strategies pertaining to MI theory were discussed in much more detail than instruction strategies. This indicated the need to increase support and training for MI instruction.

The third theme, perceptions of MI theory, explored a number of challenges to MI and DI that emerged during the interview process. Although participants saw the benefits of MI, there were difficulties in implementing appropriate MI approaches in the classroom. Further, motivation and confidence towards implementing MI theory appeared to be correlated to the supports that the teachers had available to them. Thus, it appeared especially crucial that teachers found support in overcoming the challenges of applying MI theory.

The last theme, supports for learning about MI theory, indicated that each participant did in fact have some support for using DI and MI theory. However, the supports that existed seemed to be either deficient or ineffective, since the participants all felt that they could do better. Therefore overall, this study found that a much stronger emphasis needed to be placed on education for DI and MI, both for teacher candidates and practicing teachers. Teachers needed to know how MI theory can inform DI.

5.2 Implications

Although this research study was limited to three qualitative interviews, it has fundamental implications for educational improvement. In broad strokes, this study should serve as a reminder to policy makers and curriculum planners that understanding of MI theory is integral to the DI planning process. As made evident by the Ontario Ministry of Education (2005), DI is currently the front and centre of education and is a requirement that is stated at the beginning of (and throughout) each Ontario curriculum
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Further, consistent with the conclusions of Mokhtar, Majid, and Foo (2007) and Noble (2004), the present study found that the use of MI theory in the classroom can increase academic success and, as Campbell (1992) indicates, improve motivation and confidence in learning. The study also delivers new insight into the issue of obstacles to implementing MI theory as well as access to resources and support. Without adequate knowledge of MI theory, teachers will not be able to differentiate their instruction accordingly, and policy makers should take heed.

The present study also has three specific implications for teachers who are using MI to inform DI. First, knowledge of MI theory will better ensure that teachers are acknowledging all learning styles and ways of knowing. Even if teachers are differentiating their instruction, they may not be covering all of the MIs. In this case, some students will fall behind in their learning, which will carry over in each proceeding grade. Therefore, knowledge of MI theory is important for maximizing student growth.

Second, students should have opportunities to learn in various ways before they are expected to demonstrate their knowledge in those same ways. As this study indicated, teachers discussed many more MI assessment strategies than instruction strategies. Students will not be able to effectively demonstrate their knowledge – regardless of the method – if they have not been taught in a variety of ways where they could fully understand the concepts.

Third, if teachers are not encouraged or motivated to improve in their current understanding of MI and DI, they will be holding their students back from reaching their fullest potential. Analysis of participant Amber’s interview raised the questions: (1) Why was Amber not fully confident in her abilities, even though she appeared to have the most
supports available to her for using DI and MI? and, (2) Is there a flaw in those supports?

Therefore, this study indicates that even the teachers who have the most supports available for employing DI and MI still may not feel fully confident to implement them, implying that there may be inadequacies in the supports available.

5.3 Recommendations

The implications of the present study point specifically to four main recommendations for the Ontario Ministry of Education, school administrators, and teachers. These recommendations are outlined below:

(1) The Ontario Ministry of Education is ultimately responsible for mandating an emphasis on MI theory in all areas of the Ontario curriculum. Teachers are already expected by the Ministry to differentiate their teaching; therefore, requiring an emphasis on MI theory will compliment this existing expectation by clarifying why there is a need for DI. Without a requirement from a place of high authority, action will not be taken.

(2) MI theory also needs to be an integral part of teacher training and ongoing professional development opportunities. Therefore, it is up to the Ontario Ministry of Education to provide sufficient and proper learning tools to do so, especially with an additional focus on instruction strategies and overcoming the challenges of using MI theory. Now that we have perspectives of teachers in a range of boards, grades, and years of experience, a ground up approach can be taken for implementing MI theory into DI.

(3) School administrators need to be aware of the benefits of MI theory because it is their responsibility to provide funding for resources, approve time off for teachers.
to attend professional development workshops, and plan in-school staff meetings. Without permission and guidance from administrators to access resources and support, teachers will be unable to adequately implement MI theory in their classrooms. Administrators must be knowledgeable about MI theory and of appropriate DI strategies for implementing it in the classroom. They need to actively find ways to further educate and support their school staff to optimize their learning for DI, as required by the Ministry.

(4) While it is the job of the Ministry of Education to provide expectations and learning opportunities for MI theory, and of school administrators to provide permission and funds to access them, it is the role of teachers to seek out resources and ask for them. Teachers should not wait to be told to incorporate MI theory and participate in workshops; teachers should also be aware of the benefits of MI theory, and strive to improve their practice by asking for opportunities for growth if they do not yet appear available or accessible. Teachers should also attempt to find some of their own ways to learn about and make use of MI theory, and share their strategies with other educators.

5.4 Areas for Further Research

The present study has contributed to an expansion of the extant literature, but has also highlighted the need for further study. First and foremost, in future research endeavours it is recommended that a greater emphasis be placed upon a larger sample size and quantitative data. For example, a multiple choice survey with questions such as “have you heard of MI theory,” “check off strategies that you have used,” “what grades/subjects would you say are easiest for implementing MI theory,” and more would
allow the research community to gauge what a large percentage of teachers know about MI theory, how they feel about it, and if/how they use it. In this way, a larger group of teachers could share their experiences in a less time consuming manner, which may provide more reliable results than this study was able to deliver.

Furthermore, Kornhaber (2004) found that many teachers’ practices aligned with MI theory without purposely trying to do so. It was evident that the participants in this study also frequently taught with MI ideals in mind, just without labeling them as MI theory. This implies that if the participants in this study knew more about MI theory, their answers may have been different. Their responses cannot necessarily imply that they did not use some MI strategies, but rather did not know if they were categorized as such. Therefore, further research should first include a small information session about MI theory before conducting interviews, surveys, or any other form of data collection on the topic.

Finally, future research endeavours should include data collection from all Canadian provinces using the same research questions that this study posed. Using one consistent research approach, data from all of Canada would provide a good indication of effective strategies for implementing MI theory in DI. These findings could be used to compare and contrast which provinces are ahead and which ones need work, and possibly identify why these differences exist. Further, the strategies that have been deemed effective could be used to help the provinces that are in need of improvement.

5.5 Chapter Conclusion

The present study aimed to answer the question, “How are teachers addressing elementary students’ MIs to help them achieve academic success?” This study was
projected based on the belief that there was a lack of MI acknowledgement from teachers in my own experiences. Following data analysis, it has been made evident that teachers were fairly knowledgeable about DI, which was a step in the right direction; however, teachers had limited knowledge of MI theory and presented many challenges to applying it such as time, training, and money. It is MI theory that could help these educators make more informed decisions regarding DI strategies and plans, as well as benefit students both academically and socially. With suitable supports and access to learning opportunities, teachers could improve their knowledge of MI theory significantly, and thus enhance their students’ academic achievement.

While this study has shown that greater support is required for educators in applying MI theory to DI, it must be perceived with a critical eye since the scope of the data collection was small. Nonetheless, based on the range of experiences and locations within Ontario that the participants came from, it can be anticipated that results on a larger scale may be relatively similar to what was found in this study. Most importantly, future research should begin with ensuring participants have at least some knowledge of MI theory before being expected to answer questions about it. A large-scale study would be also be useful in the area of MIs for representing who uses the theory effectively and who does not, and if there are trends in these differences.

As stated in each elementary curriculum document by the Ontario Ministry of Education (2005, p.5), “Teachers bring enthusiasm and varied teaching and assessment approaches to the classroom, addressing individual students’ needs and ensuring sound learning opportunities for every student.” This takes us back to the question of how teachers were using MI theory at the time of this study. This study is important because
teachers are expected to differentiate, but the extent to which they based their differentiation on MIs was questionable. Ultimately, it appeared that teachers needed more support and better support for understanding MI theory. If the Ministry raises their expectations and provides ongoing opportunities for professional development, and principals and teachers make the effort seek them out, students will benefit immensely.
References


courses. *Teachers College Record, 106*(1), 112-139. doi:10.1111/j.1467-9620.2004.00323.x
Appendix A

Letter of Consent

Date: ____________________

Dear participant,

I am a graduate student at OISE, University of Toronto, and am currently enrolled as a Master of Teaching candidate. I am studying Multiple Intelligence theory for the purpose of investigating an educational topic as a research study for my 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 research supervisor who is providing support for the process this year is Angela Macdonald. My data collection consists of a 60-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. We can conduct the interview in your classroom or workplace, in a public place, or anywhere else that you might prefer.

The contents of this interview will be used for my study, 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; a pseudonym will be assigned to you to protect your identity. The only people who will have access to my research work will be my research supervisor and my research course instructor. You are free to change your mind about participating 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 study has been presented and/or published, which may take up to five years after the data has been collected. There are no known risks to you for assisting in the project, and I will share with you a copy of my notes to ensure accuracy.

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: Kaylin Martin
Email: kaylin.martin@mail.utoronto.ca

Research Supervisor name: Angela Macdonald
Email: angela.macdonald@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 Kaylin Martin and agree to participate in an interview for the purposes described.

Signature: ______________________________

Name (printed): __________________________

Date: __________________________
Appendix B
Interview Questions

Introductory Protocol

You have been selected to speak with me today because I believe you to be someone who has a great deal to share about teaching, learning, and assessment for the purposes of my study. My research focuses on the application of Multiple Intelligences theory in the classroom. My study does not aim to evaluate your teaching or experiences. Rather, I am trying to learn more about teaching and learning through MI theory, and I hope to learn about practices that could help improve student learning.

We have planned this interview to last no longer than one hour. During this time, I have several questions that I would like to cover. I would like to audio record our conversation with your consent. Please sign the release form if you have not already done so. Please be reminded that you have the right to withdraw at any time and to pass on any question that you do not want to answer. Your information will remain confidential, and only researchers on this study will have access to the information. The recording will eventually be destroyed after it is transcribed.

Background Information

1. When did you become a teacher? Do you have a specialization?
2. How long have you taught at this particular school?
3. Does this school have a specific philosophy? Did this have anything to do with why you chose to teach at this school?
4. What are some of the key elements of your own teaching philosophy?

Personal Beliefs and Knowledge

5. What does multiple intelligences mean to you?
6. What does differentiated instruction mean to you?
7. Do you differentiate your instruction to address your students’ multiple intelligences? Do you do the same in your assessment and evaluation techniques?
8. In teacher’s college, did you have any training on Multiple Intelligences theory and differentiated instruction? If you did, what did this involve?
9. Do you currently have any additional resources or support to help you continue to address multiple intelligences (workshops, meetings, books, online portals, etc.)?

Instruction, Assessment and Evaluation

10. Can you provide some examples of ways in which you have accommodated for students’ multiple intelligences in your classroom teaching?
11. How long have you been implementing these types of strategies?
12. In what ways do you identify your students’ multiple intelligences?
13. Do you see the benefit of differentiating instruction to address the range of multiple intelligences of your students?
14. What factors would indicate to you that your teaching with multiple intelligences in mind has been effective?

Challenges

15. What aspects of differentiating instruction do you find most difficult, especially in regards to addressing multiple intelligences?
16. What factors would prevent you from employing particular strategies to accommodate for multiple intelligences?

Wrap-Up

17. Do you feel confident in your ability to identify and address multiple intelligences in your classroom?

Thank-you for your time and participation in my research study. Please feel free to share any comments or concerns that you have regarding this interview, or contact me if any should come up. When I have completed this study, I will share the final draft with you if you wish to see it.