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Utilizing the Multiple Intelligences Theory in Classrooms

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Abstract

Teachers have the seemingly impossible task of providing instruction that meets the needs of each learner in their classrooms. In their quest to provide quality instruction for all, many teachers have started to implement the Multiple Intelligences Theory into their lessons. Several studies have been analyzed to understand how intelligences can be identified and developed in students and how proper implementation of this theory can affect students' motivational levels and academic achievement. The studies showed that when students are aware of their own strongest intelligences and/or their teachers are aware, they are able to develop the intelligences to a higher level. The studies also showed how this knowledge, along with teachers utilizing the Multiple Intelligences Theory in classrooms, improved the motivational levels of the students as well as their academic performance. This research indicated that teachers should educate themselves on the intelligences in order to provide their students with an education catered to their needs. Further research is needed to create a broader body of knowledge for teachers to draw from.

Keywords: The Multiple Intelligences Theory, identification, development, motivation, academic achievement

Utilizing the Multiple Intelligences Theory in Classrooms

Chapter One: Introduction

Over the past few decades, the American school system has made many shifts (Hargreaves & Goodson, 2006). In their article *Educational Change Over Time? The Sustainability and Nonsustainability of Three Decades of Secondary School Change and Continuity*, Hargreaves and Goodson (2006) identified five influencers as factors into these changes, one of them being “waves of reform” (p. 1). These ‘waves’ are the changes in educational methodology which teachers are encouraged to use. Ways of teaching are regularly being challenged as new methods and strategies are introduced. These new methods and strategies can be difficult for veteran teachers to internalize and implement (Hargreaves & Goodson, 2006). However, these practices may be what best prepare students for a successful future. Researchers have looked critically into classrooms and students to discover what schools can and should do to better equip students to be productive members of society. One large change is that teachers are encouraged to present instruction in multiple ways for the sake of more effectively teaching each of the students that walk into their classrooms.

Ever since Gardner published *Frames of Mind: The Theory of Multiple Intelligences* in 1983, the Multiple Intelligences Theory (MIT) has been incorporated into many classrooms. It suggests teachers should know the strengths of their students and create classroom activities to utilize those talents. The reasons for this can be twofold: to better reach a student who is struggling by catering to their strength or to challenge a successful student by encouraging and strengthening their weaknesses. The following research on the Multiple Intelligences Theory will expand upon the identification of intelligences in students, determine whether multiple

intelligences (MI) can be developed, investigate changes in motivational levels of students when the MIT is present in classrooms, and measure the effects this theory can have on student academic achievement.

Importance of Research

The traditional method of teaching (standing in the front of the classroom and lecturing) is not a very effective way for many students to learn as it typically only caters to one of Gardner's (1983) intelligences. Even so, some studies have found up to 70% of teaching is still done through lecturing (Bordei & Ghiatau, 2014). Not only does this lack student engagement, it also meets the needs of just a small percentage of the class. Yet teachers are expected to guide all students to understanding the presented content. Because traditional lecturing does not meet those expectations, teachers are encouraged to find ways to present content to students which will differentiate and meet the specific needs of each learner in the classroom. One way to meet the needs of a higher number of students is to regularly incorporate the Multiple Intelligences Theory into lessons.

The eight intelligences published by Gardner (1983) are linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal, interpersonal, and naturalistic. Some consider existential as a ninth intelligence (Leshkovska, 2016). Understanding and identifying these is key in differentiated instruction (DI) (Madkour & Mohamed, 2016). In order to differentiate, teachers should understand which of the intelligences their students are strongest in. This will guide teachers into knowing how each of their students learn most effectively and can aide in writing lesson plans which will best engage their whole class. Additionally, it may be the way in which their students most enjoy learning, which will lead to even higher levels of student engagement and therefore achievement.

Scope of Research

To determine the effects of proper utilization of the MIT in classrooms, this literature review investigates qualitative, quantitative, meta-analytic, and mixed-method studies. These will show the effects and importance of identification of MI in students, how the intelligences can be developed, and the effects utilizing the MIT in the classroom can have on motivation and thereby, student academic achievement. The following studies range from young elementary students to university students, in several content areas, and many parts of the world.

These studies cover a wide range of ages, content areas, and countries. This review of literature does not explicitly research the effects of the Multiple Intelligences Theory on any one of these variables. The wide variations in these studies can be woven together to create a fully comprehensive view of how the Multiple Intelligences Theory ultimately enhances student achievement.

Research Question

Differentiation is essential for effectively teaching every student. This leads to the question: in light of what is known about differentiated instruction, how can proper understanding, fostering, and implementation of the MIT in classrooms impact student motivation and academic achievement? A good understanding of the Multiple Intelligences Theory and knowing the strongest intelligences of each learner will guide teachers to creating lessons plans which cater to each of their students. This will create a very high level of differentiation. In turn, this knowledge will provide students with higher levels of motivation, deeper levels of understanding and therefore better equip them for future education and living in society.

Definition of Terms

Differentiation is a tool teachers use to ensure they are meeting the needs of all students. They can do this by altering the classroom instruction by a variety of means, such as: the timing of lessons, types of activities, or interests of their students. The goal is to better meet the needs of the learners (Heacox, 2002).

Intelligence is the capacity to make products of significance to at least one culture or to solve problems effectively. It does not focus solely on a person's natural intellect but rather their willingness to work through problems or create meaningful works (Gardner, 1983).

The Multiple Intelligences Theory is a theory proposed by Gardner (1983) which suggests there are eight different intelligences each person possesses to varying extents (Adcock, 2014). As researchers have continued to study, some, including Gardner, consider there to be more than the eight which Gardner (1983) originally published (Leshkovska, 2016).

Conclusion

Gardner's theory has been heavily researched ever since its publication. As a result of some of this research, teachers have been encouraged to implement the theory into their classrooms. Differentiated instruction is important to meeting the needs of every student and implementing the Multiple Intelligences Theory in classrooms is an effective method of doing so. Understanding the above definitions will help determine the effects implementing this theory can have on student academic achievement.

The following literature review highlights several studies which speak to the effectiveness of knowing students and their strengths. It will discuss how teachers can

identify MI in their classes, how these intelligences can be developed or enhanced, how this knowledge of their intelligences and the use of the MIT can alter students' motivational levels, and the effects it has on academic achievement. The final chapter of this paper will provide potential implications on teaching and suggestions for how teachers can apply this knowledge to their professional practice.

Chapter Two: Literature Review

As previously described, teachers are expected to meet the needs of each student who walks into their classroom. This is a daunting task and requires intentional planning. One method to providing quality differentiated instruction is understanding and implementing the Multiple Intelligences Theory. The following literature review will provide studies which show the ease of identifying intelligences in students, demonstrate how MI can be developed and fostered in students, and discuss the effects the implementation of the MIT in lesson plans and classroom activities can have on academic achievement and motivation. Researchers investigated through several types of studies including qualitative, quantitative, mixed-method, and meta-analytic.

The first portion of this literature review will discuss effectively identifying the MI of students for the sake of writing lesson plans to better meet the needs of students. It is possible to identify the intelligences in students based on studies by Baleghizadeh and Shayeghi (2014), Barbulet (2014), Madkour and Mohamed (2016), Sener and Cokcaliskan (2018), and Xu (2020). A study by Tirri et al. (2013) will discuss the development of tools to measure MI in students. These provide teachers with guidance as to which intelligences to most heavily plan for. Additionally, when teachers see a student is struggling with a particular lesson, knowing the strongest intelligence(s) of that particular student allows for

the teacher to create an activity which will reach them in a manner they will be more likely to understand.

The second portion of this literature review will highlight how the multiple intelligences can be developed in students. Studies by del Mora-Peréz et al. (2015), Dueñas Macías (2013), Rinis & Vlachos (2020), Setiawan et al. (2020), and Winarti et al. (2018) will show data to explain how teachers can help foster and develop the intelligences in their students through a variety of educational means. This can be done for the sake of challenging high achieving students as well as aiding struggling learners. Each study will provide a unique strategy or new ideas for ways teachers can help students enhance their multiple intelligences.

In the third section of this literature review, studies which speak to the motivational levels of students will be discussed. Luengo-Cervera (2015), Madkour and Mohamed (2016), and Norel and Necsoi (2011) have provided data to show the changes in how much students' motivations for school changed when the MIT was implemented into their classrooms. This will provide guidance on how to aid not only the academics but also the outlooks students have on their educations.

Lastly, this literature review will show the effect incorporating the Multiple Intelligences Theory strategies has on student academic achievement, whether it is positive or negative. The studies by Adcock, (2014), Azid (2016), Batdi (2017), Brijlall and Niranjana (2015), and Inan and Erkus (2017) will show how students' performance changed when the Multiple Intelligence Theory was utilized in lessons. In addition, some of these studies will show information gathered on how teachers' views of their students and their teaching practices changed after implementing the MIT in their own classrooms.

Identification in Students

Winarti et al. (2018), whose study will be discussed in the second section of this literature review, stated “identifying students’ dominant types of intelligence before they start studying is important to...design appropriate strategies” (p. 123). Teachers cannot determine that the MIT does not have a positive impact on their classroom if they do not know what the strengths of their students are. If a teacher creates lessons to cater to the naturalistic, mathematical, and intrapersonal intelligences when the majority of their class’s strengths are interpersonal, bodily-kinesthetic, and spatial, of course the implementation of the MIT will make little impact on the class. Proper identification is essential for the Multiple Intelligences Theory to be an effective teaching tool.

The following studies by Baleghizadeh and Shayeghi (2014), Barbulet (2014), Madkour and Mohamed (2016), Sener and Cokcaliskan (2018), and Xu (2020) will further show how MI can be identified in students. They will corroborate the above quote by Winarti et al. (2018) and speak to the importance of teachers having accurate information. Additionally, Baleghizadeh and Shayeghi (2014) and Sener and Cokcaliskan (2018) will discuss the relationship they did or did not find between learning styles (LS) and multiple intelligences.

Xu (2020) conducted a quantitative study with the expressed purpose of identifying the MI of university students in China “to provide teachers with a better understanding of their students to help them develop their learning abilities...” (p. 66). Xu (2020) provided a MIT questionnaire to 359 freshman and sophomore students. This allowed time during the following years in the students’ education for further research on the matter. Xu (2020) argued that students will know their MI better than anyone else, at least at the age of these

participants. As opposed to later studies, Xu (2020) addressed the reliability of their questionnaire. The questionnaire was downloaded and edited to be completed most accurately by students, having a reliability value of .917.

The findings of this study showed the strongest MI among the students were musical, interpersonal, intrapersonal, and linguistic (Xu, 2020). As previously mentioned, this study was conducted for the purpose of aiding the faculty at the university to better teach their students. Xu (2020) gives several recommendations which align with the importance of this topic, such as how utilizing the MIT will help students develop their intelligences and teachers should pay attention to their students' strengths to ensure that they are effectively teaching each pupil. A suggestion for further work with this study could be to develop an experiment with the data. The study felt abrupt and incomplete. If the researcher composed a hypothesis or conducted another study to compare to the outcomes of this one, there may be more implications for this data on an international level.

A similar nonexperimental, quantitative study done in Romania by an English language teacher sought to identify the types of intelligences most prevalent in their classes and therefore guide them in the best ways to adjust their instruction (Barbulet, 2014). The teacher who conducted the research did so on their own English language classes. The students were between the ages of 11 and 15 in fifth through eighth grade (Barbulet, 2014). The researcher seemingly chose this group of subjects based on two criteria: convenience and to learn how to better support their classes.

Before the researcher analyzed the data they collected, they provided a brief literature review and suggested several additional ways to identify the intelligences of students. Barbulet (2014) did admit "there is no 'megatest' that can provide a comprehensive survey of the

students' multiple intelligences" (p. 25). The researcher provided their chart which lists each intelligence and its characteristics. They suggested its use in conjunction with other means to learn about the student, such as speaking with the student, their parents or previous teachers, or looking at academic performance (Barbulet, 2014). The researcher also noted there are several MI surveys available through the Internet or books. Part of their research included searching for and/or adjusting questionnaires for the age group with which they worked to create one as effective as possible. Barbulet (2014) also needed to adapt their final survey into the native language of their students.

The findings of this study showed the researcher what intelligences their students were the strongest in (Barbulet, 2014). This provided the researcher with valuable information about how to plan lessons and how to provide DI for their class. There are several aspects this study lacked to be fully comprehensive, though the researcher did not discuss them. Barbulet (2014) never provided the final questionnaire given to the students. Rather, they discussed several different options and mentioned they opted for a questionnaire. Additional information about the Romanian school system, the type of school students were enrolled in, or socioeconomic information of the participants may shed different lights on the study. Similar to the study above conducted by Xu (2020), this study felt as though it ended abruptly. Both studies could be used as the framework for future experimental research. Following studies will discuss the effects of proper identification after experimental or quasi-experimental research.

Madkour and Mohamed (2016) created a quantitative, quasi-experimental study which sought to identify the MI of college students in Saudi Arabia to understand how this information correlated to their motivation levels. The idea for this research came after they noted much student frustration in English classes (Madkour & Mohamed, 2016). The 108 students were

divided into two groups where one group continued classes in a “traditional” manner and the other group only studied English after having identified their MI through a questionnaire (Madkour & Mohamed, 2016, p. 97). Teaching strategies were divided into traditional versus cognitive, and the MIT was implemented into the experimental classroom. Preparation for the study showed traditional teaching strategies were used 87% of the time, meaning activities catering to the Multiple Intelligences Theory did not happen often (Madkour & Mohamed, 2016). The results did show students in the experimental group were more motivated and achieved higher academically. This data will be discussed later in the literature review with other studies which provide data on students’ motivational levels and academic achievement.

Learning Styles and Multiple Intelligences

Learning styles and multiple intelligences are similar, but they also have their differences. Gardner (1995) set their MIT apart from LS by describing styles as a strategy a person can utilize in any area while an intelligence is a capability within a certain content. These studies by Sener and Cokcaliskan (2018) and Baleghizadeh and Shayeghi (2014) will both show a positive correlation between LS and MI. While that was the case, it was never categorized as ‘strong’ but rather ‘moderate’ or ‘weak’ (Baleghizadeh & Shayeghi, 2014). As these studies will show, identification of a student’s LS and MI may correlate, and they can work together. However, they are not the same and should not be thought of as such. Through their research, Sener and Cokcaliskan (2018) noted a large difference between genders on the LS survey. However, there was not a significant difference between genders in the MI inventory. This provided further verification to show they are not the same.

Sener and Cokcaliskan (2018) as well as Baleghizadeh and Shayeghi (2014) sought to know if there was a correlation between MI and LS. Each group of researchers conducted

quantitative studies. Sener and Cokcaliskan (2018) gave 88 students between fifth and eighth grade two questionnaires, while Baleghizadeh and Shayeghi (2014) gave their two questionnaires to 203 Iranian adult English learners. First, both teams gave students the “Perceptual Learning-Style Preference Questionnaire” (Baleghizadeh & Shayeghi, 2014, p. 258; Sener & Cokcaliskan, 2018, p. 128). Then students completed a MI inventory. Each team of researches opted for different MI surveys.

The participants in the study by Sener and Cokcaliskan (2018) were highest in naturalistic, visual, and kinesthetic intelligences. This was expected by the researchers as the participants lived in a small village where nature is highly influential in their daily lives (Sener & Cokcaliskan, 2018). Sener and Cokcaliskan (2018) noted the benefits for a student of being aware of their own strengths and weaknesses – both in LS and MI – stating “this can also allow them to develop self-confidence, self-respect, self-regulation, etc. and [a] positive attitude toward learning” (p. 131). This study did show a moderate positive correlation between LS and MI in the students (Sener & Cokcaliskan, 2018). In their recommendations, the researchers reiterated that teachers can improve their teaching practice to meet the needs of their learners more effectively with this knowledge of their students (Sener & Cokcaliskan, 2018).

Many of the limitations or recommendations in this study stem from its location. While they never stated a hypothesis, the authors admitted they anticipated naturalistic, visual, and kinesthetic intelligences to be the most prevalent (Sener & Cokcaliskan, 2018). Should this study be replicated in another demographic, the results will likely be different. This study could be expanded on by measuring the effect knowledge of their own MI had on

students' academics, much like the previously discussed study by Madkour and Mohamed (2016).

The aforementioned study performed by Baleghizadeh and Shayeghi (2014) followed a very similar methodology and yielded similar results. After their analysis of the data, the researchers concluded there was a weak to moderate correlation between Learning Styles and Multiple Intelligences (Baleghizadeh & Shayeghi, 2014). The spatial and musical intelligences had no significant correlation to any learning style (Baleghizadeh & Shayeghi, 2014). Similar to the research done by Sener and Cokcaliskan (2018), this research would also benefit from being tested on students of different ages, in different content areas, and/or in different countries.

The most different aspect from Baleghizadeh & Shayeghi, (2014) is their section on "pedagogical implications" (p. 262). They called out several different people (not just teachers) involved in education and challenged them to utilize the Multiple Intelligences Theory more frequently. They suggested curriculum developers should work to write curricula which includes the MIT and implied syllabus designers should plan time in courses to allow teachers to get to know the intelligences of their students (Baleghizadeh & Shayeghi, 2014). They also stressed the importance of teachers to know their own strongest intelligences as this likely affects how they teach (Baleghizadeh & Shayeghi, 2014). This is corroborated by Adcock (2014), whose study will be discussed at length later. The teachers' knowledge of their own strongest intelligences impacted how they taught (Adcock, 2014). Of course, the most important aspect is students recognizing their own strengths and weaknesses (Baleghizadeh & Shayeghi, 2014). They stated students "have to learn how to

take advantage of their abilities and how to overcome their learning difficulties,” which can lead to a better outlook on learning (Baleghizadeh & Shayeghi, 2014, p, 263).

Measuring the Intelligences

The above studies have shown how the identification of MI in students can be beneficial to them and their learning. In their qualitative study, Tirri et al. (2013) worked to create a tool which could be used for students to self-evaluate their MI. They used Gardner’s MIT as the basis to build their assessment. In their publication *Multiple Intelligences: Can They be Measured?*, Tirri et al. (2013) stated “students’ perceptions of and beliefs about themselves as learners...are primary dynamic aspects in their personal learning processes,” and this “can serve as an empowering tool” (p. 441). This reiterates what the above study by Baleghizadeh and Shayeghi (2014) alluded to; students learn best when they have an understanding of how they learn best.

To answer the question proposed in their title, Tirri et al. (2013) constructed an instrument with which to measure MI in students based on some which had already been created. They presented one of their questionnaires to universities and another to secondary vocational schools in Finland (Tirri et al., 2013). They analyzed the data from both questionnaires as they looked for questions or activities which may have been too specific, too broad, too wordy, etc. (Tirri et al., 2013). These researchers admitted no fixed result will answer their question, but their research indicated the usage of such tools warrants further research and development (Tirri et al., 2013).

Once MI are identified in students, using the tools presented by Tirri et al. (2013) can give teachers an idea of how strong students are in those specific intelligences. The section of this literature review to follow will discuss how teachers can work with their students to develop the MI and grow stronger in particular intelligences.

Development of Intelligences

The second portion of this literature review will examine studies done by researchers who included a focus on the development of the Multiple Intelligences. Madkour and Mohamed (2016) stated “Gardner argued that learners not only have multiple intelligences, but they can also develop such intelligences through education” (p. 94). Barbulet (2014) agreed saying students can develop all intelligences to a “reasonable level of competence” (p. 25). Once a student’s MI is identified, it can be developed (or weakened according to Dueñas Macías [2013]), either for the sake of enhancing their weakest intelligence or maturing their strongest to an even higher level.

The following studies were conducted by del Mora-Peréz et al. (2015), Dueñas Macías (2013), Rinis and Vlachos (2020), Setiawan et al. (2020), and Winarti et al. (2018). All studies, with the exception of Setiawan et al. (2020), provided strategies to foster MI in students as well as the data they gleaned. Setiawan et al. (2020) discussed the need for curricula which provides variance. This is necessary not only for the sake of engaging the classes, but also to help prepare students to be successful in their adult lives and society.

It is necessary for teachers to understand how intelligences can be developed to aid in the creation of activities to support the MIT. Students will benefit from activities to both support and challenge their capabilities within each intelligence. A mixed-method research study from Spain suggested these intelligences can be developed (del Mora-Peréz et al., 2015). This study researched the effect a particular video game, *Naraba Word*, had on the intelligences of over a hundred first and second graders.

Teachers have mixed feelings about video games. They can serve as a major distraction for students however, they can also be a valuable educational resource. Setiawan et al. (2020),

whose study will be discussed in-depth later, stated, “teachers can maximize the potential of early childhood intelligences simultaneously through learning that is useful and fun” (p. 611). The game del Mora-Peréz et al. (2015) selected underwent thorough analysis to determine whether or not it was appropriate for the study. The team selected 40 missions within the videogame, ensuring “all missions required the simultaneous activation of several intelligences” (del Mora-Peréz et al., 2015, p. 253). The experiment, which included a control group of 20 students, was broken into two phases, the first of which included an “initial diagnosis of subjects” (del Mora-Peréz et al., 2015, p. 252). Students were given a questionnaire to determine their base level of each intelligence. Phase one also included the implementation of the experiment. For seven months, this video game was played in the classroom for one hour per week (del Mora-Peréz et al., 2015). Phase two consisted of the research team retesting the intelligence levels of students after the experiment and comparing the results of the experimental and control groups (del Mora-Peréz et al., 2015).

In phase two of the experiment, the researchers noted “the comparison of means between both phases makes it clear that all intelligences improve with this videogame” (del Mora-Peréz et al., 2015 p. 258). While the data collected clearly showed MI were developed in these young students, there are several other factors to take into account. The researchers noted several limitations in their publication. One limitation was these games must go through intensive review to determine their potential effects (del Mora-Peréz et al., 2015). This process can be very time-consuming and tedious, making it difficult for teachers to complete. The authors also noted it was difficult to measure changes in linguistic intelligence due to the game not including “specific activities to work in the ‘Spanish Language’” (del Mora-Peréz et al., 2015, p 265). They also admitted this research could benefit from a larger sample size (del Mora-Peréz et al., 2015).

Furthermore, it would be helpful for the sample size to include older students. Teachers often talk about younger students being very impressionable. Setiawan et al. (2020) described the first years of a child's education as a time of "developmental domination" (p. 611). A study on how MI can develop in older students would give further depth to this research. Another possible limitation is the lack of detail given about the questionnaire. The researchers gave very little information other than its developers and intent.

A similar study investigated the use of electronic storybooks (ES) as a way to further develop MI in early education students. The researchers selected 74 students in fourth and fifth grade, who had not had any previous experience with electronics in school, to participate in their study (Rinis & Vlachos, 2013). This created a strong baseline, but the authors noted "there was an initial challenge to engage learners in activities combining traditional and new forms of literacy" (Rinis & Vlachos, 2013, p. 82). Their findings showed the implementation of technology developed the artistic/visual, intrapersonal, interpersonal, and kinesthetic intelligences in learners (Rinis & Vlachos, 2013). Students were given opportunities to draw and show their understanding of a story in more than just a writing or speaking manner. Setiawan et al. (2020) noted in their research that student more frequently develop the logical-mathematical intelligence while they develop the interpersonal intelligence least frequently. If schools continue on the trend shown by Setiawan et al. (2020), the intelligences enhanced by using ES as shown by Rinis and Vlachos (2013) are among those which most need to be developed.

Rinis and Vlachos (2020) defined two major limitations in research: a lack of personnel and a lack of time. This study required teachers to implement ES in their classrooms and note the growth they saw. The authors mentioned the assistance of a colleague would help the teacher with this large workload (Rinis & Vlachos, 2020). Some learners were not able to complete the

tasks in the allotted time, which created another factor. This led to students having partially completed assignments saved, as well as a lack of motivation to start on longer tasks at a later time (Rinis & Vlachos, 2020).

Dueñas Macías (2013) conducted a qualitative study using a different strategy without technology to develop MI in students. They employed interest centers as a means of developing specific intelligences in students. Dueñas Macías (2013), a teacher in Colombia, used their class as the participants of this study. The class was made up of 21 students between the ages of nine and eleven. Dueñas Macías (2013) defined “learning centers” as “areas within the classroom where similar materials are grouped together to encourage specific activities or experiences for the children” (p. 95). These centers allowed the students to choose how they wanted to learn. Each center provided opportunities for different intelligences to be developed.

Dueñas Macías (2013) used three tools to collect their data: a MI questionnaire, classroom observations, and a small self-report sheet the students did upon completion of their center. The MI questionnaire showed the weakest intelligences amongst the class allowing the researcher to know to focus on developing those, while still incorporating the others (Dueñas Macías, 2013). Students completed this questionnaire after the implementation of the interest centers. While the strongest intelligences did not change, students more frequently positively responded to the questions about the intelligences which they had previously defined as their weakest. The key findings of this study showed how interest centers increased students’ MI while fostering their learning (Dueñas Macías, 2013).

This study is not without its limitations. It focused on a small group of students and only in one subject area (Dueñas Macías, 2013). The researcher created space in a separate classroom with the support of their administration (Dueñas Macías, 2013). While this worked well for this

study, this is not a viable option for all teachers. Similarly, there was a great deal of prep work involved in this study's creation. Each interest center had several activities to cater to a particular intelligence. Such a high level of preparation may not be realistic for all teachers in their daily practice. The information gained from the study is helpful in understanding how the MIT can serve students, but it would be hard to implement this strategy in everyday teaching.

Winarti et al. (2018) also designed a quasi-experimental study to determine the extent to which MI could be developed in students. This team randomly selected two different junior high schools, one consisting of high achievers, the other of low achievers (Winarti et al., 2018). Within each school, Winarti et al., (2018) selected two different classes, so each school had a control class and an experimental class. One class in each building implemented a MIT strategy to instruct their classes, while the other used traditional strategies. In contrast to other studies, these researchers provided the ways in which these strategies are different. They listed six stages which included: a self-reflection, introducing the ideas, creating questions, deepening concepts, showing understanding through activities aligned to strongest intelligences, and finishing the lesson (Winarti et al., 2018). This process was implemented in the experimental groups, while in the control groups, the lesson consisted of the teacher posing a question, explaining the objective for the day, giving a lecture, and providing students time to complete a worksheet together (Winarti et al., 2018).

This procedure continued for 12 weeks with MI tests being given before and after those weeks (Winarti et al., 2018). Winarti et al. (2018) provided their data in a bar graph, which showed the results of the post-test. The results indicated the students' MI increased substantially in five of the eight intelligences for the experimental group (Winarti et al, 2018). The changes in the other three were not statistically significant. By contrast, the MI scores of the control group

did not improve. In some cases they even decreased (Winarti et al., 2018). This data clearly showed MI in students can be developed, and the way content is presented has a large effect.

This study lacked an accurate representation of the mathematical-logical intelligence. In the results, this intelligence decreased by 1% in the experimental group (Winarti et al., 2018). The researchers attributed this to the MI test not being an effective measure of this particular intelligence. Winarti et al. (2018) cited other studies which yielded similar results. They noted “the development of intelligence is a variable that is not easily measured and observed” (Winarti et al., 2018, p. 132). The researchers suggested future research use additional tools to support the MI test. While it is not necessarily pertinent to the research and results, the researchers did not provide the content area(s) in which this study took place, which may be helpful in interpreting aspects of the data.

These studies showed how beneficial it is to create lessons to have variance, which will meet the needs of more students. In addition to meeting those needs, Setiawan et al. (2020) described a “good curriculum” as a tool which enables students to “live functionally in a changing world” (p. 612). Essentially the goal is to create well-rounded students, not only for the purpose of their academics but also to live in society. Intentionally designing lessons to develop MI in students will also affect their skills for their future. Setiawan et al. (2020) conducted a qualitative study to design their quantitative study. The goal of the study was to create a way to assess “creative curriculum-based learning” using the MIT to define the outcomes of the assessment (Setiawan et al., 2020 p. 611).

This study also focused on students in the very early stages of their education. It included a larger sample size consisting of 200 students, 20 principals, and 20 teachers. The researchers noticed the need for appropriate assessment tools for MIT based teaching. They worked to

develop a way of assessing curricula and teaching practices in several classrooms. The end goal of their research was to determine the effectiveness of their product, which was the assessment for MIT based creative curriculum. In creating the assessment, they spent a great deal of time discussing the necessity of MIT based curriculum. They noted the highest intelligence in their sample students was logical-mathematical, while the lowest was interpersonal (Setiawan et al., 2020). They created this assessment, which was described as “highly rated by users,” as a means for teachers to reflect on their practices (Setiawan et al., 2020, p. 619). This publication included appendices, which included the forms and assessments used to determine the effectiveness of the research.

The intelligences can indeed be developed within students as shown by the data provided by these studies. They have been shown not to be inherent. Teachers can and should create lessons that will help students foster their intelligences. When this type of differentiated instruction occurs in a classroom, students often tend to feel more motivated in their coursework. The review of the following studies will speak to the motivational level of students once their classrooms were utilizing the MIT.

Motivation

It is difficult for anybody to do something when they are not motivated to. This also applies to students of all ages and at any level of their schooling. As previously mentioned by Baleghizadeh and Shayeghi (2014), students had a better outlook on school when the Multiple Intelligences Theory was implemented into their classrooms. This can lead to students feeling more motivated and excited to complete the lesson activities.

The following studies from Luengo-Cervera (2015), Madkour and Mohamed (2016), and Norel and Necsoi (2011) will show how the motivational level of their participants changed as a

result of the MIT being introduced to the classroom. The previous study by Barbulet (2014), mentioned the implementation of the Multiple Intelligences Thoery in their classroom had “improved a lot of students’ motivation in learning” (p. 19). The discussion of the studies to follow will corroborate those findings.

The previously discussed researchers, Madkour and Mohamed (2016) analyzed the students’ grades, attendance, and other factors to set their baseline. Their study focused on how the identification of MI affected the motivation of students. Only 28% of the students were identified as “motivated” at the onset of the study (Madkour & Mohamed, 2016, p. 97). At the completion of the study, the data showed 91% of students were motivated within the experimental group; an increase of 63%.

This research showed the identification of MI in students motivated them for their coursework. This was an added benefit to the way in which identification of the MIT in students helped teachers guide their lesson planning as previously mentioned. Madkour and Mohamed (2016) concluded by saying “when students became aware of their multiple intelligences profiles, they managed to enhance their motivation, [and] consequently their language skills” (p. 103). This cause-and-effect relationship shows the importance of identifying MI in students not only to aid the teacher but to help the learner.

Madkour and Mohamed (2016) did not make note of any limitations or recommendations for further research in their publication. However, there was one glaring statistic missing. As previously mentioned, they stated students in the experimental group were 91% motivated at the conclusion of their experiment. The researchers did not include the same data for the control group. However unlikely, it was possible the control group had similar changes in their motivation levels. Another factor which would benefit from clarification is the definition of

“traditional” (Madkour & Mohamed, 2016, p. 96, 101). The only information provided about what this could mean is it included learning the language by means of memorizing words and grammar rules.

Another study done in 2015 by Luengo-Cervera yielded similar results to those of Madkour and Mohamed’s (2016) research. Luengo-Cervera (2015) conducted a mixed-method study in which they created an experimental third-year foreign language class at the University of Trinidad and Tobago. The data was compared to the data from a control class. Both classes ran a total of 36 hours over the course of 12 weeks (Luengo-Cervera, 2015). The control group had classes which involved much less choice than the experimental group, which implemented some Learning Style strategies as well as the MIT framework (Luengo-Cervera, 2015). The researchers collected data in the forms of MI questionnaires, self-assessment questionnaires, test scores, and weekly journal entries. There were several goals listed in this study. However, the one most related to this literature review was to determine how the classes performed in comparison to one another. The researcher concluded there was a statistically significant improvement in the experimental group. Not only that, but the journals collected from students validated the importance of understanding the Multiple Intelligences Theory (Luengo-Cervera, 2015).

Similar to Madkour and Mohamed (2016), the experimental group also had a higher motivational level for completing the course (Luengo-Cervera, 2015). The only limitations listed were the small number of participants and the fact that MI are dynamic, making them hard to research. Additionally, the researcher did not include demographical information about the participants, merely the school and program they were involved in. They also did not provide the sizes of the classes.

A qualitative study done on 41 Romanian language learners in 4th grade sought to measure the impact on learning caused by implementing the MIT. To effectively gather the information, Norel and Necsoi (2011) first divided the students into control and experimental groups. They then gave both groups some assessments to determine their initial academic levels, writing and speaking abilities, and motivational levels. The researchers then developed lessons which intentionally incorporated activities to correspond with each of the eight intelligences. This ensured all students had activities which suited their strongest Intelligence. This method of DI was implemented for approximately seven months (Norel & Necsoi, 2011). At the end of these months, Norel and Necsoi (2011) administered assessments either the same or similar to the ones they had used in the first part of their experiment. This is also when they gathered information on the thoughts of the teachers who conducted this experiment in their classrooms, which will be discussed more later in conjunction with other studies which gathered similar data (Norel & Necsoi, 2011).

The results showed students who participated as part of the experimental group had “significant improvements of the intrinsic motivation and educational success” corroborating the findings of Luengo-Cervera (2015) and Madkour and Mohamed (2016) (Norel & Necsoi, 2011 p. 107). Each of these studies showed students to be more motivated with the implementation of the MIT in classroom. Norel and Necsoi (2011) found 75% of students had a positive outlook on coming to school according to the pre-test, compared to the 90% reported on the post-test. Students who are more motivated are more likely to have higher levels of academic success. In contrast with their experimental group, Norel and Necsoi (2011) determined the results from the control group lacked significant differences in the pre- and post-assessment scores of the students.

Effects on Academic Achievement

The final section of this literature review will show the effects implementing the MIT in classroom instruction can have on student academic achievement. The ultimate goal of education is to guide students to higher levels of understanding which is often measured by that achievement. Upon comparing the control group to the experimental group, a team of researchers previously discussed found there was a 45% difference in the measured language proficiency of their two groups of students; the experimental group showed 89% while the control group showed 44% (Madkour & Mohamed, 2016). Likewise, Luengo-Cervera (2015) and Norel and Necsoi (2011) found their experimental groups out-performed those in the control groups academically.

Many other studies have been done with the objective of discovering the extent to which utilization of the MIT in the classroom affects student academic achievement. The following studies by Azid (2016), Batdi (2017), Brijlall and Niranjana (2015), and Inan and Erkus (2017) will provide data which will corroborate the above findings on academic achievement from Luengo-Cervera (2015), Norel and Necsoi (2011), and Madkour and Mohamed (2016).

Brijlall and Niranjana (2015) noticed many of their South African trigonometry students struggled with understanding the concept in their lessons. They decided to create a qualitative study based on the MIT to see if their students' scores would improve. Data collection occurred in three ways: observations, worksheets, and interviews (Brijlall & Niranjana, 2015). After creating four manipulatives related to a lesson for their five tenth grade students who participated, Brijlall and Niranjana (2015) taught the lesson. They noted one student was helped by the manipulatives, however did not need them for as much time as their classmates, stating

“in fact, some pupils may perform better with pen and pencil or may not need to interact with the manipulatives for as long as other pupils” (Brijlall & Niranjana, 2015, p. 373). This further showed the extent to which students need DI. Including one or two aspects of the MIT will have a positive effect. However, only incorporating one or two aspects of the Multiple Intelligences Theory may only meet the needs of one or two students. Teachers should work to incorporate as many as the possibly can.

These students had never used manipulatives in their math classes before and in their interview, several told the researchers it helped them learn in a fun way (Brijlall & Niranjana, 2015). The researchers also concluded the manipulatives were a successful strategy based on their students’ understandings as shown by the worksheets and in their interviews (Brijlall & Niranjana, 2015). This study was very small and specific, which is one of its major limitations. Further research could be done to include more students at a broader range of ages and content areas.

A quantitative study conducted in two fourth grade classrooms sought to determine how different the academic achievement was of students who were taught with the MIT versus those who were not. One class was named the control group and the other experimental, each with 32 students. Before the experiment began, the researchers selected ten students in the experimental group to be interviewed (Inan & Erkus, 2017). These interviews consisted of three open-ended questions concerning their attitudes toward their math assignments such as what motivated them to complete the work and what kept them engaged. The researchers then gave each class a pre-test for the Fragmentation Unit they were starting (Inan & Erkus, 2017). The results of the pre-test between the two classes were not statistically different. Each class then went through the unit, one using traditional methods, the other incorporating the MIT. When the results of the

post-test were analyzed, the performance of the experimental group was significantly higher than the performance of the control group, corroborating the findings of Brijlall and Niranjana (2015), Madkour and Mohamed (2016), Luengo-Cervera (2015), and Norel and Necsoi (2011). Inan and Erkus (2017) concluded “teaching with Math worksheets based on the Theory of Multiple Intelligence in the experimental group is more successful than traditional teaching in the control group” (Inan & Erkus, 2017, p. 1376). There were a few potential limitations to this study. It lacked a definition of “traditional teaching” (Inan & Erkus, 2017, p. 1376). It may also be possible the teacher of the control class had already made a habit of including some MIT strategies in their classroom.

Ultimately, it is important to know how the implementation of the MIT affected students in the classroom. In 2017, Batdi published a meta-analytical and thematic study in which they examined 63 studies related to the MIT. Their review of several of the studies showed “MIT presents a wide range of models and helps teachers reach more students in the class by providing a variety of methods” (Batdi, 2017, p. 2059). Based on education level, the studies were grouped into four categories: primary, secondary, high, and university. The studies showed all levels of education were impacted by the implementation of the MIT with the group affected the most being primary school (Batdi, 2017). High school students were somewhat less affected by the use of the MIT. However, there was still a positive effect.

The studies were also grouped into categories based on subject area. Again, the research showed no negative results with the implementation of the MIT. The impact was categorized as “small” in foreign language classrooms, “medium” in sciences, and “large” in mathematics, social sciences, and others (Batdi, 2017, p. 2065). Social sciences proved to have the most improvement. All data was positive to some extent.

Lastly, the data was categorized based on the amount of time teachers implemented the MIT. Studies were put into five groups, each implementing the MIT for different amounts of time (2-4, 5-6, 7-8, 9-18 weeks). While the groups which differentiated with the Multiple Intelligences Theory for only 2-4 weeks had a smaller effect, it was still positive according to the data from the results (Batdi, 2017). The implementation of new teaching strategies in a classroom is always an adjustment for students. It will likely take a few days for them to get into the new rhythm. However, once a new normal has been set in place, the outcomes it can have on their learning are tremendous. To conclude their findings, Batdi (2017) summarized “MIT has positive effects on academic achievement in comparison with traditional methods in terms of teaching grade, subject area, teaching period, intelligence area and general characteristics” (p. 2083). No matter the situation, differentiating instruction to incorporate the MIT had and will have a positive effect on students and their academic achievement.

Teacher’s Views

The mindset of teachers often plays a large part in the classroom environment. Students can feed off of the ideas, thoughts, and attitudes of their teachers. It is important for teachers not only to recognize all of their students and their needs but to do their best to incorporate those needs into their daily lesson planning. Studies by Adcock (2014), Azid et al. (2016), and Norel and Necsoi (2011) discussed how teachers’ knowledge of the MIT and its effects provided more insights into their teaching practices.

As part of their graduate course, teachers taking a class entitled *Teaching using Multiple Intelligence* were given a survey at the conclusion of their coursework. This qualitative study was done at the University of Nebraska at Omaha. The 75 participants were K-12 teachers who were completing their masters’ degrees. The survey sought to discover how they felt the course

affected their teaching practices. In this survey, around 75% of teachers said the Multiple Intelligences Theory was helpful for them in meeting the needs of the diversity many see in their classrooms. These participants also noted when instruction needed to be retaught, they were able to use a MIT strategy, which resulted in students becoming less bored with the additional instruction (Adcock, 2014). They firmly believed this would help them meet their students' needs. According to Adcock (2014), the participants noted that, "when the teacher uses all eight MI approaches, all students learn better" (p. 53).

A qualitative research study done in Malaysia designed an experiment for students to determine the effects of the Multiple Intelligences Theory in enrichment opportunities and interviewed four teachers to gain an understanding of their thoughts toward the MIT. While the experiment with students showed inconclusive results between the experimental and control groups, the teachers had largely positive comments about the MIT (Azid et al., 2016). All teachers mentioned a new or renewed realization that all students are different. One stated, "I can see clearly students' inclinations toward certain intelligences. I realize and believe that each student has various and unique intelligences" (Azid et al, 2016, p. 189). When teachers can keep this mindset daily in their classes, students will notice and be more motivated. Other positive effects the teachers noticed were a higher level of "opportunity for students to self-assess" and more "active student engagement" (Azid et al., 2016, p. 190).

As previously mentioned, the results of the experiment with the students were inconclusive; there was not a significant change in the profiles of students in the control group versus the experimental group. The authors attributed this lack of statistical significance to all students (less than 60) having been "known to be high-achievers" (Azid et al., 2016, p. 195). They suggested similar experiments conducted should be done with a larger scope of students

(Azid et al., 2016). Another limitation was the small number of teachers interviewed, as there were only four. By having a larger pool of participants, teachers, and students, and ensuring there is a wide range of academic performance among the students, more comprehensible data could be recorded.

Similar to the previous studies by Azid et al. (2016) and Adcock (2014), Norel and Necsoi (2011) also gathered information on the attitudes of the teachers after the experiment. The teachers surveyed by Norel and Necsoi (2011) all recognized the importance of DI by utilizing the MIT, however, as previously mentioned in limitations of earlier studies, they were not confident in their abilities to maintain this level of DI (Norel & Necsoi, 2011). After the study, teachers were able to identify more aspects of differentiation. The high level of DI required in this study was unrealistic for educators in their day-to-day instruction. However, teachers may be able to incorporate some components of DI using the MIT, thereby improving their practice. No matter the extent, incorporating MI as a way to provide DI will help students in their educations.

Criticisms of Multiple Intelligences Theory

As with many theories, the Multiple Intelligences Theory is not without its critics. A couple of the researchers who were in this literature review also addressed several of these criticisms in their introductions. Xu (2020) listed several criticisms of the MIT stating it does not address “general intelligence,” how intelligences are considered a “part of a person’s aptitude” and “culturally embedded,” and its implementation is not practical (p. 62). In the opening of their research study, Tirri et al. (2013) cited Sternberg as another critic of the MIT. Sternberg argued there is no data which sufficiently satisfies the curiosities of both educators and scientists (Tirri et al., 2013).

While the theory itself may have its critics and even its faults, the implications of teachers utilizing it in the classroom cannot be argued. While some may not like the ‘identifiers’ it can put on students or feel it neglects groups of students, the impacts it has on classroom instruction and ultimately academic achievement should not be ignored. This literature review provided the findings of several studies which showed how the MIT positively affected student learning.

Review of Proposed Problem

Teachers are tasked with providing instruction by several different means for the purpose of effectively teaching each of their students. This is in opposition to traditional methods of teaching which largely weighed on teachers giving lectures. Differentiating instruction is a daunting task which can feel impossible. If there are 25 students in a classroom, all 25 will have varying combinations of needs including the way(s) they internalize content most effectively. Yet teachers are still expected to provide DI for all of them.

Review of Importance of Topic

According to Gardner’s (1983) Multiple Intelligences Theory, all students will have their own strengths and weaknesses. Knowing all of this information about each student in a classroom is difficult, but acting upon that information adds another level of complexity. The above stated problem can be remedied to an extent by implementing Gardner’s (1983) MIT into classrooms. This will create variance in lessons and provide differentiated instruction for a far larger number of students. In turn, this will provide teachers with higher numbers of engaged and motivated students, which results in improved academic achievement in the students.

Summary of Findings

As the research studies above showed, there is a cause-and-effect relationship starting with identifying and knowing students' MI. Students knowing their own intelligences can help them understand themselves and their learning habits better. This likely is a factor in the higher levels of motivation several of the studies found in their participants. When their teachers were also aware of students' MI, they could ensure instruction was given in a way which best suited all students. Teachers could then work with students to develop their intelligences, either for the sake of enhancing their dominant intelligence(s) or strengthening some of their weakest.

When differentiation is provided to students through MIT strategies, students' needs are catered to and therefore met to a better extent. As a result of this, students will be more motivated to come to school, engage in learning, and complete their class activities. When students are more engaged in the lessons and complete the associated work, they will have higher levels of academic achievement. This means teachers will have done their jobs more effectively. Proper utilization of the MIT is one of the most efficient forms of DI leading to higher student academic achievement.

Conclusion

It is the job of teachers to provide instruction which will meet the needs of all learners in their classrooms. The data provided above shows how proper implementation of the Multiple Intelligences Theory is an effective strategy for providing differentiated instruction. The following and final chapter of this literature review will further discuss the insights gained from this research. Additionally, it will provide suggestions for teachers in the daily teaching practice as well as some ideas for future research which would give further validity to this theory and show stronger data.

Chapter Three: Discussion, Application, and Future Studies

All of the studies described above showed a positive trend in student achievement. Though the amount varies between the studies, each was positive to an extent. This literature review first provided several research studies which spoke about the importance of MI identification in students and showed how the intelligences can be developed. It then discussed how the attitudes and motivational levels of students improved when the MIT was implemented in the classroom and showed the effects of these factors on student academic achievement. Educators should not ignore the data found from this research. This final section will discuss the insights gained from the studies, how teachers can and should apply this information to their professional practice, and give suggestions for studies to be completed in the future.

Insights Gained from Research

The potential outcomes on academic achievement provided by effective implementation of the Multiple Intelligences Theory show teachers should work to incorporate it into their lesson plans as much as possible. But even before higher academic achievement comes to fruition, there are other benefits for students. The research provided several new insights which teachers can and should keep in mind when writing lesson plans for their students. First, it is important for teachers to know the MI of their students and for the students to know their own strongest intelligences. Secondly, teachers should work with students to develop their intelligences. Both of these insights led to the others: effective implementation of the MIT in classrooms boosts student motivation and academic achievement.

In their publication, *The Longevity of Multiple Intelligence Theory in Education*, Adcock (2014) spoke about the timelessness of the MIT. Even in the 1800s, researchers were

suggesting students learn best when given information in multiple facets (Adcock, 2014). Even though this is not a new concept, many classrooms still struggle to provide quality DI through MI. In large part, this is due to many teachers' lacks of education on identifying and teaching to the intelligences. As some of the studies mentioned, students knowing their own strongest intelligences can help them in their education. Having a better understanding of themselves will help students become independent learners. Proper identification of MI in students will also inform teacher in their lesson planning.

With this same knowledge, teachers can work to help students develop their intelligences. Creating classroom activities that cater to the Multiple Intelligences Theory not only teaches students more effectively by meeting their needs better, it also encourages them to practice with the other intelligences. Doing so will foster and enhance some of the weaker intelligences in students. Encouraging students to develop other intelligences will help to create well-rounded pupils who will be more prepared for future education and living in society.

In part, being aware of and fostering their intelligences may be what causes the higher levels of motivation several of the studies also mentioned. Whether or not that is the cause, effective implementation of the MIT was also shown to increase motivation—an added benefit. Motivated students are typically much more engaged in learning and excited to be in school. While it seems likely, this increase in motivation may or may not be a large factor in the additional increase in academic achievement. Many teachers may see the benefits of implementing the Multiple Intelligences Theory in their classrooms through the academic achievement lens. However, they should not ignore the other benefits it can have on their students.

That is not to say the higher levels of academic achievement are not important—they most certainly are. As previously stated, teachers are expected to teach each individual student in their classrooms to the best of their abilities. This includes using DI as a strategy to ensure all students gain mastery of the content. The research clearly shows when the MIT is purposefully introduced into classrooms over traditional methods of teaching, students are able to perform at higher academic levels. Once teachers have seen this research and know the benefits, they must figure out how they are going to apply this knowledge in their daily practice.

Applications for Professional Practice

The insights mentioned above create several realistic applications for teachers in their profession. First, teachers must be equipped with the proper training and strategies which encourage them to identify and develop their students' MIs. Second, teachers properly putting their training into practice will mean that they are able to engage and motivate their classes to a higher level. These higher levels of engagement and motivation will increase academic achievement.

Many teachers lack the training which courses such as the one described by Adcock (2014) provide. Only when given the proper training can teachers begin to effectively implement the MIT into their classrooms. They should do so by starting with a questionnaire or survey to help identify the intelligences of their students as several of the above studies did. This will guide them in writing lesson plans and creating meaningful activities for their classes. Additionally, when appropriate, they will be able to help students develop their intelligences, which will likely lead to higher levels of motivation and academic achievement.

The second application is proper implementation of the Multiple Intelligences Theory equips teacher to engage more of their students on a regular basis. Many of the teachers who participated in the course mentioned described by Adcock (2014) noticed when content needed to be re-taught, they could provide instruction it in a different way. It showed them which intelligences they needed to more intentionally teach to. It “helped them to think outside their comfort zones when developing learning activities and provided them with more tools for teaching” (Adcock, 2014, p. 53). Thinking outside of comfort zones is exactly what teachers must do to have a differentiated classroom. Not only does this cater to more intelligences, it will keep students who do not necessarily need the re-teaching more engaged and motivated.

When teachers apply the identification and development of intelligences in students, students will be more engaged. In turn, this will likely lead to higher motivational levels and therefore increase academic performance as shown by several of the previously discussed groups of researchers. Ensuring this level of DI through the MIT will provide students with a better education which will more sufficiently prepare them for their adult lives—the ultimate goal of education.

Recommendations for Future Studies

No research study is perfect, and the ones discussed in the above literature review have their limitations. As mentioned with several of them, the research would benefit from being expanded. A couple of the studies which researched the identification of MI in students are great foundations for future researchers to utilize the information already provided and design experiments. For those studies, to what extent did the identification of MI in students change their outlook on school, or how did their academics change once they

were aware of the strongest intelligences? Having hard data on some of the benefits many of the researchers noticed would give more credibility to the effects of the MIT.

Several of the experimental studies were designed and executed very well. It would be interesting to take the same research questions and/or methodology and apply them to a broader spectrum. Many of them focused on specific ages of students or specific contents. Researchers could further their investigations by doing these experiments or studies on other content areas and in other age groups of students. This would give more validity to the effects of the Multiple Intelligence Theory across all ages and contents. An additional level could be added to compare the effects of the MIT in classrooms worldwide.

Another limitation mentioned in several of the studies is the concern of preparation. Planning for and implementing the MIT is extremely time-consuming for teachers, who likely already have too much to do. Further research could be done to see how this issue is or could be combatted. What types of activities will provide practice which could cater to several of the intelligences? Which activities have a high amount of buy-in time, but once students and teachers get into the routine of it, take little preparation and/or time and are highly effective? At what point, if any, do teachers get into the habit of implementing the Multiple Intelligences Theory and begin to do so as a second nature? This theory may be difficult and time consuming to start, but does the amount of time decrease as teachers become more comfortable? Research on this may provide teachers who feel overwhelmed at the idea of implementing the MIT with insight into what they could expect from the process. In conjunction with this, providing teachers with courses, such as the one described by Adcock (2014), or professional development to help deepen their understanding of their students' intelligences would benefit all.

Conclusion

This literature review sought to answer the question: in light of what is known about DI, how can proper understanding, fostering, and implementation of the MIT in classrooms impact student motivation and academic achievement? The Multiple Intelligences Theory has been shown to have a positive effect on students in their academic achievement. This shows it is one of the most effective ways of differentiating instruction to meet the needs of all learners. It is clear the MIT has a consistently positive effect on the students who receive instruction aligned to it. It falls under the “waves of reform” Hargreaves and Goodson (2006) identified as one of their changes in education (p. 1). As shown by Adcock (2014), the idea of needing to provide information in multiple ways is not a new concept, though it does not always happen as frequently as it should.

The research studies analyzed in this review of literature provides teachers with data to show the importance proper implementation of the Multiple Intelligences Theory has on classroom. Overall, its identification in students can help them to become more independent learners, teachers can guide students in development of the intelligences, students will become more motivated, and they will be more successful academically. To conclude their article, Adcock (2014) states the MIT is important as it “addresses the diversity of learners” (p. 54). This is the goal of DI; to meet the needs of the vast array of students who are a part of the education system. It is imperative for teachers to effectively implement the Multiple Intelligences Theory in their classrooms.

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