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The International Baccalaureate Middle Years Programme and its Effect on Students in Poverty

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ACCEPTANCE

This dissertation, THE INTERNATIONAL BACCALAUREATE MIDDLE YEARS PROGRAMME AND ITS EFFECT ON STUDENTS IN POVERTY, by MARGARET JULIA KOBYLINSKI-FEHRMAN, was prepared under the directions of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree Doctor of Philosophy in the College of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chair, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

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ABSTRACT

THE INTERNATIONAL BACCALAUREATE MIDDLE YEARS PROGRAMME AND ITS EFFECT ON STUDENTS IN POVERTY

by

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The achievement gap between middle class white students and black or Hispanic students living in low income households continues to be a persistent problem in education even ten years since the authorization of No Child Left Behind in 2001. This study examined the International Baccalaureate Middle Years Programme and how students from low income households preformed on the Criterion Referenced Competencies Test (CRCT) mathematics and reading subtests when compared to similar students at a school with a traditional instruction program. Analysis of covariance was employed using scores from students' fifth grade composite Cognitive Abilities Tests as the covariate. The analysis did not detect a significant difference ($p=.410$) on the eighth grade adjusted means reading CRCT scores, but did detect a significant difference ($p<.001$) on the adjusted mathematics scores on the eighth grade CRCT in favor of the traditional instruction school. To help interpret quantitative results, teachers working at an International Baccalaureate Middle Years school were interviewed through a focus group setting to determine their perspectives on the how the International Baccalaureate Middle Years Programme played a part in achievement levels for their students. Through the focus group discussion, the teachers revealed that they felt the International Baccalaureate Middle Years Programme had an overall positive effect on their students' achievement and teachers' pedagogy. However, the teachers also shared that the International Baccalaureate Middle Years Programme required additional layers of requirements for teachers and students, which the teachers felt was stressful.

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EXPLAINATION OF TERMINOLOGY

In this paper, when the term program is used and refers to the actual International Baccalaureate programme, the term English spelling of the term “programme” will be used through this paper. This is in accordance with how the International Baccalaureate Organization spells the term program in their literature.

LIST OF ABBREVIATIONS

ESEA	Elementary and Secondary Education Act
NAEP	National Assessment of Educational Progress
NCLB	No Child Left Behind
IB	International Baccalaureate
IBO	International Baccalaureate Organization
ISA	International Schools Association
CRCT	Criterion Referenced Competency Test
ANCOVA	Analysis of Covariance
ESOL	English Speakers of Other Languages
CogAT	Cognitive Abilities Tests
GPA	Grade Point Average
SD	Standard Deviation

CHAPTER 1

INTRODUCTION

The 1965 Elementary and Secondary Education Act (ESEA) created a sea of change in public education policy. Not only did this act fundamentally change the funding of public schools by providing targeted assistance for students of poverty, it also ushered in the era of accountability. Following shortly after the ESEA of 1965, the landmark Coleman Report was published (May, 2009). This report linked demographic and socioeconomic status as two powerful predictors of student achievement (Cremascoli, 2011). This report provided the justification for policies at the national level to address the performance gap between middle-class White students and at-risk students (Boyd-Zaharias, 2008; Rampey, 2009; Talbert-Johnson, 2004; Rothstein, 2004). The phrase *at risk* is commonly used in educational settings to describe students who are in danger of failing or dropping out of school. Typically, students in the at-risk category are also Black, Hispanic, have low socioeconomic status, and/or are academically disadvantaged students (National Center for Educational Statistics, 2010).

Despite federal policies, the achievement gap is a persistent concern in public education even close to 50 years after the passage of ESEA 1965, and 12 years since its reauthorization, No Child Left Behind (NCLB) 2001. According to the Federal Department of Education's Status and Trends in Education of Racial and Ethnic Groups Report, Black and Hispanic students are still performing far below their White peers (NCES, 2010). When examining race alone, Black and Hispanic students are still performing significantly below the average achievement level of White students. However, after combining race and class, the achievement gap becomes even more

evident. In 2008, the percentage of Black students attending public school who were also living in poverty was 34%, and the percentage of Hispanic students living in poverty was 27% (NCES, 2009). This is in stark contrast to the percentage of White students living in poverty—only 10% (NCES, 2009). For achievement levels for Black and Hispanic students living in poverty compared to the achievement of White middle-class students, the achievement gap is startling (NCES, 2010).

While local school accountability is not a new concept to educators, the reauthorization of the ESEA 1965, NCLB formalized national statewide accountability measures for the first time. The repercussions of not making sufficient academic progress each school year caused principals and districts to look for fast-fix solutions to boost test scores. Programs such as Success For All, Comprehensive School Reform, and READ 180 became popular choices to address areas of academic weakness (Trilling, 2009). The common thought was that at-risk students were in need of remediation and reinforcement of basic skills (Carter, 2000). In 2004, a report published by Northwest Regional Educational Laboratory (NWREL) reported that, over 10,507 schools in the United States were using some type of school reform that was aimed at remediation (NWREL, 2004). Principals were searching for an intervention program to address the achievement gap and programs that focused on remediation were at the top of the list.

Nonetheless a different type of program was beginning to gain popularity in the early 2000s. The International Baccalaureate (IB) Middle Years Programme has gained popularity over the past 10 years as a program to improve student achievement. This program, however, was not developed to remediate basic skills. The IB Middle Years Programme was designed to teach students to be critical thinkers, problem solvers,

effective communicators, and able to successfully navigate life in a 21st century democracy (Trilling, 2009). The Middle Years Programme was initially popular among private schools, charter schools, and schools with large populations of gifted students. However, the program has gained popularity among schools with high numbers of at-risk learners since 2000 (Rothstein, 2004).

International Baccalaureate Middle Years Programme

The mission of the International Baccalaureate Organization (IBO) is to "develop inquiring, knowledgeable, and caring young people to create a better and more peaceful world through intercultural understanding and respect" (IBO, 2010, p. 19). The Middle Years Programme aims to achieve its mission by emphasizing a challenging and rigorous curriculum while encouraging real-world application of content knowledge to created critical and reflective thinkers. The program also strives to develop skills in communication, intercultural understanding, and global awareness.

The curriculum approach of the IB Middle Years Programme is broad and balanced (IBO, 2009). The curriculum framework includes eight subjects as well as five interdisciplinary themes to provide a template that ensures a balanced approach to instruction. The IBO maintains that a broad and balanced curriculum ensures that students acquire the knowledge and skills to prepare them for the future (IBO, 2010). The IB Middle Years Programme includes skills as well as attitudes in the curriculum to ensure that students are not just knowledgeable about a subject, but can also demonstrate a genuine understanding of ideas and the ability to apply these to new situations (IBO, 2010). The balanced approach also provides an avenue for teachers to ensure the development of higher-order thinking skills. This is accomplished by delving deeper into

the curriculum each subsequent year of the program. To effectively deliver a balanced and broad curriculum, teachers in IB Middle Years schools must use a variety of teaching and learning strategies to foster a climate in which students can discover how they learn best in different situations. Finally, the IB Middle Years Programme "emphasizes the development of the whole person—affective, cognitive, creative and physical" (IBO, 2010, p. 5). The IBO's philosophy regarding the education of adolescents is similar to that of the Association for Middle Level Educators' (AMLE) philosophy. Both the IBO and the AMLE recognize that adolescent learners are navigating a critical and complex period in their lives. By educating the whole child, the IBO hopes to create life-long learners who will become active participants in a democratic society (AMLE, 2010).

Purpose of Study

The IBO does not subscribe to the notion that student achievement can be summed up by a single assessment score; however, this is how state accountability systems evaluate schools. Tests results are a necessary factor principals use to determine whether their schools are making a difference in the academic achievement of the students in their buildings. Through the established accountability procedures of NCLB, test scores became the main factor in determining school effectiveness (Kay, 2009). The purpose of this study was to explore teachers' perspectives regarding how the IB Middle Years Programme effected their teaching practices and student achievement, and then through the use of statistical analysis, determine if a measurable difference in student achievement was evident.

The research questions that guided this study were:

1. What are the perceptions of teachers at the IB Middle Years Programme school regarding how the program affects their own practice and the level of student achievement at their school?

2. Is there a significant difference between adjusted means on the reading Criterion Referenced Competency Test (CRCT) for students who qualify for free/reduced lunch price who have participated in the Middle Years Programme for 3 consecutive years when compared to students who qualify for free/reduced lunch price who do not participate in the Middle Years Programme?

3. Is there a significant difference between adjusted means on the mathematics CRCT for students who qualify for free/reduced lunch price who have participated in the Middle Years Programme for 3 consecutive years when compared to students who qualify for free/reduced lunch price who do not participate in the Middle Years Programme?

Benefits of Study

The achievement gap is an area of concern for policy makers and educators. In 2008, the most recent National Assessment of Educational Progress assessment was administered to fourth, eighth, and 11th graders across the nation. The results of these assessments showed no significant growth in mathematics for eighth grade Black and Hispanic students and students of poverty (NCES, 2009). This information confirms that after nearly 40 years the passage of ESEA 1965, the achievement gap persists.

The information gleaned through this study helped to assess whether the balanced framework of the IB Middle Years Programme had an effect on student achievement for at-risk students. Student achievement is a difficult concept to define, and it is even more

difficult to determine whether a specific program or instructional practice affects student achievement**.** This is in part due to the wide variety of variables that play into student achievement (Barton & Coley, 2009). This research will build knowledge regarding the effectiveness that the IB Middle Years Program has over time on academic achievement for students living in poverty.

As school districts face cuts to their budgets, data regarding how the Middle Years Programme effects student achievement need to be examined to evaluate if the program is worth the investment. The cost of implementation for the Middle Years Programme is significant. The program can cost a school over $5,000 each year in fees. Information from this study will provide needed information regarding achievement outcomes of IB Middle Years Program for at-risk students. School principals and district leaders need to be able to determine the feasibility of implementing the IB Middle Years Programme and decide if the outcomes are worth the investment.

The instructional practices, curriculum framework, and the vision and mission of the IB Middle Years Programme are similar to the beliefs and theories regarding education developed by John Dewey (Kay, 2009). Reflection, guided student inquiry, and interdisciplinary lessons are evident throughout the IB Middle Years Programme's vision statement as well as the program's standards and practices (IBO, 2009). These ideals can be traced back to Dewey's theories on education.

Theoretical Framework

Dewey's theory of education grew out of his dissatisfaction with the state of education in the late 1800s (Kay, 2009). The focus of education at that time was on imparting the same information to all students and measuring their efficiency of

memorization. Dewey believed that schools should be a place for students not only to gain knowledge and experiences, but also to understand how to live in a democratic society (Dewey, 1938).

Dewey (1916) believed these outcomes would result from a different approach to education. Reflections, interdisciplinary lessons, and making learning meaningful to students were central to Dewey's theory of education (Dewey, 1916). Dewey (1938) clarified that the process of reflection was necessary for students to build knowledge. Reflection, according to Dewey (1938), was more than daydreaming; he identified it as an intentional and organized process where students focus their thoughts on one idea or belief. He clarified that through the process of reflection, students test predictions or outcomes as well as connect new information to background knowledge. Making learning meaningful was a central tenant of Dewey's educational theory. Dewey (1916) believed that education needed to be meaningful to students not for some remote future purpose, but should be made relevant to the present day lives of students. By creating lessons that pique students' interests and connect to the real world, students apply what they learn and, in the end, this keeps students engaged in learning (Dewey, 1916). The importance of interdisciplinary lessons was another essential concept to Dewey's theory of education. Dewey (1938) believed that integrating subjects helps students make sense of the content more so than when taught in isolation.

The theory of inquiry and purpose of education as articulated by Dewey is evident in the mission of the IBO. The mission of the IBO reads, "The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and

respect" (IBO, 2012, p. 4). Both Dewey and the IBO contended that knowledge should be developed in students through the use of inquiry, as opposed to memorization. While Dewey's theoretical framework of education is applicable for exploring the IB Middle Years Programme's curriculum and instructional practices, a connection needs to be made to the current educational context where accountability policies require schools to measure student knowledge through standardized assessments. This study explored teachers' perspectives on how the IB Middle Years Programme affected teaching practices and student achievement. Following this exploration, quantitative data were analyzed to determine whether measurable differences in the of student achievement for at-risk students could be detected.

CHAPTER 2

LITERATURE REVIEW

The IB Middle Years Programme was started by the International Baccalaureate Organization in 1994; however, research regarding how the program affects student achievement is still lacking (Batson, 2010; Jackson, 2006; Kay, 2009; Magee, 2005; Sillisano, 2010; Tan, 2010; Wade, 2011). The purpose of this study is to examine the perspective of teachers regarding the effect of the program on their instructional practices and on student achievement. A secondary purpose is to examine assessment results to determine whether a difference in achievement can be detected. The following review of literature provides a detailed overview of the history of Middle Years Programme followed by a summary of research-based strategies used in the program. The final section provides a summary of research studies regarding the IB Middle Years Programme.

International Education

The notion that international education was developed solely for the children of expatriated workers after World War I was a common misconception about the origins of the field discussed by George Walker (2000) in *International Schools and International Education: Improving Teaching, Management, and Quality*. While Walker (2000) conceded this was one of several factors that contributed to the development of international education, he maintained that it was not the foremost motivation. Phillip Thompson (1998) succinctly summarized the main purpose of international education in the title of his article written in 1998, “Education for Peace: The Cornerstone of

International Education**."** According to Thompson (1998), the origin of international education grew out of post-war fears of another world war. Proponents in this type of education believed the solution to preventing a second world war was through educating children in how to accept others' differences and become active participants in democratic society (Thompson, 1998; Walker 2000).

Defining International Education

Literature on international education has yet to arrive at a universally agreed upon definition for international education due to the ambiguous nature of the term *international* and the comingling of the term *globalization* (Al Farra, 2000; Gellar, 2002; James, 2005; McKenzie, 1998). The terms are neither interchangeable nor reliant on each other. Internationalization assumes the existence of nations, while globalization can occur with or without the existence of nation states (Wylie, 2008). Globalization can be defined as the context in which international education has evolved.

In *The World is Flat*, Friedman (2005) proposed three eras of globalization. The earliest era began when Christopher Columbus sailed to the new world. The early era was marked by the opening of trade between the old and new worlds. The first era ended in the 1800s when mechanized power enabled transportation and mobilization to become easier and less costly. Friedman (2005) observed that the second era saw the creation of multinational companies and invention of new telecommunications technologies such as the telegraph, telephone, fiber-optic cable, and the World Wide Web, all of which moved globalization forward throughout the second era. Friedman (2005) categorized the third era of globalization by the "new found power for individuals to collaborate and compete globally" (p. 10).

No matter which era is discussed, globalization can be categorized by the rapid diffusion of ideas and information (McKenzie, 1998). Cambridge (2000) defined globalization as “the widening, deepening, and speeding up of worldwide interconnectedness” throughout all aspects of life (p. 180). James (2005) and Walker (2000) expanded the definition of globalization by including the denationalization of networks of production, trade, and finance. Phillips (2008) further clarified the definition of globalization by adding when dominating ideas and ideologies take on a global character and are adopted by large number of social groups in all areas of the world. Phillips (2008) pointed out that the diffusion of these ideas is aided by innovations in communication and transportation.

Globalization has had a profound effect on cultures and nations around the world (Cambridge, 2000: Hayden, 2006; Jenkins, 1998). It has changed the way that students compete. Nations are more concerned with economic performance in global markets than ever before (Walker, 2000). Education has become less about building a national identity and more about developing students who are ready to compete in the global market (Walker, 2000).

International education embraced the concept of competing on global market. Phillips (2002) argued that the value of education is now measured by its ability to contribute to economic growth and must rely on providing a variety of opportunities for students to learn and prepare for jobs in the global market. The most desired skills for workers in the 21st century are problem solving, problem identification, and teamwork (Phillips, 2002; Wagner, 2008). For over 40 years, the aim of international education has been to prepare students to successfully enter the global market with these skills.

Purpose of International Education

Preparing students to be competitors in the global job market is one of many outcomes of international education (Hayden, 2006). International education heavily draws its philosophy from the post-World War I League of Nations and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) formed in 1945 (Sylvester, 2007). In 1945, UNESCO called for international education to be infused with the aims and purposes set forth in the charter of the United Nations (Thompson, 1998). The United Nations Educational, Scientific, and Cultural Organization soon after issued a statement of purpose for international education. “Education shall be directed to the full development of the human personality and to strengthen of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance, and friendship among nations, racial and ethnic groups” (Hill, 2007, p. 1).

When this statement was issued international education had already been in existence for almost 50 years operating under similar ethos. The International School of Geneva (Ecolint), founded in 1924, was one of the first international schools operating in Europe (Hill, 2002/2007; Stobie, 2007). The founders of Ecolint wanted to build a school that was primarily focused on creating a better world, developing the general powers of the mind rather than the accumulation of knowledge, and preparing students to solve global and international problems (Fox, 1998; Hill, 2002; Walker, 2000).

The purpose or mission of international education has changed little over time. Refinements and clarifications have been made, but the focus remains on building a more peaceful world. International schools are found in nations all across the world, but how

these schools deliver an international education can differ from country to country and school to school.

International Education and International Schools

Not all schools who call themselves “international” promote an international education. There is no governing body that regulates the use of the word *international* in a school’s title (Hayden, 2006). Schools have used the term *international* to signify that they have a diverse population, or that the school offers a curriculum similar to that of another nation, or for pure marketing and competition reasons (Gellar, 2002; Hayden, 2006). There are also national or state schools that offered an international education and called themselves international (James, 2005). Of all schools that offered one or more of the IB programs in North America, less than one fifth would be considered to have an internationally diverse population (Hayden, 2006). Hayden (2006) outlines three categories to classify international schools. Schools that served or were composed of students from several nationalities comprise the first category (Singh, 2002; Thompson, 1998). This category may now be obsolete, being that an increasing number of schools comprise students from various nations. The second category of international schools consisted of schools located oversees that only serve students from their home country (Hayden, 2006; Singh, 2002; Thompson, 1998). The US Department of Defense schools could fall into this category. The third category is schools that followed the guidelines for international education set forth by the International Schools Association (Hayden, 2006).

Origins of the International Baccalaureate Organization

By the mid-1960s, several international educational organizations were operating in an effort to provide guidance on the implementation of international education (Fox,

1998). One of these organizations was The International Schools Association (ISA). The ISA published several pamphlets in the 1960s titled *The International Schools Examinations Syndicate*. The process and examination requirements outlined in these pamphlets developed into the beginnings of the International Baccalaureate Diploma Program (Fox, 1998; Sylvester, 2007). Concurrently, a researcher from the University of Chicago, Ralph Tyler, was awarded a loan from the Ford Foundation to establish a formal research unit at Oxford University to study international education (Fox, 1998). The first research studies originating from this unit were focused on three main topics:

- A comparative analysis of upper and secondary educational programs in European countries
- A study of university expectations for upper and secondary school students preparing to enter higher education
- A statistical comparison of IB pilot examination results with those of national school-leaving examinations such as British A levels and US College Board Tests. (Fox, 1998, p. 68)

These studies provided the foundation of knowledge on which the origins of the IB organization were built. The comparative analysis research and the study of university expectations revealed that the abilities think critically, to apply knowledge, to think independently, and to communicate effectively were in high demand by universities (Fox, 1998). The research teams narrowed what core common knowledge and disciplines were acceptable to universities. The philosophy of the IBO was drawn from these studies and synthesized in the 1970 publication *The General Guide to the International Baccalaureate* (Fox, 1998). The third topic of research had a limited sample sizes, and

researchers were unable to make reliable conclusions; however, they did find an overall positive correlation between students in IB programs and higher schools in college entrance exams (Fox, 1998).

As the founders of the IB organization built the foundations of the IB curriculum and philosophy, they continually asked what areas of knowledge, skills, and competencies are necessary for students to enter university or the professional world in the increasingly interconnected world (Fox, 1998; Stobie, 2007). The architects of this project developed four fundamental criteria for the IB curriculum:

- priority of personal reflection over mere accumulation of knowledge;
- training for independent work, and practical application of knowledge;
- an international perspective in the approach to human problems; and
- a link between academic and extra-curricular activities—the concept of educating the whole person (Stobie, 2007).

Two additional contributors to the formation of the fundamental IB philosophy were Edgar Faure, the French Minister of Education, and Jean Capelle, Dean of the University of Nancy (Sylvester, 2007). Faure and Capelle argued that it is essential for students to understand how they learn and to, in turn, use this knowledge to form their own understanding of academic content (Stobie, 2007; Walker, 2000). Evidence of their philosophies can be seen in the IB curriculum today as the Theory of Knowledge course in the Diploma Program and as Approach to Learning in the Middle Years Program.

IB Middle Years Programme

The Middle Years Programme was developed for students ages 11 to 16 or grades 6 through 10. In the United States, the first 3 years of the program are usually offered in

the middle school setting, while the final 2 years are completed at the high school level. The IBO believed that adolescents are at a critical stage in their development and thus created a program to help students develop the knowledge, attitudes, and skills they need to participate actively and responsibly in a changing an increasingly interrelated world (IBO, 2009). The IBO mission statement reflected this belief in the final sentence: “The programme encourages students across the world to become active, compassionate, and lifelong learners who understand that other people, with their differences, can also be right” (IBO, 2009, p. 6). The IBO believed that in order for this end to be realized, students need to be able to do more than recall facts. They need to think critically and reflect on their ideas and behaviors. Three fundamental concepts central to the IBO philosophy guided the implementation of Middle Years Programme: holistic learning, intercultural awareness, and communications.

For a school to be authorized for the IB Middle Years Programme, it must first go through an application process. Once a school’s application is accepted, the school is considered an IB Middle Years Candidate School. The application and authorization process can take between 2 to 5 years. The authorization process requires schools to demonstrate alignment of their curriculum to the IB standards, assimilate IBO vision and mission into their own vision and mission statements, and ensure sufficient fiscal resources are allotted so the program can be implemented with fidelity. A second part of the authorization process is teacher training. All teachers at an IB Middle Years school must be trained through approved IBO staff development courses. Finally, an authorization visit of the candidate school is completed. During this visit, IBO-trained evaluators oversee the implementation and fidelity of the program. After the school is

authorized, the IBO completes regularly scheduled evaluations to assess the fidelity of the program (IBO, 2009).

The concept of holistic learning in the IB Middle Years Programme has been heavily influenced from the theorists such Howard Gardner, Grant Wiggins, and Jay McTighe. Gardner's views on multiple intelligences are reflected in the curriculum of the IB Middle Years Programme (Skelton, 2002). The curriculum provides opportunity for students to experience a broad range of disciplines, which is congruent with Garner's Multiple Intelligence Theory in that students can show their strengths in more than one type of intelligence (Skelton, 2002/2007). Wiggins and McTighe (2012) stated that students reveal their understanding most effectively when they are provided with complex, authentic opportunities to explain, interpret, apply, shift perspective, empathize, and self-assess. They further explained that when applied to complex tasks, these six facets provide a conceptual lens through which teachers can better assess student understanding (Wiggins & McTighe, 2012). Wiggins and McTighe (1998) believed that increased student achievement is gained through regular reflection on student work followed by direct feedback to students on performance, and then by adjusting instruction to meet the needs of the learners (Wiggins & McTighe, 1998).

Holistic learning in the Middle Years Programme is focused on discovering interdisciplinary relationships and connecting knowledge to the world outside school (IBO, 2009). To facilitate holistic learning, the IBO developed five Areas of Interaction. The areas of interaction help teachers create a link between subject areas as well as facilitating students' ability to understand content from several different points of view.

Intercultural awareness means more than celebrating the diverse cultural groups across the globe. The goal of this concept is to develop students who are empathetic, caring, and respectful of others' beliefs and ideas. A key element in developing intercultural awareness is to constantly consider a problem or concept from multiple cultural perspectives. By looking through the lens of many different perspectives and cultures, the IBO believed that students can develop respect and tolerance for other cultural groups and ethnicities (IBO, 2009).

The IBO believed that in order for students to successfully navigate in the 21st century, effective communication is key (IBO, 2010). The final fundamental concept for the Middle Years Programme, communication, is designed to help students understand the importance of communication and its many media (IBO, 2010). Learning a second language is one of the most obvious ways the IB Middle Years Programme creates an emphasis on communication. However, more subtle emphasis is placed on developing a command of your native tongue, understanding the importance of verbal and nonverbal communication, and also understanding the effect that technology has on communication. These three fundamental concepts are then interwoven into each subject of the curriculum framework of the program (IBO, 2009).

IB Middle Years Programme Curriculum

The Middle Years Programme divides the curriculum into eight unique subjects: humanities, mathematics, science, technology, physical education, arts, Language A, and Language B. A graphic representation of the curriculum can be seen in Figure 1 (IBO, 2009). The eight subjects form the sides of an octagon. At the center of the octagon is the IB Learner Profile. The learner profile comprises 10 personality descriptors that translate

the IBO mission statement into learner outcomes. The learner profile is found in all levels of IB continuum. Linking the learner profile to the eight subjects is the distinct core of the Middle Years Programme curriculum, the five Areas of Interaction. The descriptors of the learner profile are summarized in Table 1 (IBO, 2009).

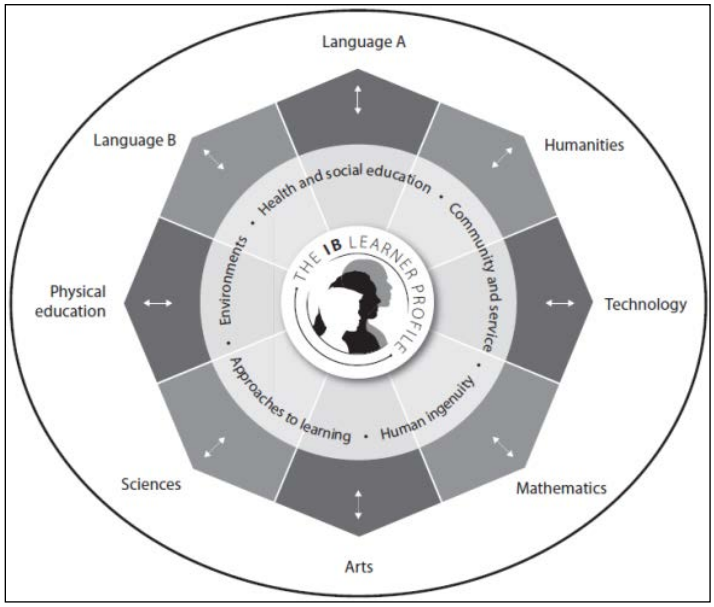

Figure 1. IB Middle Years curriculum is represented as an octagon. Adapted from "IBO Implementation Guide," by IBO, 2009.

Table 1

IBO Learner Profile

IBO Learner Outcomes	IBO learner outcome descriptors
Inquirers	Students will develop a natural curiosity and acquire the necessary skills to conduct research and show independent learning.
Knowledgeable	Students will acquire an in-depth knowledge as they explore concepts, ideas, and issues with local and global significance.
Thinkers	Students will be able to use critical thinking skills to recognize complex problems and make ethical and reasoned decisions.
Communicators	Students are able to effectively communicate their understanding through different media and languages.
Principled	Students take responsibility for their own actions. Students also act with integrity and honesty to respect the dignity of other individuals and groups.
Open-minded	Students seek different points of view and while appreciating their own culture and history, are open to the perspectives, values, and traditions of other groups and individuals.
Caring	Students are committed to showing empathy and compassion toward other groups and individuals.
Risk-takers	Students are able to approach unfamiliar situations and topics with courage and forethought.
Balanced	Students are able to recognize the need for a well-balanced life between learning and personal well-being.
Reflective	Students are able to look back on their own learning and experiences to assess their strengths and weaknesses.

Adapted from “IBO Implementation Guide”, 2009.

IB Middle Years Programme Subjects

The IB Middle Years Programme is based on the concept of balance. The IBO contended that this balance creates a broad base of disciplines to ensure that students acquire the knowledge and skills necessary to prepare for the future (IBO, 2009). The program model promotes concurrency of learning, meaning that students receive a balanced curriculum each year where different subjects are studied simultaneously. As students develop and mature, they also develop higher-order thinking skills as they explore the subjects in increasing depth.

The eight subjects outlined in the curriculum for the IB Middle Years Program each have specific objectives to be accomplished throughout the 5 years of program. The IBO has published subject guides for each of the 8 subject areas to ensure a consistent and quality implementation of the Middle Years Programme. The aims, objectives, and assessment criterion are different from the traditional academic objectives and assessment criterion. For example, the aims for the sciences include that students will be able to communicate scientific ideas, arguments, and practical experiences accurately in a variety of ways; think analytically, critically, and creatively to solve problems, judge arguments, and make decisions in scientific and other contexts; and understand the international nature of science and the interdependence of science, technology, and society, including the benefits, limitations and implications imposed by social, economic, political, environmental, cultural, and ethical factors (IBO, 2009). These aims directly support the philosophy of international education. The subject guides include objectives and assessment criteria for each subject. The assessment criteria are directly linked to the objectives so that teachers can assess student progress on mastery of the objectives. The

unique nature of the Middle Years Programme objectives and assessment criteria create a curriculum that allows schools to incorporate their local curriculum with the Middle Years Programme curriculum (Jackson, 2006). The objectives and assessment criteria in Middle Years Programme are broad and stress an international approach to mastery of content knowledge. For example, in the *Sciences Middle Years Programme Subject Guide*, one of the objectives is One World. This objective requires students to "understand the interdependence between science and society. Students should be aware of the global dimension of science, as a universal activity with consequences for our lives and subject to social, economic, political, environmental, cultural and ethical factors" (IBO, 2009, p. 24). This objective is broad and can be incorporated in the local school curriculum. An integral tool that the IBO (2009) has incorporated into the Middle Years Programme curriculum is the idea of the areas of interaction (AOI). The AOI link the curriculum areas and incorporate the Middle Years Programme objectives into the local curriculum.

IB Middle Years Areas of Interaction

The five AOI are approaches to learning, community and service, human ingenuity, environment, and health and social education (IBO, 2009). The AOI are intended to broaden the students' experiences and place learning in global context. For example, the AOI human ingenuity asks students to look at creations made by humans and understand the context of inventions, consequences of inventions, and possible future changes based on a particular invention (IBO, 2009). Students in science class may examine an invention or innovation in the field of science such as immunizations and discuss with a social studies teacher the consequences of immunizations for different

cultures and the effect of immunizations on the human body. The rest of the areas of interaction are aimed at creating similar real-life connections between subjects and real world problems and events.

IB Middle Years Programme Instructional Approach

The instructional approach of the Middle Years Programme can be linked to several instructional strategies and school-level factors that have been shown to have an effect on student achievement (Balfanz, Herzog, & MacIver, 2007). While the mission of the Middle Years Programme is not directly aimed at increasing student achievement results as measured by standardized assessment, the objectives and instructional approach of the program is similar to other interventions and practices that have shown a positive effect on student achievement (Carter, 2000; Cremascoli, 2011; Hutchings, 2010; Popp, 2012). As principals and school leaders make decisions about the effectiveness of programs, information such as the change in test scores provides quantitative data that can be analyzed and interpreted to evaluate the practicality of a program.

School-Level Factors for At-Risk Students

Research shows that when students are engaged in the learning process, they are more likely to perform at higher levels (Marzano, Pickering, & Pollack, 2001; Schlechty, 2011; Stronge, 2007; Wiggins, 2007). However, at-risk students are less likely to be engaged in learning (Barton & Coley, 2009; Murphy, 2009; Snipes, Horwitz, Soga, & Casserly, 2008). In a report on factors that affect student achievement, Barton and Coley (2009) identified seven school-level variables that correlate to poor performance for at-risk students: curriculum rigor, teacher preparation, teacher experience, teacher absence/turnover, class size, availability of instructional technology, and fear and safety

at school. The IB Middle Years Programme mitigates the effect of curriculum rigor and teacher preparation. When all other factors were equal, schools with more rigorous curriculums promoted higher achievement for students (Barton & Coley 2009; Snipes et al., 2008). However, schools with large at-risk populations tended to have less rigor in their curriculum (Murphy, 2009). The Middle Years Programme increases the level of rigor by the incorporation of second language programs and raising overall expectations for all students. A second factor identified to correlate positively with student achievement was the level of teacher preparation (Barton & Coley, 2009; Murphy, 2009; Snipes et al., 2008; Darling-Hammond, 2000). At-risk students were 3 times more likely to have a teacher who was not highly qualified when compared to middle-class students (Barton & Coley, 2009). While the Middle Years Programme does not have a position on the state-level qualifications for teachers, it does require that all staff members complete IB-sponsored training in their subject area. This additional training provides an opportunity for teachers to plan with and learn from qualified teachers in the field.

Instructional Strategies that Affect Student Achievement

The IBO (2010) stated that the fundamental concepts, AOI, and assessment practices within the Middle Years Programme create a classroom environment where students are highly engaged and reflective about their learning. There has been limited research that specifically links the Middle Years Programme to increased student achievement; however, several instructional practices, such as feedback on performance and reflective practice, are used in the program and have been shown through research to have a positive effect on student achievement (Marzano et al., 2001; Moon, 2005; Popp, 2012; Schlechty, 2011; Wiggins, 2007). Additionally, through the AOI, teachers can

make relevant and real-world connections to the curriculum standards, and make the content more meaningful to students (Dewey, 1916; IBO, 2010). This allows teachers to increase the level of student engagement in the learning process (Marzano et al., 2001; Moon, 2005 Popp, 2012; Schlechty, 2011; Wiggins, 2007).

Feedback on Performance

Marzano et al. (2001) summarized several research studies regarding the use of providing feedback on student performance. Through this meta-analysis, they found that providing feedback can affect achievement by an average effect size of .61 and a percentile gain of 23. Marzano et al. (2001) elaborated on the types of feedback that have a higher positive correlation to student achievement. Corrective feedback was seen to have the strongest link to increased achievement (Heath, 1997). *Corrective feedback* is when a teacher provides an explanation as to what is accurate and what is inaccurate (Moon, 2005). There is an even stronger correlation when teachers encourage students to keep working on making improvements (Westberg & Archambaul, 1997). James Stronge (2007) expanded on the effectiveness of using feedback to increase student achievement by pointing out that when teachers go beyond providing specific explanations on mistakes and also show students how to correct these errors, the level of student achievement rises. Stronge (2007) also maintained that when teachers take time to teach students how to critically examine their own performance for improvement that the gains are even higher.

Providing feedback is one of the essential instructional practices in Middle Years Programme (IBO, 2010). The IBO (2010) defined assessment at an integral part of learning and that providing feedback to students not only on their responses, but also on

the thinking strategies and processes involved in arriving at the answer are important for building critical-thinking skills in students. International Baccalaureate Middle Years teachers are required to incorporate formative assessments into their daily instruction (IBO, 2010). Through the formative assessment process, a teacher provides feedback to students on their progress, and students then show real understanding of the knowledge and skills for a unit of study.

Reflective Practice

Numerous studies have shown that the most effective teachers continually reflect on how to improve their practice (Mitchel, 1998; Stronge, 2007; Thomas & Montgomery, 1998; Westberg & Archambault, 1997). Popp et al. (2012) found that effective teachers looked to themselves to find better ways to reach students in the future. Thoughtful reflection translates into enhanced teacher efficacy or a teacher's belief in his or her ability to teach (Mitchel, 1998; Thomas & Montgomery, 1998; Westberg & Archambaul, 1997). This then translates into the approach a teacher takes to instructional content and students (Mitchel, 1998; Thomas & Montgomery, 1998; Westberg & Archambaul, 1997). Studies have shown that teachers with a higher rate of teacher efficacy have higher rates of student achievement (Stronge, 2007).

As summarized in the *IB Programme Standards and Practices Report* (2011), teacher reflection is a required part of teacher planning. Reflection on teaching is also included in the IBO standards for collaborative planning. As part of the authorization and evaluation visits, IB Middle Years schools must demonstrate through documentation how teachers regularly reflect on their practice. The IBO (2011) believed that planning and reflection are interdependent concepts and need to occur concurrently. The requirements

outlined in the IBO Standards and Practices report indicate that reflection must occur regularly and systematically. The standard also requires teachers to reflect on different learning needs, learning styles, the overview of the students' learning experience, and mastery of the objectives. The standards also require teachers to reflect on the assessments to inform future instruction (IBO, 2011).

Finding Meaning in Learning Through Engaging Lessons

Appleton, Christenson, Kim, and Reschly (2007) offered a definition of engagement as "energy in action" (p.89). Understanding student engagement has become a model for early identification of students at risk for dropping out of school (Appleton et al., 2006; Balfanz, Herzog, & Mac Iver, 2007). Appleton et al. (2007) maintained that at-risk students are more likely to drop out of school. Researchers are trying to figure out how to measure engagement and what strategies teachers can use to increase the level of engagement for at-risk students. It is important to differentiate motivation and engagement. While motivation is the underlying psychological process, engagement reflects a person's active involvement in a task. Motivation cannot always be measured, but engagement can be measured through the actions of a student in the classroom (Balfanz et al., 2007). The Student Engagement Instrument (SEI) developed by Appleton and Christenson provides a measure of student engagement. This instrument measures the level of academic, behavioral, affective, and cognitive engagement and was found to be a valid tool to measure student engagement (Moreira, Vaz, Dias, & Petracchi, 2009).

Schlechty (2011) argued that in order for students to be engaged in learning, they need to find meaning in what they are learning. Student engagement is revered as the key to increasing student achievement (Balfanz, 2007). When students are highly engaged in

learning, they are committed and persistent to complete even difficult tasks. Student engagement is even more important for at-risk students and is linked to increased student achievement (Taylor et al., 2003). Schlechty (2011) contended that students who are engaged in the classroom are more likely to learn at higher levels because they are committed to the task, regardless of how difficult a task may be. Highly engaging lessons have several common characteristics: creating a need to know the content, student voice and choice, and feedback and revision (Larmer & Mergendoller, 2010; Schlechty, 2011).

The Middle Years Programme relies on the AOI to provide a platform for teachers to create engaging lessons (IBO, 2010). The AOI provide a context that allows teachers to incorporate student voice and choice, a need to know, as well as other engaging qualities of student work (IBO, 2011). The five AOI are approaches to learning, community and service, health and social education, environments, and human ingenuity (IBO, 2009). As teachers plan for instruction, they use the AOI to link the curriculum to real-world contexts. This allows teachers to build a unique learning experience for their students and thusly allow teachers to create a lesson that is unique to the needs, interests, and motivations of their students. By creating this differentiated learning experience, teachers promote highly engaging lessons and activities for students in the Middle Years Programme.

Research on the IB Middle Years Programme

While IB Diploma Programme has been studied and researched over the past 30 years, the Middle Years Programme remains unstudied. Only a handful of doctoral studies examined the effects of the Middle Years Programme, and these were mainly focused on gifted or White student achievement or teacher efficacy (Hutchings, 2010;

Jackson, 2006; Magee, 2005). There is a shortage of research on effects this program has on student achievement for students in the at-risk category. The available research thus far has shown mixed evidence that participation in the Middle Years Programme has increased student achievement (Hutchings, 2010; Jackson, 2006; Magee, 2005; Sillisano, 2010; Tan & Bibby, 2010; Wade, 2011). The purpose of this study was to assess the effect of the program on student achievement for at-risk students.

Middle schools have historically been a troublesome institution for school districts (George, 2000). The IB Middle Years Programme provides a well-rounded framework to counter the flexible nature of the middle school learner; however, further research on the effectiveness of the IB Middle Years Programme needs to be completed. In the last 5 years, the number of schools offering the Middle Years Programme in North America as increased from 214 schools in 2004 to 385 in 2009, with an increase of 70 new schools in just the last year (IBO, 2011). The IB Middle Years Programme is also an expensive program with annual fees starting at $5,000 a year just to offer the program, which does not include the $600 per person registration fees to attend training sessions (IBO, 2009). Many questions remain as to the academic impact of the Middle Years Programme. Further research as to the overall academic changes for students at IB Middle Years schools is needed.

IBO-Sponsored Studies

The IBO conducted several studies to examine the effect of the Middle Years Programme on student achievement (Tan & Bibby, 2010; Sillisano, 2010; Wade, 2011). However, because the IBO is vested in finding favorable results regarding the effectiveness of the program, these studies need to be interpreted with caution. A review

of IBO-sponsored studies revealed contradictory results. A study completed by Sillisano in 2010 examined the Middle Years Programme at several schools in Texas. This investigation compared eight similar middle schools, four of which offered the Middle Years Programme and four that did not offer the program. The schools were matched on demographic and socioeconomic percentages. The findings revealed that the schools that offered the Middle Years Programme did have higher average scores on the state accountability assessment; however, the difference was not found to be statically significant (Sillisano, 2010). A second study sponsored by the IBO in 2011 and completed by Wade included a much larger sample size and a more diverse population. The findings of this study confirmed the findings of the previous study, that achievement scores at the Middle Years Programme schools were higher when compared to a similar middle school that did not offer the Middle Years Programme; however, results were not statistically significant (Wade, 2011). The Sillisano research study did not report the type of statistical tool used to measure the difference in achievement scores. While the Wade study reported that ANCOVA and logistical regression were used to analyze achievement scores. The statistical power of Wade study could explain the difference in findings between the two studies.

Independent Studies Focused on the IB Middle Years Programme

In addition to IBO-sponsored studies, several doctoral studies have examined the Middle Years Programme (Batson, 2010; Jackson, 2006; Magee, 2005; Wilson, 2007). These studies vary greatly in qualitative and quantitative methods. Of the quantitative studies examining the effect of the program on student achievement, all found the IB Middle Years schools had a higher mean score on selected assessments; however, this

difference was not found to be significant (Batson, 2010; Jackson, 2006; Wilson, 2007). Each of these studies used different variations of *t*-tests to detect the differences in group means. These studies also focused populations that were majority White with a low percentage of students receiving free or reduced-cost lunch price. Qualitative studies examined a wide range of topics, including how the Middle Years Programme and its relationship to a positive school climate increased levels of student engagement and extracurricular involvement, as well as teacher efficacy. The findings of these studies showed that schools that offered the Middle Years Programme had significantly higher ratings on school climate, student engagement, and teacher efficacy (Anderson, Greene, & Loewen, 1998). While hard data are frequently used to assess the effectiveness of a teacher or an instructional program, local school principals also need to be cognizant of how qualitative aspects such as school climate and culture can improve or decrease student achievement.

A review of the literature revealed a lack of information regarding the effect of the Middle Years Programme on student achievement for students in low-income households. The purpose of this study is to explore teachers' perspectives regarding how the IB Middle Years Programme affected their teaching practices and student achievement, and then, through the use of statistical analysis, determine if a measurable difference in student achievement was evident.

Summary

A review of literature shows that the Middle Years Programme is widespread across not just the United States, but across the entire globe. As the world becomes increasingly interconnected, it will become necessary for students of todays' schools to

be ready to interact and communicate with citizens across the globe. The Middle Years Programme attempts to begin this process through a curriculum framework. A history of the IB organization and the Middle Years Programme itself provides a summary of the mission and vision of the IB organization and how the organization is playing a part in developing students to be active participants in a global interconnected world. As widely popular as the Middle Years Programme is becoming, it is interesting that a broader scope of research does not exist.

CHAPTER 3

METHODOLOGY

Introduction

The legacy of NCLB will probably not be the edict that all students will meet minimum standards, but the increased emphasis on the use of evidence-based practices and accountability for local schools. The trend to only give credence to quantifiable, results-oriented research has become widespread throughout the public school community. School leaders are desperate to understand how school-level factors, instructional practices, and school leadership affect student achievement (Cremascoli, 2011). The purpose of this study is to assess the effect the Middle Years Programme has on student achievement for students from low-income households.

Research Methodology

While the scope of the research in this study did not encompass the usual broad spectrum of a traditional program evaluation, it did address a specific question that can be used to assess the worth of the program. Evaluations with a specific question or methods-oriented approach have been referred to as *outcome evaluations* or *quasi-evaluations* (Stufflebeam, Maddaus, & Kellaghan, 2000). Program evaluations typically examine inputs, outputs, processes, and/or impact (Owen, 2007). Kellaghan and Madaus (2002) identified student achievement as the most frequently assessed outcome in educational evaluations. Outcome evaluations rarely seek to provide an in-depth examination of a program, as the intricacy and complexity of a program is beyond the goal to measure a particular identified outcome. However, Kellaghan and Madaus (2000) pointed out that most outcome evaluations strive to relate outcomes to contextual antecedent variables. A

variety of methods are used in quasi-evaluations, including case studies, mixed methods, and action research (Owen, 2007). Quasi-evaluations do not always provide enough substantial information that can be used to draw merit of practical significance due to the narrow scope of this type of investigation.

A mixed-method approach was used in this study. Quantitative data regarding student achievement and demographic information was analyzed through descriptive statistics and Analysis of Covariance (ANCOVA). Achievement scores for students who completed 3 years of the IB Middle Years Programme at the intervention school were compared to achievement scores for students who completed 3 years at the control school. Eighth grade scores from the Criterion Referenced Competency Test (CRCT) for mathematics and reading were used to measure student achievement.

A convenience sample was employed to select the schools for this study. Selection of the IB Middle Years school was determined through examination of schools offering the program within the Atlanta metropolitan area, which also served a large at-risk population. After the identified IB Middle Years school agreed to participate in the study, demographic data were gathered regarding other middle schools within the same district to determine which other middle school would serve as an appropriate match. Schools were matched on the percentage of students in demographic groups, including ethnicity, free/reduced-cost lunch price program, special education, and English Speakers of Other Languages (ESOL) programs. The school with most similar demographics to the intervention school elected not to participate, so the second closest match was selected.

Qualitative data were gathered through a focus-group setting. Staff members at the IB Middle Years Programme School were interviewed through a focus group to gain

information on their perspective regarding how the IB Middle Years Programme changed their teaching practices and student achievement.

Qualitative Data Collection

To answer the first research question, teachers at the intervention school were interviewed through a focus group. Krueger (2002) recommended several basic practices to create focus group that effectively provides information. Careful selection of participants was cited as one of the most important factors. Krueger (2002) suggested the ideal number of participants to be between 6 and 8. He further advised that the use of groups that have met before when possible helps build a trusting environment. An intact teacher-leader group was selected for the focus group in this study. The AOI lead teachers were a logical choice to participate in the focus group. The teachers in this group have worked at the intervention school for between 5 and 7 years. All the AOI leaders have attended additional training sessions in their subject area and for the areas of interaction in particular. This leadership group is responsible for helping teachers incorporate the areas of interaction into their units of study and daily lesson plans. The areas of interaction teachers also collaborate with teachers at their school to create a vertical and horizontal plan to integrate the areas of interaction in each subject and grade.

The teachers selected for the focus group were all members of a leadership group at the IB school. The guiding questions for the focus group are listed below.

1. In your opinion, how does the Middle Years Programme affect your students academically?

2. In your opinion how does the Middle Years Programme affect the way you teach?

Qualitative information from the interview was recorded and then transcribed. Teachers in the focus group are not identified by their real names. Each teacher was given a pseudonym and signed a confidentiality agreement to protect their identities and the identity of the school.

Quantitative data-collection procedures. Historical data obtained from the district-level reports were used in this study. After approval from the school district research board was obtained, an identified representative from each school served as a point of contact for data requests. Each local school contact removed all student identification information from the data file so no individual students could be identified. The data contained in each file included the following demographic information for each subject: ethnicity, free/reduced-cost lunch price eligibility, gender, participation in ESOL, gifted, and special education. Achievement scores in the data file included mathematics and reading CRCT scores from 2008, 2009, 2010, and 2011, and composite fifth grade Cognitive Abilities Tests (CogAT) scores.

Data regarding the schools' overall student demographics and school personnel were obtained from the Georgia State Department of Education web page. These data were used to select an appropriate comparison school. Table 2 summarizes the demographics for the intervention school and control school. Similar ethnic demographics are evident in both schools. As reported in Table 2, the intervention school comprised approximately 14% Asian students, 5% Black students, 78% Hispanic students, and fewer than 2% mixed and White students. The control school had similar demographics with approximately 8% Asian students, 2% Black students, close to 64% Hispanic students, 2% racially mixed students, and 3% White students in the data set.

Table 2

Student Demographic Enrollment of Intervention (IBMYP) School and Control School (Non-IBMYP)

	School Level Variables	N	% of Enrollment
IBMYP school	Asian	17	13.9%
	Black	6	4.9%
	Hispanic	95	77.9
	Mixed	2	1.6%
	White	2	1.6%
Control school	Asian	7	8.4%
	Black	18	21.7%
	Hispanic	53	63.9%
	Mixed	2	2.4%
	White	3	3.6%

Enrollment in special programs, including ESOL, special education, gifted, free/reduced-cost lunch price program is summarized in Table 3. The intervention school reported nearly 23% of students in ESOL, while the control school had only 11%. The percentage of students participating in the special education program for the intervention school was 4%, while the control school had 12%. Both the intervention school and the control school had similar numbers of students qualifying for free lunch price with 86% and 88%, respectively. The percentage of students qualifying for gifted services was 13% at the intervention school and 11% at the control school.

Table 3

Program Enrollment for Intervention School (IBMYP) and Control School (Non-IBMYP)

	Program	N	% of enrollment
IBMYP school	ESOL	28	23.0%
	Spec. Ed.	5	4.1%
	Free Lunch	105	86.1%
	Reduced Lunch	10	13.9%
	Gifted	16	13.1%
Control school	ESOL	9	10.8%
	Spec. Ed.	10	12.0%
	Free Lunch	73	87.9%
	Reduced Lunch	10	12.1%
	Gifted	9	10.8%

Because the main area of interest throughout this study focused on examining the effect that the Middle Years Programme had on student academic achievement over an extended period, only students who attended the same school for 3 consecutive years were included in the data analysis. Table 4 summarizes longitudinal information about sustained enrollment at each school.

Table 4

Enrollment of Intervention (IBMYP) School and Control School (Non-IBMYP)

	Total 8th grade enrollment in 2010-2011	Students with 3-year enrollment from 2008-2011	% of students with continuous enrollment
IBMYP school	401	132	32.9%
Control school	292	85	29.1%

Table 5 summarizes descriptive information about the faculty and staff at both the intervention school (IBMYP school) and the control school (non-IBMYP school). The intervention school has a slightly larger staff with six administrators and 81 teachers. Both schools have nearly the same percentages in all other demographic areas.

Table 5

Staff Demographics – Full time

	Non-IBMYP school (N)	IBMYP school (N)
Administrators	5	6
Teachers	75	83
Male staff members	21	16
Female staff members	59	73
4 Yr Bachelor's	26	32
5 Yr Master's	37	39
6 Yr Specialist's	16	12
7 Yr Doctoral	1	6
Black	24	24
White	47	44
Hispanic	5	11
Native American	1	0
Multiracial	3	7
Less than one year experience	4	5
Between 1-10 years of experience	52	49
Between 11-20 years of experience	19	20
Between 21-30 years of experience	4	11
More than 30 years of experience	1	4

Data Analysis

The achievement results from mathematics and reading CRCT were analyzed through the use of two ANCOVAs. The dependent variable in first ANCOVA was the eighth grade reading CRCT, and the dependent variable for the second ANCOVA was the eighth grade mathematics CRCT. The covariate for both ANCOVA analyses was the composite fifth grade CogAT score.

The use of ANCOVA helps eliminate systematic bias and reduces error variance (Stevens, 2007). Careful selection of a covariate is essential in the reduction of errors. Stevens (2007) identified an ideal covariate as one that is significantly correlated with the dependent variable. Fifth grade CogAT composite scores were used as the covariate in this study. The CogAT measures students' learned reasoning abilities in three areas most linked to academic success in school: verbal, quantitative, and nonverbal categories. Scores for the three subtests are combined into a single composite score. Composite scores were reported as standard scores with an average of 100, and a standard deviation of 15. All students in the selected schools complete the CogAT in fifth and eighth grade. The fifth grade CogAT score was a logical choice as a covariate because it was given to students prior to their entry into middle school. Another factor that made the CogAT an appropriate covariate is that it was administered prior to the treatment being introduced.

Eighth grade CRCT reading and mathematics subtest scores were selected as the dependent variable. The CRCT is a state-mandated assessment administered to all students in grades three through eight. Scores on the CRCT are reported as scale scores, which is a mathematical transformation of the raw score. Scale scores provide a uniform metric for interpreting and comparing scores within each grade and content area. Scale

scores on the CRCT are assigned to one of three performance levels. Performance level one, or does not meet expectations, include scores of 799 or lower. Scores between 800 and 849 fall in the meets expectations performance level or level two. Scores of 850 or higher denotes a level three score, or exceeding expectations.

Caution must be used when interpreting CRCT scores. Conclusions about increase or decrease in achievement cannot be made directly from year to year by simply comparing CRCT scores. Even though the scaled scores use the same performance level values, the CRCT assesses mastery of entirely different curriculum standards from year to year, and this makes direct interpretations of growth inaccurate. For this reason, a longitudinal comparison using CRCT scores is difficult.

The use of ANCOVA follows the same assumptions of Analysis of Variance (ANOVA), which include independence of observations, normality of distribution, and homogeneity of variance in each group as well as several additional assumptions. A linear relationship between the dependent variable and the covariate must be established in order for ANCOVA to be an appropriate statistical analysis. Secondly, homogeneity of regression of slopes must be found tenable. Once these two assumptions are met, the results for ANCOVA can be interpreted without these issues confounding the results.

Also, ANCOVA assumes random assignment to the groups. Stevens (2007) observed that the use of intact groups is controversial among some researchers. While random assignment is a way to ensure that groups are equated, in educational research random assignment is not always possible. However, educational researchers need to be cautious when assuming that intact groups are equated, no matter how many covariates are used (Stevens, 2007). Intact groups can also overlook natural growth in one group

from some covariate that is not included in the analysis. This can create a situation where growth is mistakenly attributed to the dependent variable.

Even though the use of ANCOVA with intact groups can be difficult, Stevens (2007) stated, “other statistical methods for analyzing the same kind of data suffer from many of the same problems” (p. 75). Inferring cause and effect results from ANCOVA, as with any statistic, must be done with caution (Stevens, 2007).

Strengths. The selection of the covariate and the longitudinal aspect used here contribute several strengths to the design. Selection of a covariate for an ANCOVA study must be carefully considered. The covariate selected for this analysis was the fifth grade CogAT composite score, which was administered prior to students’ entrance into middle school prior to any exposure to the treatment.

The longitudinal nature of this design is another noted strength for this evaluation. Participants selected for this study attended the same school for 3 consecutive years. This ensured that all students used in the data analysis had sufficient exposure to the program, whether the at the IB Middle Years school or at the traditional model school. Students from low-income households tend to be more mobile and will transfer from one school to another several times over the course of their schooling (Cremascoli, 2011). Eliminating students who moved out of the school at some point during their time at middle school from the data sample strengthens the conclusions that can be drawn regarding the difference in achievement levels between the treatment school and the control school.

Limitations. There are several limitations to this study. First and foremost, intact groups were used in this study. The use of intact groups rather than randomly assigned groups that have a moderate to large sample size, allows researchers to focus on the

possibility of pre-existing differences between the groups. Second, additional covariates such as grades, classroom test scores, attendance, discipline records, parental-education level, and grade point average (GPA) could also be used strengthen the conclusions about student achievement. The selection of only students with continuous enrollment could also create a limitation. At-risk students tend to be more mobile, and thus the selection of students that did not change schools may not be representative of the at risk student population (Fram, Miller-Cribbs, & Horn, 2007).

CHAPTER 4

RESULTS

Introduction

The results of the study are presented in this chapter. The purpose of this analysis was to investigate the effect of the IB Middle Years Programme on academic achievement for at risk students and in order to help develop a better understanding of teachers' perspective of how the IB Middle Years programme influences student achievement. This chapter is organized by the research questions used to frame this study.

The research questions that guided this study were:

1. What is the perception of teachers at the IB Middle Years Programme school regarding how the programme effects their own practice and the level of student achievement at their school?

2. Is there a significant difference between adjusted means on the reading CRCT for students who qualify for free/reduced lunch price that have participated in the Middle Years Programme for three consecutive years when compared to students who qualify for free/reduced lunch price that do not participate in the Middle Years Programme?

3. Is there a significant difference between adjusted means on the mathematics CRCT for students who qualify for free/reduced lunch price that have participated in the Middle Years Programme for three consecutive years when compared to students who qualify for free/reduced lunch price that do not participate in the Middle Years Programme?

A descriptive summary of the data analyzed is presented first, both in narrative form and through the use of tables and figures where possible this included. Then a summary of the findings from the focus group are presented followed by a summary of the ANCOVA.

Description of Data

Data for this study were gathered through archival information from the school district's internal information system database. Both schools selected for the study provided data to the researcher devoid of any identifying variables. Composite CogAT scores from fifth grade were used to adjust the means on CRCT mathematics and reading subtests. In the 2010-2011 school year, the intervention school had 401 eighth graders, while the control school had only 292 students. Only students with continuous enrollment over 3 consecutive years at their zoned school were selected from the archived data for use in the analysis. Students who separated from their zoned school at any point between six and eight grade were removed from the group. After students without continuous enrollment were removed from the data set, the intervention school had 132 students and the control school had 85 students. Only about 33% of the 2010-2011 eighth grade class had continuous enrollment at the intervention school, and only 29% at the control school had continuous enrollment.

Enrollment in special programs, including ESOL, special education, gifted, free/reduced-cost lunch price program is summarized in Table 3. Both the intervention school and the control school had similar numbers of students qualifying for free lunch price with 86% and 88%, respectively. As this was the main factor used to determine if

students belonged to the at-risk category, the percentage of students in the free/reduced lunch price program is of particular interest.

Table 6 summarizes ability scores (CogAT) and achievement scores (CRCT Mathematics and Reading) for each school. The average composite score on the CogAT for the intervention school was 102.59. The average composite score on the CogAT for the control school was 100.33. Achievement scores from the CRCT for grades five through eight are also reported in Table 6. Both the intervention school and the control school had an average score for CRCT that fell in the second level each year. The mean reading CRCT scores for the intervention school and the control school had an average score that fell in second level each year.

Table 6

Descriptive Statistics of Achievement Variables

		N	Min	Max	Mean	SD
IBMYP school	CogAT5Comp	133	53	144	102.59	14.123
	CRCT Mathematics 8TH	135	761	903	825.59	28.435
	CRCT Mathematics 7TH	134	789	925	841.43	30.336
	CRCT Mathematics 6TH	134	774	950	826.92	30.139
	CRCT Mathematics 5TH	134	756	990	844.29	40.773
	CRCT Reading 8th	135	784	920	835.10	23.144
	CRCT Reading 7th	135	784	868	826.84	18.967
	CRCT Reading 6th	134	775	920	837.27	24.971
	CRCT Reading 5th	134	779	920	829.57	22.643
	Valid N (list-wise)	132				
Control school	CogAT5Comp	88	53	131	100.33	12.819
	CRCT Mathematics 8th	98	758	941	836.45	34.165
	CRCT Mathematics 7th	99	780	950	844.35	32.648
	CRCT Mathematics 6th	99	761	921	826.74	27.417
	CRCT Mathematics 5th	93	746	905	824.05	35.249
	CRCT Reading 8th	99	773	920	834.21	23.100
	CRCT Reading 7th	99	782	920	828.87	24.057
	CRCT Reading 6th	98	775	890	832.74	23.638
	CRCT Reading 5th	93	772	878	822.14	21.612
	Valid N (list-wise)	76				

Results

Research Question 1

To answer the first research question, a focus group of teachers from the intervention school were asked two questions. The focus group consisted of 6 teachers (Jenny, Nichole, Nina, Rich, Stacey, and Tina) at the intervention school. To prevent identification of the intervention school, pseudonyms have been used. Table 7 summarizes the subject area taught, years of experience teaching, years of experience at the intervention school, and degree level. The teachers selected for the focus group were all part of a leadership group for the IB Middle Years Programme. These teachers were selected for several reasons. Each teacher in this group had attended additional training for the AOI presented by the IBO and was responsible for assisting the other staff members to incorporate the AOI in their units and lesson plans. These teachers also worked with other IB teachers in the schools' cluster to develop a vertical and horizontal plan to incorporate the AOI in the curriculum. The local school's coordinator for the IB Middle Years Programme was also a participant in the focus group. The teachers in the focus group were required to have at least 6 years of teaching experience.

Table 7

Focus Group: Grade/Subject Area Taught, Years of Experience, and Degrees Earned

	Grade / Subject Area Taught	Total years of teaching	Total years teaching at intervention school	Highest degree completed
Jenny	6-8 health and physical education	13	12	Ed. S.
Stacey	6th grade science	11	10	Ed. S.
Tina	8th grade social studies	7	6	M.A.
Nicole	8th grade mathematics	6	6	M.A.
Rich	7th grade mathematics	11	6	B.A.
Nina	Technology	16	9	M.A.

Two specific questions were developed to elicit and direct the comments from the focus group. Question 1 asks teacher how they believed the IB Middle Years Programme affected their students academically. Jenny stated that she believed the IB Middle Years Programme helped her students see the bigger picture of school by ensuring they took more than just academic classes. When asked what types of classes this included, she responded that students had to complete classes in technology, music, art, and a foreign language every year of the program. Nina added that she thought this helped students develop a more well-rounded education.

When Rich was asked how he thought the program affected students academically, he stated that in the area of mathematics, he believed the program was beneficial because it required him to make connections between the mathematics curriculum and real-world applications. He also stated that he frequently worked with the science teacher on his team to create interdisciplinary lessons so his students saw how

mathematics was a subject they could use in other classes, not just in his mathematics classroom.

Tina mentioned that she liked the learner profile. When asked why she liked this, she explained that the learner profile helps teachers and students focus on the long-term qualities that program is designed to help students master. When asked how she incorporated the learner profile in her lessons, she gave an example of discussing different religions or cultures in her social studies class to create a feeling of appreciation, sensitivity, and open-mindedness. Tina also said that she frequently links events from around the world to her social studies content. When asked for an example, she explained a lesson where the students study diseases from undeveloped countries and discuss how this affects literacy rates, life expectancy, and birth rates. She then compared these to rates in the United States.

Stacey remarked that she liked how the program kept the focus off “teaching to a test” (personal communication, Month day, year). When asked why she thought this was the case, Stacey stated that the AOI and the learner profile create a real purpose for the curriculum and allow teachers to incorporate real-world events into their daily instruction. Following up on Stacey’s comment, Rich revealed that this sometimes caused frustration and anxiety for him and other math teachers. When asked why, he stated that the additional IB standards that had to be incorporated sometimes caused him to move too fast so he would have time to teach all the standards from the county curriculum. When asked to explain what the IB standards were, he stated that the IB program helps teachers to “get kids to think critically and reflect” on their learning (personal communication, Month day, year). When asked how he believed this affected test scores,

he stated that it should help increase test scores. The other teachers also asserted that these items should help increase test scores.

Stacey then shared that she felt it was “overwhelming” at times to try and incorporate the “IB stuff” with the county or state curriculum (personal communication, Month day, year). She believed that sometimes she did not spend enough time on a particular concept because she needed to move on to the next topic. She stated that with the IB program, there is a great deal of time spent on reflection, and while this is good, it also takes time to get the students to reflect and then this takes time away from teaching the prescribed curriculum. Nina shared that this was frustrating for her as well. She explained that she thought the reflection piece is valuable because it helps students to see there is not always one correct answer. She discussed how this takes time away from moving forward in the curriculum at the prescribed pace outlined in the instructional calendars.

The second question asked how the teachers thought the IB Middle Years Programme affected the way they teach. To answer, Rich volunteered that he liked the IB program and that it helps teachers plan with each other and share ideas not only within their subject area, but also across grades and content areas. He stated that he enjoyed the collegiality that he feels at this school. Jenny remarked that the program helped her to build more creative lessons, assessments, and activities in her class. When asked for an example, she cited that her assessments are more application based than simple recall-type assessments.

Tina reiterated that the main strength of the IB program is that it allows teacher to teach beyond what is tested. She further explained that teachers at IB schools have to get

their students to move beyond memorization, so teachers have to plan higher level lessons that engage students in critical thinking and learning. The rest of the teachers in the group agreed with Tina on this comment.

When asked if the teachers thought they took time to reflect on their teaching practice, all teachers responded that they did frequently discuss how lessons went with their peers and on their own. Nina pointed out that she frequently goes to the teacher next door to ask for suggestions on how to improve a lesson if she thinks the students did not do well in her class that day. Stacey commented on a similar reflective practice. When asked if they wrote down their reflective thoughts somewhere to use for later reference, the teachers all responded that it was not always necessary, but they did make notes on their lesson plans.

Research Question 2

To address the second research question, ANCOVA was conducted to examine whether the CRCT reading scores for eighth grade students differed after adjustments on the dependent variable were made based on the CogAT ability assessment taken in fifth grade. Adjusted means are reported in Table 8. The significance level was adjusted with the Bonferroni Adjustment technique to .025 in order to prevent inflation of Type I error. A preliminary analysis to evaluate the assumption of homogeneity of regression (slopes) indicated that the relationship between the covariate, fifth grade CogAT, and the dependent variable, eighth grade Reading CRCT, was tenable, $F_{(1, 215)}$ =2.049, p =.154. The ANCOVA indicated that there was no significant difference between reading CRCT scores for either graders at the intervention school and the control school, $F_{(025, 1, 216)}$ = .681, p =.410 (See Table 9). Effect size was calculated using Cohen d's formula $d = m_A$ -

m_B / *SD* where *d* = effect size, m_A, m_B = adjusted means for experiment and control groups (Cohen, 1987). The effect size using adjusted means for the eighth grade reading scores was .376. Cohen (1987) developed a guide to interpret effect size where a small effect size value is .2, a medium effect size is .5, and a large effect size is .8. In 2001, Coe explained that effect size can be interpreted as the emphasis of the difference. The effect size calculated between the adjusted mean reading scores of .376 lies between the small and medium values of effect size.

Table 8

Adjusted 8th Grade Reading CRCT Mean Scores Based on CogAT Covariate

	Dep. var.	Adj. mean	Est. mean	Raw resid.	Std. resid.
IBMYP school	CRCT Read 8	833.796	834.788	<.001	<.001
Control school	CRCT Read 8	826.275	835.282	<.001	<.001

Table 9

Analysis of Covariance for 8th Grade Reading CRCT

Source	Type III sum of squares	df	Mean square	F	*p* value
Corrected model	40,243.401[a]	2	20,121.701	58.104	<.001
Intercept	2,071,817.803	1	2,071,817.803	5,982.609	<.001
CogAT5	40,243.363	1	40,243.363	116.207	<.001
School ID	235.972	1	235.972	.681	.410
Error	74,802.252	216	346.307		
Total	1.527E8	219			
Corrected total	115,045.653	218			

Note. [a]. R Squared = .350, Adjusted R Squared = .344.

Research Question Three

To answer the third question, ANCOVA was conducted to examine whether the eighth grade CRCT mathematics scores differed after adjustments were made to the dependent variable based on the CogAT ability assessment taken in fifth grade. Adjusted means are reported in Table 10. The significance level was adjusted with the Bonferroni Adjustment technique to .025 to prevent inflation of Type I error. A preliminary analysis to evaluate the assumption of homogeneity of regression (slopes) indicated that the relationship between the covariate, fifth grade CogAT, and the dependent variable, eighth grade mathematics CRCT, was tenable, $F_{(1, 213)}$ =.828, p =.364. The ANCOVA indicated that there was a significant difference between mathematics CRCT scores for eighth graders at the intervention school and the control school, $F_{(.025, 1, 214)}$ = 21.56, p <.001 (see Table 11). Effect size was calculated using Cohen d's formula. The effect size using adjusted means for the eighth grade math scores was -.647, which is in favor of the control school. This effect size lies between medium effect size value of .5 and the large effect size value of .8 according to Cohen's guidelines (Cohen, 1987).

Table 10

Adjusted 8th Grade Mathematics CRCT Mean Scores Based on CogAT Covariate

	Dep. var.	Adj. mean	Est. mean	Raw resid.	Std. resid.
IBMYP school	CRCT Math 8	824.132	825.659	<.001	<.001
Control school	CRCT Math 8	839.409	837.882	<.001	<.001

Table 11

Analysis of Covariance for 8th Grade Mathematics CRCT

Source	Type III sum of squares	df	Mean square	F	*p value*
Corrected model	100,654.441[a]	2	50,327.220	90.403	<.001
Intercept	1,751,903.645	1	1,751,903.645	3,146.960	<.001
CogAT5	92,929.283	1	92,929.283	166.930	<.001
School ID	12,005.249	1	12,005.249	21.565	<.001
Error	119,133.200	214	556.697		
Total	1.499E8	217			
Corrected total	219,787.641	216			

Note. [a]. R Squared = .458, Adjusted R Squared = .453.

The mean score on the eighth grade mathematics CRCT at the intervention school was 826, and the eighth grade mathematics CRCT score at the control school was 836. The achievement for the intervention school was significantly lower than it was in the control school at the significance level of .025.

Summary

The focus group revealed that while they thought the IB Middle Years Programme was a beneficial program and it did have a positive effect on student achievement, they were unable to consistently spend time on reflection or feedback because of pacing guides. The ANCOVA revealed that there was not a significant difference between adjusted means on the eighth grade reading CRCT scores. Composite CogAT scores were found to be an appropriate covariate through analysis the homogeneity of regression of slopes. The ANCOVA revealed that there was a significant difference between adjusted means on the eighth grade mathematics CRCT scores in favor of the traditional program control school. Composite CogAT scores were also found to be an appropriate covariate in this ANCOVA through analysis the homogeneity of regression of slopes.

CHAPTER 5

DISCUSSION

The achievement gap between students living in low-income households and their middle-class counterparts is a persistent concern in public education, despite decades of state and federal policies aimed at improving student achievement for at-risk students. The Federal Department of Education's *Status and Trends in Education of Racial and Ethnic Groups* (NCES, 2012) reported that the difference in achievement between low-income students and middle-class students as measured by the National Assessment of Educational Progress remained significant. The purpose of this study was to explore teachers' perspectives regarding how the IB Middle Years Programme affected their teaching practices and student achievement, and then, through the use of statistical analysis, determine whether a measurable difference in student achievement was evident.

Findings

The consensus from the focus group of teachers was that the IB Middle Years Programme had a positive effect on student achievement and their own instructional practice. The teachers shared several examples of how they believed the program helped their students academically. The teachers believed strongly that the program helped create well-rounded students by requiring students to take more than just core academic classes. The group thought that the requirement to take art, technology, and physical education classes helped their students to do well in all areas. Teachers also commented about the benefit of interdisciplinary lessons on student achievement. The mathematics teacher in the group asserted that when students apply what they have learned in one classroom in a different context, this helps the students develop a deep understanding of

the subject matter in both classes. This supports the theory of inquiry developed by John Dewey. Dewey (1938) believed that integrating subjects helped students make sense of the content better than when taught in isolation.

The teachers in the focus group believed strongly that the IB Middle Years Programme was beneficial because it forced teachers to teach more than what was tested on state accountability tests. They cited the learner profile and the IB assessment criteria as two tools from the program that helped teachers develop enriched, rigorous, and challenging lessons that help students become critical thinkers and problem solvers, instead of just good test takers.

The teachers in the focus group also thought the program helped them develop deep collegial relationships. Two teachers described their department meetings as cooperative and collaborative in nature. The teachers seemed to enjoy having the opportunity to collaborate and plan with not just their grade level teachers, but also with the other grade level teachers. Another area of improved practice cited by the teachers was in the area of assessments. The teachers asserted that they created assessments that were more application based and not simple recall. As noted by Dewey (1938), the use of reflection is as an important aspect of instruction that increases student achievement.

Unfortunately, while the teachers had a generally positive feeling regarding the use of reflection and development of critical thinking as recommended by IB Middle Years Programme, the teachers thought that it was difficult and overwhelming at times to fit in all the “IB stuff” while keeping pace with the district curriculum standards and pacing guides. One teacher stated that while she thought it was valuable to have students reflect on their learning, she could never help thinking it would cause her to fall behind

on her pacing guide. Five out of six teachers in the focus group shared feelings of frustration with the increased amount of content to cover at an IB school.

In the quantitative element of the research, ANCOVA revealed that there was not a significant difference between reading CRCT scores for eighth graders at the intervention school and the control school, $F_{(.025, 1, 216)} = .681$, $p = .410$. The adjusted mean score for the intervention school was 833.796, while the mean score for the control school was 826.27. While the intervention school's average score was above the control school, this difference was not statistically significant at the .025 level. The use of ANCOVA revealed that there was a statically significant difference between adjusted mean mathematic CRCT scores for eighth graders at the intervention school and the control school, $F_{(.025, 1, 214)} = 21.56$, $p < .001$. The adjusted mean mathematics CRCT score for the intervention school was 824.132, while the mean mathematics CRCT score for the control school was 839.409. The difference between these two means was found to be statistically significant, however, in favor of the control school.

Results from this study provide evidence that while teachers have a positive view of the IB Middle Years Programme in regard to its effect on teaching practices and student achievement, a conclusively positive effect on student achievement for at-risk students attending an IB middle school was not found when examining quantitative data. Adjusted means on reading scores were not significantly different between the two schools, and adjusted means mathematics scores at the IB middle school were significantly lower when compared to the control school. Despite lagging test scores, this did not universally confirm or contradict the findings from previous studies that

examined the effect of the IB Middle Years Programme on student achievement (Batson, 2010; Jackson, 2006, Magee, 2005; Sillisano, 2010; Tan % Bibby, 2010; Wade, 2011).

Previous studies of the IB Middle Years Programme have found a positive relationship between the program and student achievement outcomes (Batson, 2010; Hutchings, 2010; Jackson, 2006; Wilson, 2007). However, these studies examined schools with students from higher income households and less diverse communities. Additional research is necessary before a correlation can be identified between student achievement outcomes for low-income students and the IB Middle Years Programme.

While the teachers' perspectives were overall positive when discussing the effects of the IB Middle Years Programme had on student achievement and their teaching practices, conclusively positive were not realized when actual achievement results were analyzed. Teachers reported that they were not always able to implement the program with full fidelity because they could not spend sufficient time to have students to reflect on their learning and other IB practices because they had to move on to new topics as outlined in pacing guides. A conflict between Dewey's Theory of Inquiry and modern accountability requirements was evident. A theory that provides opportunities for students to be highly engaged in critical thinking and reflection has not produced the desired results on modern accountability assessments.

Recommendations

Student achievement at the IB middle school was not found to be statistically significantly higher than student achievement at a traditional instruction school was. Considering the limited scope of the outcomes and processes assessed in this investigation, there is insufficient evidence to make an overall judgment as to the total

value of the IB Middle Years Programme at the intervention school, especially since the teachers believed that the program was beneficial to their students. Removal of the program could be detrimental to morale and teacher retention. The following recommendations are for further research regarding the IB Middle Years Programme and for the leaders of the intervention school to consider in order improve the fidelity of the program.

1. Use additional covariates to parse out variance, such as class grades, attendance rates, discipline records, and parents' highest education attainment.

2. Each year students in the control and intervention school take a Student Engagement Instrument (SEI). Though the IBO discourages the use of test results to determine the efficacy of its programs, results from this survey could be used to measure how the program affects such constructs such as future goals and aspirations and the relevance of schoolwork.

3. Examine differences between groups through a cross-sectional design instead of a longitudinal design.

4. Use the CogAT subtest scores for quantitative and verbal when adjusting mean scores for mathematics and reading respectively instead of the composite score.

5. Increase sample size to increase statistical power of the study.

The examination of the instructional program and perception on practices employed by teachers was the main focus of this evaluation, and the school leadership team was not included in the scope of this study. The Wallace Foundation identified school principal as the second most important factor in student achievement, second only to that of teacher effectiveness (Leithwood, Seashore, Stephen, Wahlstrom, &

Wahlstrom, 2004). The role of the principal cannot be underestimated. Research from the Wallace Foundation on the effectiveness of the local school principal puts new emphasis on the role of the principal as the instructional leaders of the school. In light of this research and the effect a principal can have on student achievement, additional research regarding effective principals at IB middle schools would also be worthwhile.

The findings in this evaluation add valuable information to the knowledge base regarding the IB Middle Years Programme. The design of this study focused on at-risk learners, but also narrowed the scope to at-risk learners who attended the same school for 3 consecutive years. The stability of the at-risk learners examined here may not be typical to that of at-risk learners sampled in previous studies. The demographic composition of the students in this study was also more diverse than other studies focused on the IB Middle Years Programme. While the IB program seems to generate a more globally aware student, this is not necessarily translating to a statistically significant difference in student achievement for at-risk students.

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