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The Visibility of Deweyan Inquiry in an International Baccalaureate Elementary School

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ACCEPTANCE

This dissertation, THE VISIBILITY OF DEWEYAN INQUIRY IN AN INTERNATIONAL BACCALAUREATE ELEMENTARY SCHOOL by SABRINA K. MAY, 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 VISIBILITY OF DEWEYAN INQUIRY IN AN INTERNATIONAL BACCALAUREATE ELEMENTARY SCHOOL
by
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Research in the field of school curriculum and national organizations such as the National Council for the Social Studies and the National Council for Teachers of Mathematics support the use of inquiry-based curriculum in schools. However, due to the policy constraints of No Child Left Behind (NCLB), inquiry-based curriculum is not common in schools. Within these policy constraints, school principals often turn to reform models to increase student achievement on high-stakes assessments. One particular reform model, the International Baccalaureate Program (IB), requires an inquiry-based curriculum as well as teacher inquiry. Using qualitative inquiry and a normative framework based on Dewey's theory of inquiry, this study reveals how students and teachers inquire in a high poverty, IB elementary school in Georgia. It also addresses the conditions that influence and hinder inquiry in the school.

THE VISIBILITY OF DEWEYAN INQUIRY IN AN INTERNATIONAL BACCALAUREATE ELEMENTARY SCHOOL

by

Sabrina K. May

A Dissertation

Presented in Partial Fulfillment of Requirements for the
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in
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in
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in
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TABLE OF CONTENTS

Page

List of Tables v

Abbreviations vi

Chapter

1 THE PROBLEM 1
Introduction 1
Inquiry-based Curriculum 5
Description of Study 10
Purpose of Study 11
Benefits of Study 13
Theoretical Framework 17
Background of PL 107-100 NCLB 21
History of the International Baccalaureate Program 23
Conclusion 25

2 LITERATURE REVIEW 26
Introduction 26
Student Inquiry 26
Teacher Inquiry 34
Conditions for Inquiry 42
Conclusion 47

3 METHODOLOGY 50
Introduction 50
Qualitative Research 50
Using Theoretical Inquiry in Qualitative Research 51
Normative Framework 52
Design Elements of Study 55
Collection of Data 58
Data Analysis 61
Reliability 62
Limitations of Study 62
Conclusion 64

4 RESULTS 65
Introduction 65
Normative Framework 66
Participants 68
What Inquiry Exists for Students in the Classrooms? 77
IB Documents 85
What Inquiry Exists Among the Teachers? 90
What conditions influence inquiry in the classroom and the school? 94
Classroom Conditions 95
Institutional Conditions 99
Hindrances to inquiry 107
Summary 110

5 DISCUSSION 112
Introduction 112
Supportive Cultural Conditions 113
Teacher Inquiry 117
Student Inquiry 120
Institutional Organization 126
School Reform 130
Recommendations for Future Research 141
Conclusion 141

Reference 144

Appendixes 164

LIST OF TABLES

Table		Page
1	Georgia Elementary School Demographics	56
2	Demographic Information of Participants	69
3	Classroom Demographics	69

LIST OF ABBREVIATIONS

AYP	Adequate Yearly Progress
CRCT	Criterion Reference Competency Test
GPS	Georgia Performance Standards
IB	International Baccalaureate
IBO	International Baccalaureate Organization
NCLB	*No Child Left Behind Act of 2001*
NWREL	Northwest Regional Educational Laboratory
PYP	Primary Years Program
USDA	United States Department of Agriculture

CHAPTER 1

THE PROBLEM

Introduction

In today's world of accountability, superintendents, principals and teachers face critical issues in educating all students who enroll in their public schools. With the reauthorization of the Elementary and Secondary Education Act of 1965, P.L. 107-110 the *No Child Left Behind Act of 2001*(NCLB), policy makers have placed high stakes accountability on teachers and school leaders (LeFloch, Taylor & Thomsen, 2006; United States Department of Education, 2002). School principals and teachers face the problem of raising the achievement of all students they serve to a level of 100% meeting or exceeding standards by the year 2014 (United States Department of Education, 2002). This includes children from wealthy families, poor families and children from diverse backgrounds as public schools reflect the characteristics and moral sense of the communities they serve (Meier, 1993). The purpose of NCLB legislation is to close the achievement gap between middle to upper class white students and students who are economically disadvantaged or from a minority population. Under the law, states must establish curriculum standards and create tests that measure students' understanding of the standards (United States Department of Education, 2002). In the state of Georgia, the policy evoked by NCLB requires elementary schools to use the Georgia Performance Standards (GPS) as the curriculum. In addition, third, fourth and fifth grade students must

pass the Criterion Reference Competency Test (CRCT) for the school to meet adequate yearly progress (AYP) benchmarks and avoid state sanctions (Georgia Department of Education, 2007).

According to Goodlad (2008), the accountability of NCLB legislation shifts the focus of schools from student learning to the output of high test scores. This focus on test scores has narrowed the curriculum as schools focus on teaching what is tested. According to Kohn (1999), test scores are detrimental to student learning. He states, "They [test scores] are not an inevitable part of 'life' or even a necessary part of school; they are a relatively recent invention that gets in the way of our kids' learning" (p.73). In fact, the more the test scores count, the more anxiety rises and invalidates the scores (Kohn, 1999). Since states have increased their level of participation in mandating the content of what schools teach it is not clear what affect this involvement will have on student achievement (Schiller & Muller, 2000).

In the midst of the accountability debate, school superintendents and principals are searching for ways to meet the needs of their student populations and ensure their students are successful on state mandated tests so the school can meet adequate yearly progress (AYP) benchmarks (Cuban, 2003). School leaders often turn to various curriculum reform models for assistance in improving test scores. In 2004, over 10,507 schools in the United States were using a model of school reform (Northwest Regional Educational Laboratory, 2004). Some school leaders turn to reform models that offer a traditional curriculum focused on direct instruction or the remediation of basic skills, especially for those students who are not passing state tests (Bowers, 2000; Haberman, 2005; Kohn, 1999). This model for curriculum is often structured and teacher scripted.

Examples of school reform models that focus on sequential, structured curriculum include E. D. Hirsch's *Core Knowledge* and Englemann's *Direct Instruction* program (Northwest Regional Educational Laboratory, 2004). Researchers found remediation of basic skills with a focus on direct instructional teaching methods did not work with struggling students (Chang & Mao, 2001; Shippen, Houchins, Calhoon, Furlow, & Sartor, 2006). In addition, research shows students often forget information they memorize, therefore, this method of teaching does not constitute student learning (Dewey, 1938/1997; Tyler, 1950). Other school leaders look to implement programs that focus on non-traditional, rigorous curriculum models hoping to raise test scores. Researchers believe when teachers hold students accountable to high academic standards, their achievement improves (Chang & Mao, 2001; McBride & Bonnette, 1995). A rigorous curriculum includes opportunities for students to engage in meaning experiences that focus on research and inquiry (Dewey, 1910/1997; DeWitt, 2003; Metz, 2004). School reform models offering a curriculum based in inquiry include Hahn's *Expeditionary Learning Outward Bound; Atlas Schools* developed by the Coalition of Essential Schools, Education Development Center, Project Zero, and School Development Program; and the *International Baccalaureate Program (IB)*, developed by the International Baccalaureate Organization (International Baccalaureate Organization, 2002; Northwest Regional Educational Laboratory, 2004).

The IB Program, a prominent inquiry-based program, has grown in popularity (Chmelynski, 2005; Laurent-Brennan, 1998). Over the past 10 years, the number of students involved in IB programs at all levels increased by almost 20% across the world. The adoption of the IB Primary Years Program (PYP) has increased 215% in the last five

years (information retrieved from http://www.ibo.org/who/slideg.cfm on August 27, 2009). In 2001, there were only six IB PYP elementary schools in the United States. Currently, there are 173 IB elementary schools in the United States and 18 are in the state of Georgia (information retrieved from http://www.ibo.org/school/search on August 27, 2009).

The purpose of the IB program evolved from one of meeting the needs of students attending international schools to one of developing character, knowledge and intercultural respect in students (Walker, 2004). The International Baccalaureate Organization's (IBO) mission is to "…develop inquiring, knowledgeable and caring young people who create a better and more peaceful world through intercultural understanding and respect" (IBO, 2002, p.2). To accomplish their mission, IB specifies the written, taught and assessed curriculum through the IB PYP framework. Teachers work in teams to create a series of open-ended questions for students to explore in a unit of inquiry. The questions help students generate their own questions, which lead students to search for an understanding of the unit's central idea (IBO, 2005).

The inquiry-based curriculum of the IB program is not typical of the curriculum found in our current schools. Researchers believe the focus on accountability and improving test scores has perpetuated a focus on traditional teaching methods (Cuban, 2003; Cuban, 2007; Goodlad, 2008). The IB PYP does not focus on the improvement of test scores; however, AYP reports of the IB elementary schools in Georgia show 14 out of 15 public IB schools met state required benchmarks (Georgia Department, 2009). This information sparked my research interest into the use of inquiry-based curriculum within the current constraints of accountability. In my study, which I conducted at an IB

elementary school in Georgia, I focused on student and teacher inquiry and the conditions that influence inquiry.

The questions that guided my study were:

1. What inquiry exists for students in the classroom?
2. What inquiry exists among the teachers?
3. What conditions influence inquiry in the classroom and in the school?

The purpose of my study was to understand the role of an inquiry-based curriculum in an IB elementary school and to identify the conditions for inquiry that exist in the classroom and within the school. Further, I wanted to gain a deeper understanding of the use of inquiry-based curriculum within the curriculum constraints of Georgia's educational policies.

Inquiry-based Curriculum

Inquiry-based curriculum is not a new concept in schools. In fact, it has been the topic of debate between supporters of both traditional and non-traditional curriculum (Dewey, 1931/1970; Tyler, 1950). Researchers have different terms for these two views. Goodlad (1966) referred to a traditional curriculum as "subject-centered" and a non-traditional curriculum as "child-centered" (p.29), while Jackson (1986) named them "mimetic" and "transformative" (p. 116). Teachers who use a traditional curriculum focus on knowledge and the memorization of facts; a curriculum centered on the subjects they teach. Those who use a non-traditional curriculum focus on the processes of learning, such as teaching students to research and explore possible solutions to problems. This type of curriculum connects to the experiences of the child. A non-

traditional curriculum focuses on student learning, more than covering information. According to Kohn (1999), “These two basic approaches rarely show up in pure form” (p. 5). Varying degrees of inquiry-based curriculum have surfaced throughout educational history. For example, educators took notice of inquiry-based curriculum after the publication of The Eight Year Study in 1942. The study revealed the college success of students who attended thirty non-traditional high schools (Lipka, Lounsbury, Toepfer, Vars, Alessi, & Kridel, 1998). Some of these schools focused their curriculum on cooperative teaching and investigative exploratory learning. Lipka et al. (1998) state, “The conviction that young people in a democracy should develop the habit of reflective thinking in solving problems strongly influenced methods of teaching developed in the thirty schools” (p. 109). In addition, teachers within these schools collaboratively inquired as they developed curriculum.

Other movements have made it more difficult to value inquiry-based curriculum. In the 1980’s, government officials believed mediocre student performances on national tests related to low performance of the United States in the global market (Cuban, 2003). School reform movements, led by the business community, focused on raising standards. According to Kohn (1999), there were flaws in the movement to tougher standards. This movement focused on student achievement measured by test scores, not on learning. It perpetuated the teaching of basic skills through traditional methods and it coerced improvement by imposing specific curriculum requirements (Kohn, 1999). Standard-based educational practices call for students to apply their learning, while the state dictates the content of subjects students are to learn and measure their learning by asking factual questions on tests. For example, since the 1990s, curriculum organizations such as

the National Council for Teachers of Mathematics and the National Council for the Social Studies strongly encouraged an inquiry-based curriculum (National Council for the Social Studies, 1992; National Council for Teachers of Mathematics, 2000). The National Council for the Social Studies (1992) created standards for an inquiry-based social studies curriculum that focuses on students' inquiry into societal problems. However, state tests are multiple-choice and focus on measuring factual knowledge (Kohn, 1999). While the current standards movement influences a more progressive curriculum, the policy constraints of NCLB limit their influence. According to Cuban (2003) and Goodlad (2008), the involvement of government and corporations led to the curriculum restraints and accountability measures we have today.

How do educators navigate this curriculum debate? Along with the appeal for an inquiry-based curriculum by national curriculum organizations, research supports inquiry-based curriculum. For example, Tyler (1950) found students rapidly forget the information they memorize, so learning experiences should focus on problem solving. Jackson (1986) believed the focus for education should be on developing students who can independently attain knowledge and skills to solve problems. Dewey's (1938/1991) theory promoted an inquiry-based curriculum. He believed the role of the teacher is to provide meaningful learning experiences that help students explore solutions to problems. Dewey's arguments about curriculum are consistent with and supported by his theory of inquiry (Dewey, 1938/1991). According to Dewey, inquiry begins with the realization of an unsettled thought or feeling. This thought brings a problem to mind. The next step is the exploration and testing of possible solutions through thought processes, which Dewey called reflection. During the reflection phase, judgments are accepted or rejected. Once

acceptance brings “warranted assertions”, the problem is settled until new information brings further inquiry. Dewey (1902/ 2001, 1910/1997, 1915/2001, 1916/1985) also believed inquiry is social; it relates to the child’s interests; it is experiential; and has a moral purpose.

Although more progressive images of curriculum have surfaced, current curriculum practices are often a hybrid of traditional and non-traditional curriculum (Cuban, 2003; Cuban, 2007). Furthermore, educators and organizations define inquiry-based curriculum in many ways. For example, Collins and Stevens (1983) believe an inquiry-based curriculum should teach students to construct rules and theories, and then apply them to new cases. Teachers should have a set of goals and a set of strategies to achieve these goals. Based on constant assessment of students understanding of the goal, they should provide individual prescriptive measures to help the child achieve the goal (Collins & Stevens, 1983).

Meier (1995), believed that inquiry-based curriculum for virtually any topic should begin by asking the following questions: How do we know that we know? How are things related? Whose viewpoint does it represent? Why is what we are learning important? This inquiry sparks discussions and disagreements that stimulate the mind into deep thinking. Kohn (1999) believed teachers often reserve this enriched deep thinking for high achieving students, however he believes it is best for all levels of students.

Project-based learning proposes a different view of an inquiry-based curriculum. Its origin is from research on student motivation and cognitive engagement; however, recent technologies have also encouraged the increase of project-based learning

(Blumenfeld, Soloway, Marx, Krajcik, Guzdial, & Palinscsar, 1991). In project-based learning, students answer questions or solve problems through inquiry-based activities chosen by the student. This provides opportunities for students to create artifacts that answer the question or solve the problem. Students work together to create a presentation to share with others. Most project-based learning models use technology as a resource (Curtis, 2002). Educators often connect project-based learning to Dewey's theory of inquiry (Buck Institute for Education, 1999). However, Dewey (1931/1970) distinguished between his theory of inquiry and learning that is project-based. Dewey did not believe there was information to "discover" through students completing specified projects. He based his theory on students using inquiry to find new meaning in what they were learning.

After considering various definitions of inquiry-based curriculum, I chose to use Dewey's theory of inquiry for my study because it aligns with inquiry suggested by the IB Program. An IB program's inquiry unit begins with connecting the central idea to students' background experiences. Students create questions to answer through actively engaging in research. While IB requires an inquiry-based curriculum organized through six interdisciplinary themes, the state has a specified required curriculum. Dewey (1902/2001) wrote about the conflict that exists between the "the child's experiences and the various forms of subject-matter that make up the course of study" and the "other mode of doctrine" which requires a specified set of facts students must know (p. 109). He believed the course of study should develop from the shared experiences of the child's current world. For example, if the school were located in a farming community the

curriculum would involve farming. Students would also study how farming has an effect on the community. This is far removed from Georgia's required curriculum.

The curriculum required by Georgia and NCLB mandates does not support inquiry or the philosophy of the IB program. What brought school curriculum to where it is today? Cuban (2003) suggested, curriculum is driven by "market-inspired reformers [who] care little about transforming classroom practices; they care a lot about raising test scores" (p. 7). With the policy constraints of NCLB and Georgia's required curriculum, how do teachers at an IB school create an inquiry-based curriculum?

Description of Study

My qualitative study examined inquiry-based curriculum in a high poverty, inner-city elementary school authorized as an IB school since 2007. The school, located in a small city in Georgia, provides the inquiry-based curriculum outlined by IB's Primary Years Program (PYP) according to IBO's standards. I chose to study in a high poverty school as it is not typical of International Baccalaureate schools (Kyburg, Hertberg-Davis, & Callahan, 2007). The poverty rate is determined by the percent of students in the school population who qualify for free or reduced lunches. In this school, 92.5% of the students are from economically disadvantaged backgrounds.

I used qualitative inquiry and a normative framework based on Dewey's (1938/1991) theory of inquiry to provide structure for my study. I focused my study on student inquiry and teacher inquiry. The goals of my study were to gain an in-depth understanding of the inquiry-based curriculum in this IB PYP school and to determine the conditions that exist for inquiry in both the instructional and institutional context

(Merriam, 1998). I collected data through semi-structured teacher interviews, classroom observations and document analysis. I analyzed the IB curriculum resource guides and the teachers' written lesson plans for the units of inquiry. I used a normative framework based on Dewey's theory of inquiry to analyze data.

Purpose of Study

As previously stated, the purpose of my study is to gain an understanding of inquiry-based curriculum. Why study inquiry? A curriculum grounded in inquiry is beneficial for students. Research has shown students who experience an inquiry-based curriculum ask deeper questions, which in turn, develops deeper understanding (Godbey, Barnett & Webster, 2005). When students are engaged in meaningful inquiry, their attitudes about learning improve. The use of inquiry-based instruction also improves students' level of engagement (Aubrecht, 2005; Chang, & Mao, 2001; Godbey et al., 2005). In addition, Kinchin (2004) investigated students' beliefs about their preferred role as learners. Students chose concept cartoons depicting teacher-student dialogue in a traditional classroom or a progressive classroom to express their favored means of learning. Out of the 369 students in his study, 88.8% of the students preferred an inquiry-based curriculum.

Even though research shows the benefits of inquiry-based learning, teaching practices have not changed (Cuban, 2007; Kohn, 1999). The current focus on a traditional, subject-centered education dates back to the ancient Greeks (Cuban, 2007). Although there has been shift toward a hybrid of child-centered curriculum in elementary classrooms since the 1980s, current teaching practices mainly focus on helping student

memorize facts to pass high-stakes assessments. High-stakes assessments have returned schools to a focus on a subject-centered curriculum due to accountability requirements, which began in the 1990s and with the 2001 NCLB legislation (Cuban, 2007). As suggested by Cuban (2003), in business the bottom line is profit, however in schools the bottom line is test scores. Thus current accountability policies work against a culture of inquiry and promote the rote learning of facts (Joseph, Mikel & Windschitl, 2002; Cuban, 2007). For example, most science classrooms exhibit traditional curriculum where teachers lecture about scientific facts. Researchers found even when teachers gave students opportunities for hand-on investigations, the investigations were brief and the teacher defined the tasks and research methods students used (Falk & Drayton, 2004; Thompson, 2003). Researchers argue traditional methods of teaching are part of our culture, so if we are to change pedagogy, teachers need experience and training in inquiry-based curriculum (Aubrecht, 2005; Haefner & Zembal-Saul, 2004; Supovitz, Mayer & Kahle, 2000).

My study also focused on teacher inquiry. Research shows teachers are more likely to use inquiry-based curriculum in their classrooms if they are inquirers themselves (Sergiovanni, 1996). Teachers personally inquire as they make curriculum decisions in their classrooms daily. For example, they change the way they phrase a question if they see students do not understand their question (Henderson, 1992). Dewey (1929) believed teacher inquiry authenticates teacher's practice, reveals to teachers how classroom conditions influence student inquiry, and empowers teachers to change. It provides a tool to clarify and improve professional practice (Garrison, 1997; Hammer & Schifter, 2001; Kraft, 2002). In addition to personal inquiry, teachers collectively inquire with peers.

They discuss curriculum informally through conversations (Honawar, 2008) and formally through the development of professional learning communities (DuFour & Eaker, 1998). Collaborative teams who meet regularly to solve problems improve teaching practices (National Staff Development Council, 2001).

In addition to teachers creating meaningful inquiry-based experiences, teachers need to create certain classroom conditions to support inquiry (Henderson, 1992; Kraft, 2002; Sergiovanni, 1996). Dewey (1938/1997) believed the learning experience does not happen just inside a student; it includes the social interactions in the classroom and school. Research shows students need a safe and secure environment, opportunities for social inquiry, and time and freedom to reflect on their learning (Dewey, 1910/1997; DeWitt, 2003; Meier, 1993; Tyler, 1950). Furthermore, a school organization that supports inquiry provides time for teachers to reflect and collaborate in meaningful ways (Henderson, 1992). For a culture of inquiry to be present in a school, there is a focus on solving problems together and the social influences encourage an attitude of inquiry (Henderson, 1992). In contrast, researchers found if the focus of the school is on students passing the test, the culture will be one of disseminating facts that are tested (Joseph et al., 2002; Falk & Drayton, 2004).

Benefits of Study

There are a number of benefits for my study. First, it adds to the body of research on IB programs. Although IB's PYP has been in existence since 1997, the research related to the elementary level is sparse (Kyburg et al., 2007; Walker, 2004). Research in the area of IB has focused on the Diploma Program (Hayes, 2006; Kyburg et al. 2007;

Tookey, 2000; Vanderbrook, 2006). These studies have included student perceptions (Shaunessey, Suldo, Hardesty & Shaffer, 2006; Taylor & Porath, 2006; Vanderbrook, 2006), teacher perceptions (Hayden, Rancic & Thompson, 2000; Pace & Standiford, 2003) and parental perceptions (MacKenzin, Hayden & Thompson, 2003; Bunnell, 2005). Shaunessey et al. (2006) state there is a need for research to show how the IB program meets the needs of diverse learners. In addition, there is a call for research on the progress of students from high poverty urban areas in IB or Advance Placement programs (Kyburg et al., 2007).

The lack of research in the area of IB's PYP creates a dilemma for superintendents and elementary principals. This study informs superintendents and elementary principals who are considering implementing the IB PYP in elementary schools. The IB program comes with significant cost, time and effort. A school leader cannot merely purchase and implement the program; a school must go through an authorization process (IBO, 2007b; IBO, 2007c; Walker, 2004). This process requires training for all staff members and the cost of registration averages $575 per person (IBO, 2008b). Registration fees do not include travel expenses. In addition to the cost of training, a school application fee is required each year. During the authorization process, the cost is over $5,000 per year. It may take three or more years of professional learning for staff members and the implementation process to be completed. Numerous visits from trained IB officials help schools refine their implementation practices before the school can become an authorized IB school. After authorization, the cost for membership drops to $3000, but IBO requires yearly renewal fees for the school to remain an IB school (IBO, 2007b).

IBO's personnel requirements add to the overall cost of implementing the model. At the elementary school level, IB PYP's guidelines require the teaching of a foreign language to all kindergarten through fifth grade students daily (IBO, 2007c). In Georgia, a foreign language teacher is not a state funded position for elementary schools. The model also requires a program coordinator. IBO (2007c) states, "The PYP coordinator … has to ensure that the standards for implementation are understood, and that the program is planned, taught and assessed collaboratively" (p. 7). To remain an IB school, the IBO also requires the monitoring of policies and practices on a regular basis, which is costly (IBO, 2005; IBO, 2007b; IBO, 2007c). With these costs in mind, schools interested in implementing the program need research to support becoming an IB school.

Third, my study adds to the field of research on using inquiry-based curriculum with economically disadvantaged students. According to research, teachers typically use traditional teaching methods requiring the memorization of facts or the learning of basic skills with economically disadvantaged students and they often do not have access to advanced curriculum (Bowers, 2000; Darling-Hammond, 2007b; Haberman, 2005; Jackson, 1986; Kohn, 1999; Kyburg et al., 2007). These students receive a lot less literature and a lot more drill of isolated skills (Haberman, 2005; Kohn, 1999). Inquiry-based models are diametrically opposed to what researchers have characterized as pedagogy of poverty in many schools serving economically disadvantaged students (Haberman, 2005; Hayward, 1999; Spillane, 2002). Yet, research shows the advantages of using challenging curriculum and problem solving with economically disadvantaged students. In a study by McBride & Bonnette (1995), male students from economically disadvantaged backgrounds experienced an inquiry-based curriculum in a non-traditional

setting at a summer camp. After engaging in inquiry and cooperative learning experiences students' scores increased on the New Jersey Test of Reasoning Skills. Miller (2003) studied the use of inquiry-based reading and writing assignments with at-risk students. The assignments lasted longer than a day and included topics chosen by the students. There were opportunities for students to work cooperatively and receive feedback from their peers. He found that students in three out of the four classes in his study performed higher on tests and all students in the study preferred this type of learning as compared to a traditional approach. In addition to improving test scores, students who used inquiry-based curriculum in high school were successful in college (Lipka, et al., 1998). The Eight Year Study found students who attended schools where teachers offered a non-traditional, inquiry-based curriculum had the most success in college compared to the students who attended schools offering traditional curriculum experiences (Lipka, et al., 1998). Therefore, my research helps school leaders see alternatives to the use of traditional teaching methods with students from impoverished backgrounds.

It was beneficial to use a normative framework to conduct my qualitative inquiry. I used a normative framework based on Dewey's theory of inquiry as a lens to study the inquiry-based curriculum in this IB PYP school. The environments and experiences in classrooms are very complex; therefore, the use of a normative framework gave me direction to know where to begin. It guided my study of how students and teachers inquire at Georgia Elementary School. Furthermore, it gave guidance to the questions I asked teachers during the interviews. It also provided a focus of my observations in the classrooms. In addition, my use of Dewey's (1938/1991) theory of inquiry provided

structure for the analysis of data I gathered (Lincoln & Guba, 1982; Miles & Huberman, 1994). Researchers collect a substantial amount of data when conducting qualitative research, and this data is difficult to analyze. However, by using a normative framework, I could manage data I collected by narrowing my focus on how students and teachers inquire. The framework also provided credibility to my interpretations and explanations of the data (Thomas & James, 2006).

Theoretical Framework

Dewey developed a theory of inquiry over his scholarly career. He had many ideas about educating children, which at the time of his writings were highly influential. In his pedagogic creed, first published in 1897, Dewey stated,

> I believe that much of present education fails because it neglects this fundamental principle of the school as a form of community life. It conceives the school as a place where certain information is to be given, where certain lessons are to be learned, or where certain habits are to be formed. The value of these is conceived as lying largely in the remote future; the child must do these things for the sake of something else he is to do; they are mere preparation. As a result they do not become a part of the life experience of the child and so are not truly educative. (p.8)

Dewey's search for an applicable theory began early in his career, starting before the development of the experimental laboratory school at the University of Chicago in 1896. Dewey did not agree with the educational focus at that time. He did not believe the focus of education should be on efficiency or memorization of facts (Kliebard, 1986).

Dewey (1938/1997) said students learn through inquiry which is "…the controlled or directed transformation of an indeterminate situation into one that …determinate" (p. 108). When an unsettled thought or problem brings question, it is through inquiry the question is settled. Dewey also believed students learn through reflective thought and

their experiences; that there are no certain set of truths for students to discover (Boyles, 2006; Hickman, 2007). Thoughts constantly run through our minds; however, he distinguished between daydreaming thoughts and reflective thought. Reflection is intentional organized thoughts that aim at a belief (Dewey, 1910/1997; 1938/1991). In reflection, there is a stream of thought where predictions and outcomes are tested and connected to our background knowledge and experiences. This process brings about "knowing." According to Hickman (2007), Dewey often used the term "knowing" instead of knowledge because he believed it to be a larger part of the process of inquiry (p. 207). Dewey used the phrase "warranted assertion" to represent what he meant by "knowing". Hickman (2007) suggested, "What is warranted is the result of reflection that has been effective in the sense that some specific doubt or difficulty has been resolved" (p. 207). Dewey's (1938/1991) theory of inquiry is consistent with the scientific method, with the exception that it relates to the natural world and does not lead to a definite solution. The "warranted assertions" are socially constructed.

If students learn through experiences and reflective thought, what experiences should teachers provide in schools? Dewey (1931/1970) suggested there are two things to consider when teaching children: what to teach and how to teach. Dewey tested his educational theories in his lab school at the University of Chicago where observations of teaching and learning occurred. His goal was to create new standards of teaching practice in order to reform public education (Tanner, 1997). Through the use of inquiry, Dewey was able to see his theory transform into practice in his laboratory school (Tanner, 1997).

In his work, Dewey (1902/2001) addressed the structure of schools and the need to integrate subjects. According to Dewey, subjects taught in isolation do not necessarily

make sense to children. Further, memorizing meaningless facts does not constitute genuine learning. Dewey (1910/1997) felt so strongly about this that he states, “For teacher or book to cram pupils with facts which, with little more trouble, they could discover by direct inquiry is to violate their intellectual integrity by cultivating mental servility” (p. 198). According to Dewey, learning should focus on inquiry, not on imparting knowledge. Children can learn to become deep thinkers if teachers provide the opportunity (Dewey, 1938/1997).

According to Dewey’s theory of inquiry, learning is social and communicative. Children learn through interactions with people and their environment. Children are constantly exploring their environment, trying to figure out how things connect to their world. Social inquiry provides cooperative reflection, which in turn allows children to try out possible solutions before making final judgments (Hickman, 2007). They watch, imitate, and learn through social connections, inside and outside of the school building (Dewey, 1910/1997; Dewey, 1915/2001).

Inquiry is experiential. Children should be active participants in their learning through experiencing an emotional connection (Hickman, 1998; Meier, 1993). If children engage in only routine work and they do not connect emotionally to the lesson, they are only getting work done. Dewey’s idea of an experience is one that reveals new meaning and brings value to learning (Hickman, 1998). Dewey (1915/2001) said, “The child is already intensely active, and the question of education is the quest of taking hold of his activities, of giving them direction” (p. 25). Dewey’s view of learning to solve problems requires physical activity and mental activity. Students are actively engaged in inquiry. Dewey (1931/1970) discussed the difference between giving children a project-based

assignment where they study a certain topic to gain factual knowledge, and his suggested method of inquiry where children work toward solving a problem. Dewey (1938/1991) stated, “A problem is not a task to be performed which a person puts upon himself or that is placed upon him by others” (p. 111). For example, if students are asked to read pages from the social studies book on the Civil War then create a poster explaining one cause, they would be completing a project. Conversely, if students are asked to research the causes of the Civil War and create a poster explaining one cause and how it could have been prevented, students would experience the creation of new meaning from their inquiry. The teacher should create opportunities for students to experience the creation of new knowledge.

Dewey’s (1916/1985) purpose of education was a vital part of his theory. He believed education was the means through which people understand how to live in a democratic society. Dewey (1916/1985) stated, “What nutrition and reproduction are to a physiological life, education is to social life” (p.12). Students must learn how to interact with each other and how to apply what they learn to their world. Dewey (1910/1997) suggested teachers should prepare topics of study that connect to children’s interests and the values of the community. Without a connection to the real world, children have difficulty applying what they learn. When children do not see connections to their world, they lose interest. In addition, Dewey (1916/1995) believed the moral purpose of school was to see that “each individual gets an opportunity to escape from the limitations of the social group in which he was born …” (p. 24-25). It is through the educational environment students learn to understand others’ differences and live in a democratic society.

Dewey's (1938/1991) theory of inquiry established a framework for inquiry-based curriculum. It is applicable to my qualitative study because it provides a lens with which to view the IB PYP inquiry-based curriculum. To understand the frame of my study, it is important to become familiar with the background of NCLB legislation and recognize the degree to which this legislation impedes inquiry.

Background of P.L. 107-110 NCLB

Public Law 107-110, also known as *No Child Left Behind Act of 2001* creates quite a dilemma for school principals and teachers. This educational policy mandates a high-stakes assessment to measure of students' learning of the state's curriculum (US Department of Education, 2002). In Georgia, the state policy for elementary schools requires a certain percentage of students to meet or exceed expectations on Georgia's Criterion Referenced Competency Test (CRCT), which is an assessment of the Georgia Performance Standards (Georgia Department of Education, 2007). If schools do not meet the state benchmarks two years in a row, they receive the label of a needs improvement school. Continued failure to meet the benchmarks set by the state can result in the enactment of sanctions such as the removal of the principal or loss of state funding.

Reaching the goal of all students meeting state benchmarks by 2014 will be difficult. Auwarter & Aruguete (2008) suggest academic achievement correlates to a student's economic status. In 1960, economist Orshansky developed a measure to compare a family's economic resources with a known dollar value "poverty threshold" to determine if the family could be considered poor (Blank, 2008). This rate adjusts regularly as it is based on the consumer price index, amount of family members, and the

composition of those members (i.e. children vs. members over 65 years old). In the field of education, an economically disadvantaged student is defined as a student whose family qualifies for free or reduced price lunches. According to the United States Department of Agriculture (USDA) Food and Nutrition Service guidelines, to qualify for free lunch, a family of four's annual income must not exceed $27, 500. To purchase school lunch at a reduced price, the annual income cannot exceed $39, 220 (USDA, 2008). Schools with a high percentage of economically disadvantaged students face a challenge meeting AYP benchmarks. Schiller & Muller (2000) discuss the negative affect of accountability on students from economically disadvantaged backgrounds. The students do not come to school with the background knowledge needed to be successful in the high-stakes culture.

To help teachers face the challenge, some superintendents and principals have turned to reform models. In 2004, the Northwest Regional Educational Laboratory (NWREL) reported detailed information on 25 different whole-school reform models. At the time of the report, over 10,507 schools were using a model of school reform. Most of the schools listed as examples in the report served students from economically disadvantaged populations of 50 percent or higher (NWREL, 2004). Although the IB program was not part of this report, the use of the IB program has grown rapidly in the United States. Chmelynski (2005) states,

> There are continually increasing amounts of interest among school districts everywhere in the United States in the subject of offering a more rigorous curriculum to be available for our students. It is the intensity of this interest which has fueled the expansion of the International Baccalaureate program in this country. (p. 58)

IBO boasts of 2,730 schools worldwide, and 1,033 in the United States. The schools offer the IB Diploma program (IBDP), Middle Years Program (MYP), or the Primary Years

Program (PYP), depending on what level of students they teach. Currently there are 173 IB PYP elementary schools in the United States and 18 in Georgia (information retrieved from www.ibo.org on August 27, 2009). Out of the 15 public IB elementary schools in Georgia, seven schools serve populations where 40% or more of their students are economically disadvantaged. In addition to data that shows the popularity of the IB program, the program is well recognized by state leaders. During an interview Georgia's State School Superintendent said she is hopeful that the International Baccalaureate Program "will grow and blossom in Georgia" (Jordan, 2009, p. 1A). Because I situated my study of inquiry in an IB elementary school, it is important to understand the context of inquiry-based curriculum within the historical perspective of the International Baccalaureate Organization.

History of the International Baccalaureate Program

Historical accounts of the International Baccalaureate Program reveal teachers at the International School of Geneva had a visionary idea that one university entrance exam could be accepted by a host of international universities (Peterson, 1972; Renaud, 1974). This idea first appealed strongly to the International Schools Association in 1962. Consistency in enrollment of students in international schools was problematic as military families moved often. Transient students struggled with curriculum as well as language barriers (Peterson, 1972). In 1965, the International Schools' Examination Syndicate was established. This organization, established in Switzerland, is currently the International Baccalaureate Organization (IBO). The IB project, made possible by grants from the Twentieth Century Fund and the Ford Foundation, launched at the February

1967 Sevres Conference. Hundreds of teachers from schools and universities all over the world met to discuss curriculum and examination methods (Peterson, 1972). The IBO Research Centre had the tasks of validating International Baccalaureate examinations, assessing current programs and syllabi, developing new testing techniques to offer admission into colleges and universities, and conducting comparative studies in this field of secondary education (Renaud, 1974).

The IBO named their program the International Baccalaureate Diploma Program (IBDP), which is for interested students during the last two years of high school. IBO expanded the idea to offer the Middle Years Program (MYP) in 1994 and the Primary Years Program (PYP) in 1997 (Hayden, 2005; Walker, 2004). IBO requires a program grounded in inquiry-based curriculum. IBO (2008a) defines inquiry-based curriculum as, "...the need to acquire skills in context, and to explore content that is relevant to students and that transcends the boundaries of the traditional subjects" (p. 7). IB requires teams of teachers collaborate to develop transdisciplinary units of inquiry using the IB curriculum framework. The units begin with a central idea connected to one of six themes. Guiding questions situated within the framework help teachers design inquiry-based learning experiences. After teaching the units, the teacher teams reflect on the curriculum and adjust it for future use. In addition, IBO addresses the moral side of education through the required teaching of certain attitudes and behaviors outlined in the PYP Student Profile. The profile requires students to become principled, caring, open-minded, well-balanced and reflective (IBO, 2002). Teachers guide students to an understanding of moral reasoning, caring for the needs of others, respecting the beliefs and values of other cultures, understanding the importance of physical and mental balance; and giving

thoughtful reflection to their own learning (IBO, 2002). This aspect of the IB program supports Meier's (1993) belief that schools represent an opportunity to build community.

Conclusion

In this introduction of my research study, I discussed the problem that exists between the need for an inquiry-based curriculum and the state curriculum requirements mandated by Georgia policies. I situated the purpose of my study within literature that supports inquiry-based curriculum and the conditions necessary for a culture of inquiry. I described Dewey's (1938/1991) theory of inquiry and discussed how it informed my study. To provide background information, I shared details of the policy requirements of NCLB and the history of the International Baccalaureate Program. In chapter two, I present a review of literature as it relates to my study.

CHAPTER 2

LITERATURE REVIEW

Introduction

Inquiry-based curriculum involves social experiences for students to solve authentic problems (Dewey, 1910/1997). Research shows an inquiry-based curriculum engages students (Aubrecht, 2005; Change & Mao, 2001) and helps them develop a deeper of understanding (Godbey et al., 2005). Teachers who use inquiry-based curriculum engage their students in meaningful experiences. Examples include students working in pairs or groups to conduct research and test hypotheses. In addition to students inquiring, teachers inquire (Dewey, 1910/1997). Teacher inquiry happens on a personal level as well as collectively with colleagues (Henderson, 1992). In addition, researchers suggest certain conditions must exist to promote inquiry (Dewey, 1910/1997; Fishman & McCarthy, 2007; Henderson, 1992; Meier, 1993). In this chapter, I present a review of the literature surrounding three concepts: inquiry-based curriculum, the use of inquiry by teachers, and the conditions needed for inquiry.

Student Inquiry

Composition.

According to Dewey (1902/2001, 1910/1997, 1915/2001), inquiry-based curriculum includes social experiences which guide students to unsettled thoughts that

lead to a problem, reflection, and the testing of hypotheses. Through inquiry students arrive at warranted assertions about their problem. An inquiry-based curriculum also has a moral purpose (Dewey 1916/1985). While a number of scholars and educators who address student and teacher inquiry may not reference Dewey in their work, qualities in much of their work are consistent with his theory.

First, an inquiry-based curriculum involves opportunities for students to solve authentic problems. According to Dewey (1938/1991), "Without a problem, there is blind groping in the dark" (p. 112). Inquiry-based curriculum provides opportunities for students to ask questions about something of interest and includes time to explore answers (Chang & Mao, 2001; DeWitt, 2003; IBO, 2002; Wilson & Murdock, 2004). The authentic problems interest the students and have meaning they can relate to their world. An inquiry-based curriculum involves reasoning and reflection, where students consider answers to their questions and make decisions about what to do or what to believe (Ennis, 1993; Hudgins & Edelman, 1988). Students explore new ideas and solve problems with more than one possible solution (Haefner & Zembal-Saul, 2004). These ideas are consistent with Dewey's belief that inquiry involves the consideration of many possible answers to solve the same problem. Dewey (1938/1991) stated, "When a suggested meaning is immediately accepted, inquiry is cut short" (p. 115). In fact, through suspending judgment of the answer to a problem, students test other possible solutions. In addition, McBride & Bonnette (1995) suggest an inquiry-based curriculum provides experiences for students to integrate prior knowledge and engage in self-evaluation. Making connections to background knowledge engages students in their learning.

Second, inquiry involves learning through experiences. Instead of teachers imparting knowledge, they create experiences for students to achieve understandings. In an inquiry-based curriculum, teachers are no longer like technicians following a manual. Instead, they are creators of meaningful learning experiences (Hickman, 1998; Joseph et al., 2002; Schon, 1983; Smyth, 2000). The experiences begin with students actively solving an authentic problem by testing hypotheses, drawing conclusions to arrive at possible solutions. Dewey (1938/1991) stated, student inquiry involves students using their "…eyes and ears, their hands and their brains" (p. 30). Students practice making judgments based on their prior knowledge and current observations when deciding what to do to solve the problem. Students who inquire spend more time engaged in gathering information, interpreting data, and creating meaning from their interpretations than sitting in a desk listening to the teacher (Chang & Mao, 2001; DeWitt, 2003; Haefner & Zembal-Saul, 2004; Wu & Hsieh, 2006).

Some inquiry-based experiences in the literature are inconsistent with Dewey's beliefs. For example, sometimes the authentic problems teachers present to students do not engage or makes sense to the students. Teachers contrive problems connected to specific curriculum objectives, and not to the students' world (Chang & Mao, 2001; Tanner, 1988). In addition, schools often focus on the teaching of critical thinking skills and believe they are creating inquiry-based experiences (Ennis, 1993; Tanner, 1998). Dewey (1910/1997) would argue students know how to think; that thinking is a way of life, as humans, it is what we do. Tanner (1998) suggested much of the push to teach critical thinking in schools ignores Dewey's philosophy that "critical thinking is motivated by a genuine problem – the pupil's own problem", not one created by the

teacher (p. 471). For example, science teachers who present students with an experiment to perform and give students the steps to solve it are not creating inquiry-based experiences (Chang & Mao, 2001). Deweyan inquiry is an active process where students develop their patterns of thinking as they experiment with possible solutions to an authentic problem (Dewey, 1910/1997). While the focus on the teaching of critical thinking skills does not align with Deweyan inquiry, it does create an interest in involving students in making judgments based on evidence (Tanner, 1998).

Third, inquiry is social and involves dialogue. Everything students do connects to their social world. In fact, Dewey (1938/1991) believed "All inquiry proceeds within a cultural matrix which is ultimately determined by the nature of social relations" (p. 481). It is through social communication and physical interactions students learn. In an inquiry-based curriculum, there are opportunities for students to work cooperatively in pairs or small groups. Students share with others what they are thinking and how they approach problems with others. When groups of students solve problems collectively, they learn from each other. Consistent with Dewey's philosophy regarding inquiry as collective achievement, Vygotsky (1978) suggested social interaction is a vital part of learning. In fact, he believed that students learn at the social level first and then transfer their learning to construct meaning at the independent level. Inquiry-based experiences provide the chance for students to think independently and solve problems collectively in a group (Aubrecht, 2005; Chang & Mao, 2001; Haefner & Zembal-Saul, 2004). Integral to this process, students discuss problems and varied possibilities for solutions (Dewey, 1916/1985; Dewey, 1938/1997; DeWitt, 2003).

Fourth, an inquiry-based curriculum has a moral purpose (Dewey, 1916/1985). Students are not memorizing facts to remember them for a test; instead, there is a purpose for learning. Students learn where to find information, how to analyze it and apply it to real situations. Students learn to communicate their knowledge and take action beyond the classroom or the school building (DeWitt, 2003; Wehlage, Newmann & Secada, 1996). According to Goodlad (2008) schools teach, "The beliefs, attitudes, skills, passions, knowledge, and sensibilities that make the whole of an individual's unique being" (p. 15). Because of this, schools have the responsibility to develop students' attitudes and moral convictions as they develop within a democratic society. Dewey (1916/1985) believed it is the responsibility of schools to give students the opportunity to break away from the boundaries of the social group in which they were born. Moreover, it is through teaching the whole child that schools become the means by which to continue our democratic society (Goodlad, 2008). For Dewey (1916/1985), the idea of democracy was more than form of government; "it is primarily a mode of associated living, of conjoint communicated experiences" (p. 93). Through the shared experiences in schools, students learn how to live in democratic society. Further, in line with democracy, schools must allow students to think for themselves. Garrison (1997) believed teachers should cultivate the education of *eros*, which is wisdom that gives students "the ability to recognize what is good and valuable for themselves and others" (p. xiii). Teachers should develop children's passionate desire for learning. This is not a values curriculum specified by state mandates, but a curriculum focused on building capacity in student's abilities to appraise, judge and create values themselves (Garrison, 1997). For Dewey,

education was for the betterment of society, and for society to improve, students needed to value education and society.

Support of inquiry-based curriculum.

National organizations call for an inquiry-based curriculum that requires the development of understanding, not just the memorization of facts. The position statement from the National Council for the Social Studies (1992) describes a curriculum rich in experiences that prepares students to recognize, comprehend, and work to solve social problems. The National Council of Teachers of Mathematics (2000) also suggests a curriculum that provides experiences for students to learn and understand concepts and the processes of math. The standards describe a curriculum where students learn through experiences such as problem solving, reasoning, connections, and communication. Furthermore, Doherty, Echevarria, Estrada, Goldenberg, Hilberg, Saunders, and Tharp (2002) suggest effective pedagogy for students who are from diverse ethnic, linguistic and economically disadvantaged backgrounds includes teachers “connecting schools to student’s lives”, “teaching complex thinking” and “engaging students through dialogue” (p. 1).

Research supports the use of an inquiry-based curriculum with students. Benefits include increased student engagement and the development of a deeper understanding of what students are learning (Godbey et al., 2005, Miller, 2003). When students engage in inquiry, they analyze and discuss possible solutions to problems (DeWitt, 2003). Through inquiry students learn to ask better questions, which help them comprehend topics they are studying (Godbey et al., 2005). In an inquiry-based curriculum, students stay interested in what they are learning. Not only do they remain interested, but there is more

on-task behavior in an inquiry-based classroom (Godbey et al, 2005; Haefner & Zembal-Saul, 2004).

Typically, inquiry-based curriculum is not a part of schools with impoverished populations (Haberman, 2005). As suggested by Anyon (1980) the curriculum in schools often reflect the socio-economic status of the community. For example, Anyon found the school work in economically disadvantaged schools is often mechanical and routine and only prepares the students for wage labor. However, schools in affluent and elite areas gave students opportunities for "linguistic, artistic and scientific expression" (Anyon, 1980, p. 88). The differences in classroom practices perpetuate the marginalization of students from impoverished backgrounds. In addition, Kohn (1999) states, "One place where traditional teaching rules with a vengeance is in 'urban' or 'inner-city' schools, which are generally euphemisms for those attended by children of color or low-income families" (p. 9). However, the use of an inquiry-based curriculum is beneficial for students who are at risk of failure, such as students from economically disadvantaged families or students with disabilities. Miller (2003) found using an inquiry-based curriculum with at-risk students increased their motivation. Also, in three of the five classes where at-risk students completed challenging tasks, the at-risk students scored higher on achievement tests than at-risk students who did not experience challenging tasks. In addition, Chang & Mao (2001) found students who experience an inquiry-based science curriculum had higher achievement on the Earth Science Achievement Test than students taught using a lecture-based traditional curriculum and Rapp (2005) found inquiry used in informal learning environments increased the level of learning for students with special needs. Doherty et al. (2002) found teaching through

transdisciplinary units, connecting school to students' lives, and engaging students through dialogue increased at-risk students' motivation as well as their attitudes and perceptions towards school. Furthermore, Townsend (2002) suggests, culturally responsive curriculum for economically disadvantaged students centers on high expectations and academic engagement. An inquiry-based curriculum is important in impoverished schools to provide opportunities for marginalized students to inquire and reflect instead of students experiencing a curriculum which focuses on the remediation of basic skills (Munns, 2007).

Although there are advantages for using an inquiry-based curriculum with students, it is not prevalent in schools (Cuban, 2007; Falk & Drayton, 2004; Kohn, 1999). Research shows several reasons why teachers use traditional methods instead of an inquiry-based curriculum. First, the policy constraints and accountability of NCLB discourage an inquiry-based curriculum. Teachers want to be compliant and ensure their students will pass multiple-choice tests, so they focus on teaching specific knowledge and skills (Cuban, 2007; Fecho, 2000; Joseph et al., 2002). Furthermore, state policy makers, local boards of education or principals make decisions about curriculum; therefore, teachers are not empowered by the current culture to develop an inquiry-based curriculum (Keys & Bryan, 2000).

Second, it takes time to plan inquiry-based lessons. It is much faster to open a teacher's manual and follow the prescribed manuscript. Daily tasks such as taking roll, collecting lunch money, and grading papers take up most of teachers' time, leaving little planning time or opportunity to collaborate with other teachers (Joseph et al., 2002;

Yonezawa & Datnow, 1999). It also takes materials and resources to create inquiry-based lessons.

Third, teachers use traditional methods because their teachers used traditional methods when teaching them; therefore, it is a method of teaching they know (Withee & Lindell, 2005). For teachers to use inquiry-based instructional methods, they need training (Haefner & Zembal-Saul, 2004). It takes practice for teachers to break the mold of traditional teaching. In addition, to be able to understand and create an inquiry-based curriculum, teachers must learn to become inquirers themselves (Peck & Hughes, 1996; Supovitz et al., 2000).

Teacher Inquiry

Dewey's beliefs about teacher inquiry.

Dewey's theory of inquiry is not just for children; it also applies to teachers. In his *Sources of a Science of Education*, Dewey (1929) argued for teachers' use of inquiry in schools. Through inquiry a teacher can substantiate or discredit the research of another or add new information to the practice of teaching. In addition, inquiry into problems brings new investigations, which help refine curriculum.

Dewey (1929) gave three purposes for teacher inquiry. First, inquiry authenticates teachers' practice. When teachers inquire and reflect, they see meaning and purpose for their work. Inquiring about what and how to teach students places curriculum decisions back in the hands of the teacher. Secondly, inquiry alters the way teachers think about their teaching. They begin to feel empowered and no longer see themselves as imparters of knowledge (Breault, 2005; Dewey, 1929; Ulmer & Timothy, 2001). Inquiry reveals to

the teacher how learning, student attitudes, and classroom climate are connected. Teachers no longer see problems as isolated situations to solve. Thirdly, teachers engage in personal inquiry to improve their teaching practices (Garrison, 1997). Inquiry allows the teachers to be reflective and examine their professional practice (Breault, 2005, Dewey, 1929). They become students of their own teaching (Henderson, 1992).

Instead of a rigid form of inquiry requiring a systematic procedure like the scientific method, Dewey's (1929; 1938/1991) theory of inquiry is naturalistic. Reflective thoughts continually occur throughout the day. For example, reflection includes thoughts such as how to rephrase a question when a student does not understand what the teacher is asking. Dewey (1929) believed it is the "educational practices that provide the data, the subject matter, which form the problems of inquiry" (p.33). When teachers inquire into problems, this brings to light additional problems for which they can inquire. Reflection provides a process for challenging and clarifying thinking (Swain, 1998). Through the cycle of inquiry, teaching practice improves. In addition, inquiry takes place within the social realm of the classroom and school (Dewey, 1938/1997). Each school contains a unique and highly complex culture. The social interactions, experiences, policies and procedures create the culture of the school. This environment cultivates or hinders teacher inquiry.

As I reviewed the literature, fluid layers of teacher inquiry emerged. I named the layers personal inquiry, collective inquiry, institutional and organizational inquiry. I chose the description of fluid layers because the layers interconnect. For example, I cannot inquire collectively without inquiring into my own practice, and I cannot inquire about institutional problems without collective and personal inquiry. Within each layer,

two types of inquiry exist: informal inquiry and formal inquiry. Furthermore, Breault (2005) suggests there is a continuum of inquiry. Teachers inquire at different levels and at different times depending on levels of maturity and the conditions for inquiry.

Personal inquiry.

The first layer of inquiry is personal and individual. It is the basis of all other layers of inquiry. Teachers inquire informally and formally about their personal experiences. Dewey (1910/1997) suggests "Everything that comes to mind, that 'goes through our heads' is called a thought" (p. 1). To think is just to be consciously aware of what is in our mind. Individual inquiry is often a quick, emotional reaction to an idea. Underlying values, internal commitments, and the nature of free choice guide teachers' reflective thoughts and actions (Jackson, Boostrom & Hansen, 1993; Schon, 1983). For example, a teacher may react negatively to an elementary student who is tardy everyday even though it is the parent's fault the child is late. The teacher's values of being on time evoke the response he/she gives to the student. If the teacher was to consciously reflect on why the child was late, a different reaction may take place.

Dewey (1910/1997) distinguished between thoughts that are routine, and reflection that is deliberate, careful consideration of practices and beliefs. Henderson (1992) refers to this more formal level of individual inquiry as purposeful reflection, while Schon (1983) calls it reflective action. Teachers inquire formally through conscious, reflective thoughts that guide their actions. Experiences gained from daily interactions with students, parents and colleagues help teachers decide their future actions. For example, a teacher may reflect upon a particular interaction with a student. The teacher constructs meaning from the situation and considers how he/she could have

handled the situation differently. This layer of inquiry requires the act of teachers' constant questioning, observation and assessment of students. The focus of inquiry is on how well students are learning. Teachers reflect upon their actions, style and methods of teaching and consider changing their actions based on their observations. This layer of personal inquiry and reflection helps teachers learn from their mistakes and repeat their successes (Swain, 1998). They use information to make educational decisions such as how much scaffolding a child needs to learn a concept (Jaworski, 2004). Research has shown reflection can improve teaching practices (Boody, 2008; Boyd & Boyd, 2005) Teachers who focus on student learning are reflective and wonder what they can do to ensure more student success (Kohn, 2008). In addition to teachers focusing on teaching practices within their inquiry, examination of interactions between themselves and their students are sources of inquiry (Dewey, 1929; Kraft, 2002). Through purposeful conscious inquiry, teachers reframe their ideas, define their own reality and experience self-awareness (Fendler, 2003; Kraft, 2002). A teacher's perception and judgment about his/her work can originate with individual inquiry (Hammer & Schifter, 2001).

Collective inquiry.

Collective inquiry involves collaboration among a pair or group of teachers. Through collective inquiry, each teacher has access to the ideas, strategies and talents of other teachers (Honawar, 2008). Like personal inquiry, collaborative inquiry happens informally and formally. In informal situations, teachers have conversations concerning student learning and instructional practice with other teachers while passing in the hallway or eating lunch. For example, a teacher may discuss a failed math lesson while eating lunch with other teachers from his/her grade level. Waks (2002) states, this is a

time when teachers “stop affecting their [teaching] conditions directly and instead reflect upon how they might do so more effectively” (p. 100). In addition, Honawar (2008) suggests authentic reflection happens outside the classroom where teachers share stories of their experiences. Through the sharing of stories, teachers solve problems and reflect upon their actions.

In formal situations, there is a specific time when teachers meet to inquire about student learning and to improve teaching practices. Garrison (1997) suggested, “Those [teachers] who really care are eager to have valued colleagues thoughtfully appraise their work in the hope of enhancing it …” (p. 40). Through critical engagement concerning curriculum, groups of teachers improve their understanding of practices and develop a professional learning community (DuFour & Eaker, 1998; Hammer & Schifter, 2001; Kraft, 2002). One example is when teachers bring student work to collaborative meetings to share products of their teaching practices. Teachers lay aside their egos and learn to talk to each other as they build collegial relationships (Honawar, 2008). In addition, formal collaborative inquiry takes place through observation, peer-coaching opportunities, or mutual reflection of videotaped lessons. It is a form of collegial professional development (Fendler, 2003; Sandoval, Deneroff & Franke, 2002). In fact, the National Staff Development Council (2001) claims the most powerful form of professional learning occurs in on-going teacher teams that meet regularly to plan and solve problems together.

Institutional and organization inquiry.

Institutional and organizational inquiries address school and system contexts respectively. Both are similar but meet different needs. Institutional inquiry focuses on

problems and situations that affect the school as a whole. Organizational inquiry focuses on improvement at the school system level. Institutional inquiry involves groups of teachers inquiring about curriculum and teaching practices beyond their classrooms. Teacher teams inquire for the collective purpose of improving the school (DuFour & Eaker, 1998). One example is a staff of teachers creating a rubric to assess student writing. Through this process, kindergarten teachers gain knowledge of the expectations of fifth grade teachers. Institutional inquiry and reflection are part of a school-level evaluation process. Likewise, teams of teachers, principals, and central office personnel inquire for the collective purpose of improving a school system. Through organizational inquiry, the alignment of curriculum and teaching practices are refined. An example includes a study of why special needs students across the school system did not pass high-stakes assessments in math. A collaborative team works together to arrive at warranted assertions and create a plan of action. Through organizational inquiry, this mixed team of professionals discusses different issues and comes to consensus. This level of inquiry reaches outside the walls of the school.

Benefits of teacher inquiry.

There are benefits to the use of teacher inquiry in a school. They include promoting a shared purpose and professional growth as well as improving the climate of the school and creating a professional environment. First, inquiry helps teachers reflect and think about their educational practice, interactions, and the learning environment of their classrooms. Teachers who inquire can gain a reflective view of the complexity of their classrooms (Breault, 2005). Teacher inquiry also removes barriers of isolation. Through collaboration, teachers realize they share the same difficulties as other teachers.

They see how their work in the classroom connects to the vision and mission of the school, which in turn, creates a shared purpose (Barlow, 2005).

Teacher inquiry promotes professional growth. As teachers reflect on student learning and their teaching practices, it brings awareness to areas needed for growth. Through reflection, teachers begin to take ownership of their learning because they reflect on what they know (Garrison, 1997; Ulmer & Timothy, 2001). They begin to search for ways to meet the needs of their students, which in turn helps them to grow professionally. One form of teacher inquiry is peer coaching. Peer coaching gives teachers opportunities to provide feedback on another teacher's practice. This creates professional growth in both teachers involved (Henderson, 1992).

Teacher inquiry has a positive impact on the climate of the school. When teams of teachers collaborate, share ideas and solve problems together, the team grows closer and relationships improve (Barlow, 2005; Hord, 1997). Teachers feel valued when they inquire and have the power to make educational decisions. Research shows collaborative inquiry has a positive influence on teacher morale (Darling-Hammond & Friedlaender, 2008).

Finally, teacher inquiry creates a professional working environment and changes the role of the teacher from an imparter of knowledge to a cultivator of learning. DuFour & Eaker (1998) suggest that educators are detached from the results of their teaching because they have had so little voice in the decisions leading to those results. They teach curriculum and give tests created by someone else, therefore they have no ownership in what they are doing. Inquiry allows teachers to use critical thinking and problem solving to improve student learning. Teachers treated as professionals have the opportunity to

make decisions based on inquiry (Ulmer & Timothy, 2001). This level of professionalism creates a professional working environment in the school (Darling-Hammond & Friedlaender, 2008). Teachers take ownership of their students' learning. In addition, teachers who inquire are more likely to use inquiry-based curriculum with their students (Peck & Hughes, 1996; Sergiovanni, 1996).

Difficulties of inquiry.

Although there are many benefits of teacher inquiry, research also indicates that there are a number of challenges regarding its implementation (Hammer & Schifter, 2001; Jaworski, 2004). While informal inquiry is a natural act, formal inquiry is difficult work. It requires time, training, and collegial relationships. Time is a priceless commodity in schools. Teachers need time for explicit reflection to define a problem or identify exactly what they want or need to know (Hammer & Schifter, 2001; Honawar, 2008). It is often difficult for a school leader to create a master schedule that allows time for individual reflection or collaborative inquiry.

Collaboration does not come naturally. Often collaborative teams have difficulty with team dynamics. Trust has to develop within the inquiry teams, so teachers will be willing to share their experiences. Teachers need guidance in order to move beyond shallow conversations such as the location for the next field trip. They need preparation to help them grow in their practice through professional discourse and critical reflection (Kraft, 2002). Coaching in how to nurture a collaborative environment is also necessary (Graham, 2007; Lieberman, Saxl & Miles, 1988).

Inquiry develops the capacity to change teaching. Through collaborative inquiry and personal reflection, teachers strengthen their teaching practices (Jaworski, 2006).

However, it is not enough for teachers to be reflective. Teachers have to be willing to accept the knowledge they gain from reflection to change their practice (Ulmer & Timothy, 2001; Fendler, 2003). They have to get used to the doubts and uncertainties of teaching and be willing to embrace the fact that inquiry is never ending (Garrison, 1997).

Research strongly supports inquiry among students and teachers. In fact, Jaworski (2004) stated inquiry is the merging factor between theory and practice. In order to develop and sustain inquiry, a certain environment must exist.

Conditions for Inquiry

Classroom conditions necessary for student inquiry.

Dewey (1938/1991) suggested, “All inquiry proceeds within a cultural matrix which is ultimately determined by the nature of social relations” (p. 481). The culture in a classroom influences student inquiry. For the purpose of my study, the term culture means all aspects of the environment; the interactions between students and teachers, the interactions between students, and the atmosphere created by the teacher’s moods and behaviors. It is within the classroom culture, influenced by all social interactions, that learning occurs (Dewey, 1916/1985). This part of the curriculum is hard to define. Jackson, et al. (1993) described it as the “moral life” of the classroom while previously Jackson (1986) named it the “hidden curriculum”. Social interactions are teaching students what is acceptable and unacceptable within their community and these social interactions influence inquiry (Dewey, 1938/1997). Therefore, in an inquiry-based classroom, certain psychological, social and structural conditions must exist.

First, psychological conditions of the classroom must promote an environment that supports inquiry. To create a safe and secure environment in the classroom, the mental habits and attitudes of the teacher are crucial (Dewey, 1938/1997; Jackson et al., 1993). Learning is social and involves the teacher managing the conditions for interactions within the classroom. Positive interactions build a culture of community (Meier, 1993), however not all interactions are necessarily positive. As a result, the interactions between the teacher and students either build or tear down trust. A teacher's habits and the way he/she interacts with students set the tone of the classroom environment. For example, when a student asks a question, the reaction he/she gets affects the classroom environment. If the teacher encourages students to ask questions about their interests, students will begin to develop habits of inquiry. In an environment of inquiry, the teacher is conscious that everything he/she does affects students' attitudes about learning (Dewey, 1910/1997; DeWitt, 2003; Kinchin, 2004). Jackson et al. (1993) suggest the implicit actions of teachers represent a moral attitude in the classroom because "every classroom constitutes a small society embedded with a complex web of social entities whose overlapping systems of laws, customs and traditions it partially shares and sometimes adds to or contradicts" (p. 12). For example, classroom rules and regulations, which the teacher often sets, dictate the moral attitude in the classroom. Even when teachers involve students, there is usually a rule that states "Raise your hand to speak". Yet, different teachers enforce this rule in different degrees. Some teachers are strict and do not allow students to call out answers at anytime, while other teachers allow students to call out but may ask them to raise their hands if too many students are talking at once.

Second, specific social conditions among the students are necessary to promote an environment for inquiry. Dewey (1916/1985) stated, “Not only is social life identical with communication, but all communication is educative” (p. 8). The communication among students in the classroom can evoke a positive or a negative experience for students. Garrison (1997) suggested, “Our minds and personalities emerge through interpersonal relationships” (p. 42). Jackson, et al. (1993) adds, teachers make a difference in the moral upbringing of students because they control the social interactions in their classrooms. By conducting extensive investigations and teacher interviews in eighteen classrooms in the Midwest from 1988 to 1990, Jackson et al. (1993) found that moral instruction was not part of the formal curriculum in the public schools in their study, however they observed lessons that had “moral tones” (p. 5). For example, when students shared their opinions, this often encouraged other students to share a different opinion. Students made moral judgments throughout the conversations. As suggested by Fishman & McCarthy (2007), “Dewey teaches us we are not just in our environment, our environment is in us” (p. 167). In a culture that promotes inquiry, trust and positive relationships exist among the students in the class. Students have freedom to share ideas with classmates, and opinions are valued so everyone has a voice. Further, the teacher does not dominate the conversation. In a culture of inquiry, the students ask more questions than the teacher does.

Third, the structure of the class promotes inquiry. Students are natural inquirers, so they need opportunities for inquiry. Inquiry-based environments support students as they learn mental habits that include questioning, reflecting, and suspending judgment. Students also learn the ability to discipline their minds, and to reflectively think (Dewey,

1910/1997). An inquiry-based environment is challenging yet supported by the teacher. The students are asking questions, gathering information, collecting and interpreting data, and drawing conclusions. The curriculum includes reflective activities where students have time to think about their learning and engage in self-evaluation (Dewey, 1910/ 1997; Dewey, 1938/1997; Peck & Hughes, 1996). In a culture of inquiry, students have time and the support of the teacher to develop their capacity as inquirers (Tyler, 1950; Dewey, 1910/1997).

Conversely, the environment in the classroom can hinder inquiry. The interactions between teachers and students are crucial. Students are keenly aware of the teachers' feelings merely through their social interactions. Jackson et al. (1993) suggest, teachers who do not respond to students, or those who are impatient when students are responding to questions, create a culture that inhibits learning. If students feel threatened by criticism, they will not share their ideas. Teachers must be careful not to create an environment where students are trying to guess what the teacher is thinking when the teacher is asking questions. This environment focuses students on pleasing the teacher rather than solving problems, and this is the antithesis of an inquiry-based environment (Dewey, 1910/1997). Furthermore, if there is tension between students in the classroom, this tension takes the focus of learning (Peck & Hughes, 1996).

Institutional conditions necessary for teacher inquiry.

The institutional conditions necessary for teacher inquiry are much the same as the conditions necessary for student inquiry. In a culture of inquiry, members of the school community have a shared vision. The goal of education focuses on the development of disciplined inquiry in teachers as well as students (Dewey, 1910/ 1997;

Dewey, 1915/2001; Meier, 1993). Inquiry brings the opportunity for teachers to be involved in decision making which in turn helps to create a shared vision (Tanner & Tanner, 1995).

In a culture of inquiry, there is shared respect among the adults in the school. Teachers work in a trusting, risk-free environment and experience collegial relationships. They respect the opinions of others, even if their opinion differs. Just as the teacher influences students in the classroom, the principal influences teachers in the school (Costa, 1985; Donaldson, 2006). In a culture of inquiry, teachers have the confidence and trust of their leader to make professional decisions. Collegial relationships exist between the teachers and their leader, as these relationships are crucial for building trust (Costa, 1985; Donaldson, 2006; Fullan, 2006; Morrison, 2002). The school principal is available and approachable to everyone in the building. There is positive dialogue, confirmation and caring from the principal, and teachers have ownership of their learning environment (Henderson, 1992; Tye, 2000). The principal does not have all of the answers in inquiry-based environments. Teachers feel safe to ask questions, and uncertainty is valued (Smyth, 2000; Snow-Gerono, 2005). A collaborative school environment, as opposed to a competitive one, is fundamental for teacher inquiry. Through the establishment of professional learning communities, teachers have freedom to work together to solve curriculum problems (DuFour & Eaker, 1998; Henderson, 1992; Snow-Gerono, 2005). Teams of teachers also collaborate to solve school-wide problems, and to develop curriculum. This collaborative inquiry environment has the potential to build capacity for improving practice (Fullan, 2006).

In a culture of inquiry, the institutional structure of the school provides time for individual and collaborative inquiry, and reflection (Hammer & Schifter, 2001; Henderson, 1992). The school organization has a leader who acts as a buffer between policy mandates and the classroom. When the school leader does not dictate the curriculum, this enables teachers to develop curriculum through inquiry (Adler & Borys 1996). For a culture of inquiry to be present in a school, the focus is on solving problems together. There is time during the teacher's day for reflection and collegial conversations (Breault, 2005; Joseph et al., 2002). For example, the model for teacher inquiry provided within the context of the IB program empowers teachers to collaborate. Teachers meet with teammates to develop and refine inquiry-based curriculum units (IBO, 2002). In addition, the adults in the building have an attitude or passion for inquiry (Henderson, 1992). In contrast, the policy constraints of NCLB hinder inquiry. School accountability is based upon students passing a high-stakes assessments. As suggested by Falk & Drayton (2004), if the focus on the school is on students passing the test, the culture will be one of disseminating facts that are tested.

To sustain a culture of inquiry, all members of the school community must commit to the continued practice of inquiry. The school leader does not accept a culture of complacency (Morrison, 2002). By committing to inquiry and by working in a school environment that encourages inquiry, teachers are more likely to promote an inquiry-based classroom culture (Sergiovanni, 1996; Supovitz et al., 2000).

Conclusion

A review of the literature shows inquiry-based curriculum has a positive influence on students. Using an inquiry-based curriculum with students creates deeper

understanding (DeWitt, 2003), as well as improved student engagement and on task behavior (Godbey et al., 2005; Haefner & Zembal-Saul, 2004). In addition, inquiry-based curriculum is beneficial for students who are at risk of failure (Change & Mao, 2001; Miller, 2003; Rapp, 2005). Dewey (1938/1997) believed education is a balance between the intellectual stimulation, personal experience and the freedom of the learner. The focus of the curriculum in schools should be inquiry, not the dissemination of facts.

Research shows teacher inquiry has a positive influence on students as well as the school. The use of inquiry with teachers brings a shared purpose (Barlow, 2005; Breault, 2005); helps teachers grow professionally (Henderson, 1992; Ulmer & Timothy, 2001); and improves teacher morale and the climate of the school (Barlow, 2005; Darling-Hammond & Friedlaender, 2008; DuFour & Eaker, 1998; Hord, 1997).

Furthermore, research shows certain cultural conditions must exist to promote inquiry (Dewey, 1938/1997; Jackson, et al., 1993). Psychologically, students need a safe and secure environment, and they need to feel free to take risks. They develop mental attitudes and habits of inquiry. Socially, students develop trust and experience positive relationships. Structural conditions include a curriculum developed around the interests of the students and a schedule that promotes time for inquiry (Dewey 1910/1997; Jackson, et al., 1993; Fullan, 2006).

In conclusion, according to Fishman and McCarthy (2007), Dewey's theory of inquiry brings hope. Challenges brought to us through life's experiences provide us opportunities for growth. It is through growth of professional experiences that educators improve education (Fishman & McCarthy, 2007). By learning more about inquiry-based curriculum, teacher inquiry, and the conditions needed to develop a culture of inquiry,

educators are able to make decisions concerning curriculum in schools. It is my hope that this study will offer not only the “merit” of inquiry-based curriculum, but also its “worth” to the world of education (Lincoln & Guba, 1979).

CHAPTER 3

METHODOLOGY

Introduction

The goal of my study was to increase my understanding of inquiry-based curriculum, teacher inquiry and the conditions needed to support inquiry in an elementary school. In addition, my study adds to the body of research in the areas of inquiry within the IB Primary Years Program (PYP) curriculum. For my study, I used qualitative inquiry with a normative framework based on Dewey's (1938/1991) theory of inquiry.

Qualitative Research

I conducted qualitative inquiry to understand how individuals construct meaning and understanding from experiences and interactions in their school (Denzin & Lincoln, 2005; Merriam, 2002). Qualitative inquiry allowed me to gain an in-depth understanding of the meaning teachers construct from their experiences of planning and participating in inquiry (Merriam, 2002). Not only did I focus on how students and teachers inquire, I also included teachers' interpretations of the conditions necessary for inquiry. As a qualitative researcher, I participated in the research in two ways. I gathered data through observations, interviews and a review of documents; and I analyzed and interpreted data (Merriam, 2002; Miles & Huberman, 1994). My interpretation of data was ongoing

throughout the research process. I used words, as opposed to numbers in quantitative research, to describe the meaning I constructed from the data (Miles & Huberman, 1994). To provide trustworthiness for my study, I kept an audit trail, including interview transcripts, voice files, documents and observation notes (Lincoln & Guba, 1982).

Qualitative researchers often use theory as a framework for analysis (Miles & Huberman, 1994). Likewise, I used Dewey's theory of inquiry to develop normative frameworks for the collection and analysis of data. This process provided a guide for my study (Merriam, 2002).

Using Theoretical Inquiry in Qualitative Research

Why use theory to inform qualitative inquiry? Theoretical inquiry and qualitative inquiry work together in several ways. First, by using a normative framework based on theory I provided purpose, boundaries and structure for my study. Secondly, it guided me in the formation of questions and the process of collecting data. Lastly, the use of a normative framework provided structure for my interpretation of the data (Miles & Huberman, 1994; Thomas & James, 2006).

Qualitative research is difficult (Thomas & James, 2006). Using a normative framework based on theory did not necessarily make it easier, but it provided structure and coherence to my qualitative inquiry. Qualitative researchers do not have specified methods or detailed hypothesis to guide inquiry, so I used a framework in order to have boundaries (Willis, 2007). In my case of studying curriculum in a school, I used Dewey's (1938/1991) theory of inquiry to help me focus on student inquiry, teacher inquiry, and the conditions needed for inquiry. In contrast, if I were to use critical race theory, my

study would have focused on issues such as gender or ethnicity (Ladson-Billings, 1998). Using a normative framework guided me in the formation of questions and the collection of data. It helped me narrow my study to one particular area, which in my case was inquiry (Ma & Norwich, 2007).

Further, the use of a normative framework based on theory provided structure for my analysis and interpretation of data. As a qualitative inquirer, I interpreted human actions. The framework supplied a lens to view significant amounts of data generated by my research. It gave me a lens through which I interpreted the data. By using theory, it gives credibility to my interpretations and explanations of the data (Lincoln & Guba, 1988; Miles & Huberman, 1994; Thomas & James, 2006).

From the development of a normative framework, I focused on specific themes. Curriculum as a construct is broad. By using frameworks based on Dewey's (1938/1991) theory of inquiry, I focused on three key curricular elements: opportunities for student to engage in inquiry; teacher inquiry and its role in curriculum development; and the overall conditions for a culture of inquiry in schools.

Normative Framework

Through the use of Dewey's (1938/1991) theory of inquiry, I developed two frameworks to guide my study. Developing normative frameworks prior to collecting data guided me in the selection of themes most important to my study (Miles & Huberman, 1994). The first framework, entitled *Framework for Inquiry*, provided structure for my study of student inquiry and teacher inquiry. The second framework,

entitled *Conditions for Inquiry*, provided structure for my study of classroom and institutional conditions that promoted or hindered inquiry.

I situate both frameworks in the literature I presented in chapter two of this dissertation. The *Framework for Inquiry* addressed the components of inquiry-based curriculum used with students as well as teacher inquiry. To reiterate the literature, Dewey (1910/1997; 1915/2001; 1938/1991) believed inquiry involved students and teachers solving problems related to their world. Students and teachers research and test hypotheses to obtain warranted assertions. These steps are experiential and socially constructed. In addition, inquiry has a moral purpose beyond the classroom. Elements of Deweyan inquiry are observable in the literature. For example, researchers believe inquiry involves solving authentic problems (Chang & Mao, 2001; DeWitt, 2003; Wilson & Murdock, 2004). When the problems relate to the students' lives, inquiry is meaningful. In addition, reasoning and reflection are essential elements of inquiry (Henderson, 1992; Hudgins & Edelman, 1998; Schon, 1983). Further, inquiry is both experiential and social. Students have to experience inquiry in an active manner; it is not something a student can just read about in a textbook (Aubrecht, 2005; DeWitt, 2003; Joseph et al., 2002; Smyth, 2000; Tyler, 1950; Vygotsky, 1978). Finally, inquiry has a moral purpose beyond the walls of the classroom. Students apply what they learn to their lives for the improvement of society (Dewey, 1916/1985; DeWitt, 2003; Wehlage et al., 1996).

The following normative framework guided my study concerning inquiry-based curriculum and teacher inquiry. An example of the *Framework for Inquiry* is in the appendix.

Framework for inquiry.

Inquiry includes: (a) solving an authentic problem, (b) meaningful experiences, (c) social connection, and (d) moral purpose. I used the following definitions within my line of inquiry.

1. *Authentic problem*: the inquiry relates to something the students know and understand.
2. *Meaningful experiences*: students are actively involved in inquiry by doing research or testing hypotheses.
3. *Social connection*: students are working in pairs or small groups; students are engaged in conversations about inquiry.
4. *Moral purpose:* students know and understand the purpose for the inquiry and how they can use what they've learned to become active citizens of a democratic society.

Conditions for Inquiry

My second framework, *Conditions for Inquiry*, guided my study concerning conditions that influence inquiry. Literature detailed in chapter two of this dissertation support the components of this framework. As a review, a culture of inquiry has a safe, secure environment cultivated through respect, trust and positive relationships (Donaldson, 2006; Fullan, 2006; Morrison, 2002; Peck & Hughes, 1996; Tyler, 1950). Secondly, a culture of inquiry involves social interactions and collaboration with others (Dewey, 1910/1997; Dewey, 1915/2001; DeWitt, 2003; Kinchin, 2004). Lastly, a culture of inquiry provides time and freedom for students and teachers to inquire and reflect

(Breault, 2005; Hammer & Schifter, 2001; Henderson, 1992; Joseph et al., 2002). Based on this research, I developed the following framework concerning conditions for inquiry. The definitions of the themes of the framework are self-explanatory.

Conditions for inquiry include the following: (a) a safe, secure environment involving respect, trust and positive relationships; (b) interaction and collaboration with others; and (c) time and freedom for inquiry and reflection.

According to Miles & Huberman (1994), the preferred method of coding is creating a "start list" using a conceptual framework before the data collection process begins. For my study, my framework provided the start list from which I placed data. An example of the *Conditions for Inquiry* framework is included in the appendix. I did not use these codes to restrict my view of the data. After reviewing the data numerous times using my frameworks, I suspended the use of the frameworks and reviewed data again to code common phrases allowing additional themes to emerge.

Design Elements of Study

Research questions.

Since the purpose of my study was to develop an in-depth understanding of inquiry and conditions necessary for inquiry, three questions guided my study:

1. What inquiry exists for students in the classroom?
2. What inquiry exists among the teachers?
3. What conditions influence inquiry in the classroom and in the school?

By using these questions, I reached an understanding of inquiry-based curriculum, the use of teacher inquiry, and the conditions for inquiry that are present in this IB elementary school.

Selection of study site.

The International Baccalaureate Organization (IBO) requires the use of an inquiry-based curriculum. It is for this reason I chose to situate my study within the setting of an IB elementary school. I used the pseudonym Georgia Elementary School to protect the identity of the participants in this study.

Georgia Elementary School is located in a small city in Georgia. It is a unique IB elementary school due to the demographics of the student population (Kyberg, et al., 2007). It became an IB school after a three-year authorization process. The school's principal is in his first year as principal. The school has approximately 590 students, 92.5% of whom are from economically disadvantaged families. Demographic details of the student population are in Table 1.

Table 1

Georgia Elementary School Demographics

Total Students	White	Hispanic	Black	Asian	Other
590	3.20%	70%	23.40%	0.90%	0.20%

Note: information retrieved from www.schoolmatters.com on July 20, 2009.

With a population of 3.2% white students, the majority of the students are from diverse backgrounds. I selected this particular IB elementary school for my research because the demographics are uncharacteristic of elementary schools with the International Baccalaureate Primary Years Program. Compared to other public IB

elementary schools in Georgia, Georgia Elementary School has a small percentage of white students in their total population. Another unique factor is the high percentage of economically disadvantaged students the school serves. Only one other IB elementary school in Georgia serves a higher percentage of economically disadvantaged students than Georgia Elementary School (Information retrieved from http://schoolmatters.com on August 31, 2008). According to Kyberg, et al. (2007), there is a need for research on the use of the IB program in high poverty urban areas. The uniqueness of this school provides a glimpse into the use of inquiry in a high poverty school.

Selection of Participants.

Participants in my study include teachers and their classrooms. Rubin & Rubin (2005) suggest participants should be experienced and knowledgeable in the focus of the study. Since Georgia Elementary School recently received authorization as an IB school, I solicited teachers who experienced the IB authorization process. By way of purposeful sampling, I asked all teachers with at least two completed years of experience in teaching at Georgia Elementary School to participate in my study with the hopes of having at least four volunteers from four different grade levels (Merriam, 2002). Four classroom teachers from four different grade levels and one support teacher volunteered. The support teacher co-taught with one of the teachers, therefore my study only involved four groups of students. Since there were five volunteers, I chose all of the participants for my study because of their willingness to participate in an open way (Rubin & Rubin, 2005). Students were involved in the study only through my observations in classrooms.

Collection of Data

Typical of qualitative inquiry, I collected data from several different sources (Merriam, 1998; VanWynsberghe & Khan, 2007). Data collection included classroom observations, teacher interviews, and a review of internal and external documents. Internal documents included teacher lesson plans of inquiry-based units. External documents were those generated by the International Baccalaureate Organization for the purpose guiding teachers to an understanding of the IB curriculum requirements. I provide details of my data collection process in the next three sections.

Classroom observations.

Van Manen (2003) states, “The best way to enter a person’s life-world is to participate in it” (p. 69). To understand how students inquire, I observed in the classroom during a lesson involving a unit of inquiry. Students knew my purpose for observing; however, I did not participate in the lessons or classroom discussions. DeWalt and DeWalt (2002) describe this type of participant observation as moderate participation. I was a participant physically and emotionally as I took notes, yet I detached myself from participating in the actual lesson.

I conducted observations of four inquiry-based lessons, which lasted approximately one hour each. Although I used data collectively to answer all of the research questions, classroom observations were particularly important in answering the research questions (a) what inquiry exists for students in the classroom and (b) what conditions influence a culture of inquiry in the classroom?

My normative framework guided my data collection during the observations. With my framework in mind, I took notes of what the teacher was doing and what the

students were doing during my observation. For example, I was mindful of examples of students working together to solve authentic problems and I looked for the moral purpose of the lesson. Since interactions and relationships are a key component to a culture of inquiry, I recorded interactions between students and between students and the teacher (Dewey, 1910/1997; Dewey, 1915/2001; DeWitt, 2003; Kinchin, 2004). I also recorded a description of the tasks students completed as well as the teacher's method of delivery. In addition, I made notes concerning classroom structures, such as seating, posters, student work or other items displayed in the room.

Interview process.

I conducted teacher interviews as a second source of data for my study. Interviewing allowed the teachers to have a reflective voice concerning the topic of inquiry. I conducted individual interviews with the three of the teacher participants, which lasted from 25 minutes to 57 minutes. I interviewed the two teachers who co-taught together. The purpose of my interviews was to gain information about (a) how teachers defined and planned inquiry experiences for students, (b) how teachers inquired, and (c) what conditions of inquiry existed in the school. The interviews were semi-structured, focused on the topics of student and teacher inquiry. For a copy of guiding questions used in the interviews see the Appendix.

During interviews, teachers used their own perceptions when describing events and situations concerning inquiry. Although I used an interview guide, I also used probes to gain a deeper understanding of inquiry-based curriculum and teacher inquiry (Rubin & Rubin, 2005). For example, I asked teachers to provide examples of inquiry-based curriculum they are using with their students. I also asked them how they inquire. It was

difficult to ask questions directly related to the culture of inquiry because culture is multifaceted (Jackson et al., 1993; Rubin & Rubin, 2005). Culture involves feelings, and it is difficult to research feelings (Garrison, 1997). Instead, I asked for examples of teacher inquiry and I gave attention to the stories that conveyed cultural assumptions.

To ensure accuracy, interviews were tape recorded and transcribed verbatim. I kept all documentation of the interviews private. Merriam (2002) suggested the use of "member checks" to strengthen validity of the study; therefore, I mailed a copy of the transcript of the interview to each participant for validation. I received four out of the five transcripts back. I revised the transcripts according to feedback from the teacher participants, however all revisions were typographical errors and did not change the meaning of what was said.

Document review.

As a third source of data for my study, I analyzed three types of documents: two units of inquiry lesson plan documents for the lessons I observed in kindergarten and third grade; the resource used for the fourth grade lesson; a graphic organizer from the second grade lesson; and documents published by the IBO related to curriculum and the planning of units of inquiry. These documents represented elements of the IB curriculum and its implementation (Prior, 2003). Because groups of teachers in an IB school design unit plans, I was able to use their work to gain information of how students inquire. Using my *Framework for Inquiry*, I analyzed the unit plans and the IBO documents for evidence of students solving authentic problems through experience. I also looked for evidence that inquiry has a purpose beyond the classroom. An analysis provided insight into the inquiry-based curriculum for that unit.

My review of the documents written by the IBO focused on information concerning the PYP curriculum requirements for the units of inquiry as well as teacher inquiry. I searched for evidence of collaborative problem solving and purposeful inquiry. It is important to note that the IBO specifically designed PYP documents as a resource for schools who have adopted their program. Through examination of the IBO documents, I was able to determine how students and teachers inquire.

Data Analysis

I used the themes of my normative frameworks when I analyzed data. I code data from interviews, observations and documents to support the themes listed in my frameworks. As suggested by Miles & Huberman (1994), data analysis was ongoing throughout the research process. I coded information by assigning labels to represent meaning of the text. I used the following constructs as themes for data concerning student and teacher inquiry: student/teacher is involved solving an authentic problem, student/teacher is actively involved in meaningful experience, social connections, and moral purpose. For a culture of inquiry, I used the following constructs as thematic codes: environment is safe and secure; respect, trust and positive relationships exist; interaction and collaboration exist; there is time and freedom for inquiry and reflection. I also reviewed data by suspending the use of my normative framework, coding additional words and phrases that appeared in numerous places. This allowed for the emergence of additional themes. I discuss these in detail in Chapter 4.

Reliability

While my qualitative inquiry in one elementary school does not allow the transfer of results, Merriam (2002) states, “An audit trail in a qualitative study detailing how the data was collected, how categories were derived and how decisions were made throughout the inquiry” is a way of support the reliability of qualitative inquiry (p. 27). For this reason, I kept a journal to describe my data collection process (Lincoln & Guba, 1982). I kept interviews I transcribed, my detailed observation notes, the unit plan documents and the IB documents from my study in a file in a secured area of my home office. This provides a “chain of evidence” that I followed protocol throughout the research process (Yin, 2003, p. 36).

One unique quality of qualitative research is the rich data I collected. As I analyzed data, I wrote rich, thick descriptions through the lens of my normative framework. This ensured external validity (Merriam, 2002; Yin, 2003). I provided a detailed description of my study of Georgia Elementary School so readers will be able to determine the extent to which their situation aligns with this study.

Limitations of My Study

There are several dangers entering the field of qualitative inquiry with a strong normative framework based on theory. First, it narrows the process of collecting data. Secondly, it encouraged me to look for data, rather than to look at data. Thirdly, because I am collecting data on human experiences, I am aware of how the restrictions my prior knowledge and assumptions of theory affected my research (Thomas & James, 2006).

Entering the field of research with a strong theoretical prospective narrowed my data collection process. For example, when observing in classrooms I looked for the themes of inquiry based on my normative frameworks. However, I went into the research field with an understanding the other constructs existed. I kept an open mind when taking notes and recording my experiences.

Using a framework to analyze and interpret data encouraged me to look for data to support my normative frameworks. There is concern for what I might have missed or dismissed as I analyzed the data (St. Pierre & Roulston, 2006). The use of normative frameworks may have inhibited my ability to look at data in other ways. In my study, the frameworks developed from Dewey's (1938/1991) theory provide my definition of inquiry and suggested conditions that promote a culture of inquiry. However, I suspended the use of my frameworks to allow other themes to emerge. According to Thomas & James (2006), it was important for me to address other elements or conditions for inquiry that emerged from my data.

As a qualitative researcher, I will always be a participant in the process. My background as a school administrator helped and hindered the data collection process. As an administrator, I know how to take copious notes while observing in a classroom. This helped me gather rich information. I must mention that my experience as an administrator affected the way I collected and interpreted data. I have a critical eye in the classroom. It was hard for me to detach my administrative role while taking notes during the observation (Miles & Huberman, 1994; Thomas & James, 2006).

Conclusion

I conducted a qualitative study at an IB elementary school in Georgia to study the degree to which the IB curriculum engages students in inquiry, the degree to which teachers engage in inquiry while planning curriculum, and the conditions for inquiry in the classroom and school. My study site, Georgia Elementary School provides a unique picture into the use of inquiry-based curriculum in a high poverty elementary school authorized to use the IB Primary Years Program. I gathered data from four classroom observations, five teacher interviews, three lesson plan documents, and IBO publications. I analyzed my data by using normative frameworks based on Dewey's theory of inquiry.

CHAPTER 4

RESULTS

Introduction

The purpose of my study was to understand inquiry in an IB elementary school and to identify conditions for inquiry that exist in classrooms and within schools. According to researchers, students who inquire gain a deeper understanding (Godbey et al., 2005), and increase the level of engagement in learning (Aubrecht, 2005; Change & Mao, 2001). My study informs educational leaders who are searching for ways to meet the needs of their students while meeting the demands of the high stakes accountability of NCLB. It adds to the research literature for IB elementary schools and informs superintendents and elementary principals who are considering the implementation of the IB Primary Years Program. It meets the call for research on students from high poverty schools with IB programs (Kyburg et al., 2007). In addition, it informs educational leaders of the detailed components for developing a culture of student and teacher inquiry within their schools.

In this chapter, I present evidence of inquiry found at Georgia Elementary School. I begin by reviewing the normative frameworks used to provide structure for the analysis of data. Next, I provide a detailed description of the five research participants, the student demographics of their classes and a portrait of their classroom. Then, I use the three research questions that guided my inquiry to present the data found in all observations,

interviews and documents. Documents included teacher lesson plans, unit planners for kindergarten and third grade, and curriculum documents written by IBO.

It is important to note that some data fit in more than one theme in the frameworks. For example, I coded “students interacting with community members” as *social inquiry* as well as *moral purpose*. Even though double coding may cause repetition of information, it provides a deeper understanding of student and teacher inquiry and the conditions for inquiry in this IB elementary school.

Normative Framework

To provide structure for my study as well as a lens with which to analyze data, I used a normative framework. Using this framework provides credibility to my analysis and interpretations (Thomas & James, 2006). The composition of an inquiry-based curriculum as defined by Dewey (1902/2001; 1910/1997, 1915/2001) includes experiences which guide students to unsettled thoughts that lead to a problem, reflections and the testing of hypotheses. It also is experiential, social and has a moral purpose. I used a preferred method of data analysis by creating themes developed from Dewey’s (1938/1991) theory of inquiry for coding the data (Miles & Huberman, 1994). Examples of the frameworks are included in the appendix. The framework for student and teacher inquiry included the following themes: (a) solving an authentic problem, (b) meaningful experiences, (c) social connections, and (d) moral purpose.

For a detailed definition of each theme, please see chapter 3, page 54, of this dissertation. The framework for teacher inquiry had the same themes; however, I used the lens of the teacher as inquirer.

As a researcher, it is important not to prohibit the emergence of other themes; therefore, both frameworks included a column labeled as “other” in which to categorize themes not listed in the framework. *Building background knowledge* and *transdisciplinary units* were the two additional themes that emerged for student inquiry. These additional themes add detailed information concerning student inquiry to prior themes that were in the framework. The IB PYP requires the development of transdisciplinary units that include building background knowledge. A detailed review of IB curriculum materials is included in this chapter.

Dewey (1910/1997) suggested certain psychological, social and structural conditions must be present to develop a culture of inquiry. To examine the conditions that exist in Georgia Elementary School, I used the following themes to examine the conditions in classroom as well as the institutional conditions for teacher inquiry within the school: (a) safe / secure environment, (b) interaction and collaboration with others, and (c) time and freedom to inquire and reflect.

Just as I did with the framework for inquiry, I added a column labeled “other” to provide the emergence of additional themes. It is difficult to separate the social, emotional and educational experiences within a classroom and school, therefore some of the data qualified for two or more themes. For example, I placed “students worked with partners to generate questions” under *social connection* and *meaningful experiences.* Themes, not listed in my framework emerged from the data, which is typical in qualitative data analysis (Miles & Huberman, 1994). Data supported the addition of *materials* and *celebrations of learning* as themes to the conditions for student inquiry.

Additional themes for the conditions for teacher inquiry included *professional learning* and *shared vision, commitment, and passion for inquiry*.

Data support these emerging themes for teacher conditions with the majority of qualifiers supporting professional learning. This is consistent with research that suggests teacher inquiry facilitates professional growth (Henderson, 1992; Ulmer & Timothy, 2001). Further, *shared vision, commitment and passion for inquiry* support the literature that shows inquiry brings about a shared purpose (Barlow, 2005; Breault, 2005).

Hindrances to inquiry also emerged as a theme. I present the data as a separate section. This theme supports research that indicates there are a number of challenges for implementing student and teacher inquiry (Hammer & Shifter, 2001; Jaworski, 2006). Before presenting a comprehensive examination of the research results, it is important to gain an understanding of the teachers who participated in my study.

Participants

I solicited teachers with at least two years of experience in the IB elementary school. I wanted teachers who had experienced teaching in an IB Primary Years Program because I wanted to study inquiry within the IB curriculum. Participants needed an understanding of inquiry-based instruction and teacher inquiry. I included the participant's definition of inquiry-based curriculum in my descriptions below, which gives insight into each participant's understanding of inquiry.

A total of five teachers, four female and one male, volunteered as participants. Two of the teachers worked together as co-teachers for the research project, therefore only four classes of students were involved. I use pseudonyms for the participants to

protect their identity. Collectively, they had 88 years of teaching experience and served 75 students representing four ethnicities. See Table 2 for teacher participants and Table 3 for student demographic information.

Table 2

Demographic Information of Participants

	Grade Taught	Years of Experience	Years at GA Elementary
Patsy	Kindergarten	25	7
Peter	Fourth Grade	7	7
Cheryl	Third Grade	26	4
Lynda	Second Grade	8	4
Michelle	Support Teacher	22	20

Table 3

Classroom Demographics

	No. of Students	Boys	Girls	Hispanic	Black	Asian	White
Patsy	19	8	11	8	7	2	2
Peter	17	10	7	10	6	0	1
Cheryl	18	8	10	14	3	0	1
Lynda/ Michelle	21	11	10	6	10	5	0

Conducting four observations, four interviews and gathering lesson plan documents provided data in the areas of student and teacher inquiry. I received an array

of documents ranging from detailed unit planners to a graphic organizer used by students for a lesson. I received two unit planners: one for the kindergarten unit and one for the third grade unit. I also received lesson plan materials from the fourth grade teacher. Teachers devote one hour per day to teaching the inquiry-based unit and each unit lasts six weeks. I include the details of these documents in my portraits of the participants and their classrooms.

Patsy.

Patsy is a kindergarten teacher with twenty-five years of teaching experience, seven of those years at Georgia Elementary School. When I entered her classroom, Patsy greeted me while the students moved toward the carpeted area of the room to sit down for the lesson. Looking around the room, I noticed a hand written chart containing student questions about transportation, and a transportation poster on the wall. During the interview, Patsy explained, “At the beginning of the unit the students created these questions about transportation.” Examples of the students’ questions included “How does a helicopter go up and down?” and “How does a space shuttle go up in the air?”

I observed a lesson taught by Patsy from the kindergarten unit of inquiry entitled *Fast, Slow, Zigzag, Go!* The focus of the unit is on transportation. The lesson began with Patsy asking the students questions about how people get around the city. As students shared their ideas, Patsy asked, “How does the object move?” They continued to discuss different modes of transportation. After the discussion, Patsy divided students into two groups. The first group worked in pairs to research various forms of transportation. Students used books to locate transportation objects, then recorded the names of the objects on cards and described how they moved. The second group of students created

objects that moved out of clay, craft sticks, toothpicks, and foam circles. Students made objects such as helicopters, trains, and trucks. One student created an imaginary object and Patsy reminded all of the students, “You can make your own invention, but you have to tell us how it moves.” During the interview Patsy stated, “Students are allowed to think outside the realm of a discussion and be creative. We’ve been stuck in this mode of vehicles for awhile…so I was pleased when someone created a [snake] today.”

After a 30-minute period, the two groups of students switched to complete the other project. At the end of the lesson time, Patsy pulled the students back together on the rug. Some of the students shared their research and some shared the objects they made out of clay. Patsy concluded the lesson by having students answer two of the questions generated by students in a previous lesson, “How does a helicopter go up and down”? And “What is the difference between how a rocket and an airplane move?” She extended the questioning by adding, “Why do you think there’s so much fire?” Patsy announced the plan for tomorrow’s lesson. They would finish sharing what they learned and sort their clay objects into groups according to how they move.

The lesson plan document Patsy provided outlined the day’s lesson. She listed the unit title, teacher questions, student questions to address, materials, and possible activities. Materials included books, mostly non-fiction, note cards, pencils, clay, toothpicks, foam circles and craft sticks. The list of possible activities contained the two student activities I observed. Other activities included the suggestion of beginning a motion box of things found in the classroom and having the students sort the items into various groups identified by the students.

During the interview, I asked Patsy for her definition of inquiry and she replied, "There has to be constant questions, open-ended or closed questions, but it is neat when you have those open-ended ones that might remain there forever." She indicated it is more about the process of learning where to find answers than just finding answers.

Peter.

Peter is a fourth grade teacher with seven years of teaching experience, all at Georgia Elementary School. He described himself as an inquiry-based teacher before having the IB training, citing his college field experiences. During the interview Peter defined inquiry-based instruction as,

> Letting the kids ask questions about things they are curious about, but guiding them to the right questions. Kids having ownership in what they are learning. Therefore, inquiry learning ends up being where the teacher knows what they need to learn, and maybe at the beginning of the unit we front load a little bit by asking questions.

Peter's fourth grade students were learning about the First Amendment of the Constitution. The lesson I observed involved Peter's use of the curriculum resource *We the People*, published by the Center for Civic Education (2003). Lesson 17 entitled, "When are other rights and interests more important than freedom of expression?" (p. 139). The purpose of the lesson, as described by the resource book, was for students to explain the meaning of freedom of expression and describe real life situations when it is fair to restrict that freedom. Peter shared his excitement to have this curriculum resource book. He received copies for his class by attending a workshop sponsored by the Center for Civic Education (2003). He stated, "…it is an inquiry-based book, where our old history books are old history books and this book is fantastic because the whole book is inquiry-based."

Peter began his lesson with a review of the First Amendment by using a PowerPoint presentation that reviewed the four parts of the amendment. He also pointed out student made posters from previous lessons that were hanging in the front of the room. The posters listed examples of freedom of speech, freedom of the press, freedom to assemble, and freedom of petition. He showed the students an example of a letter from the opinion section of the local newspaper to illustrate how people express their opinions publically through our freedom of speech. Next, he asked his students to get with three other students to form a group. The student groups were to choose one of the seven scenarios from Lesson 17 and discuss their answers to the following questions: (a) What rights and interests might be endangered in this situation? (b) Should this kind of expression be limited? Why? and (c) What rule can you make to limit this kind of expression? While the groups discussed their answers to the questions, Peter circulated. When one group had a question about the definition of the word *perjury*, Peter asked all groups to stop and listen. Students brainstormed what they thought the word meant, and then Peter asked a student to read the definition from a dictionary. After discussing the meaning of the word, and providing an example, Peter told the groups they could resume their discussions. After the groups of students had time to discuss the scenario and answer the questions, Peter guided a whole group discussion, which required students to reflect on their answers.

Cheryl.

My third participant was Cheryl, a third grade teacher with twenty-six years of teaching experience. She joined the staff at Georgia Elementary School when they started the process of becoming an IB school. She stated during her interview that she was “not

in on the decision to become an IB school"; however, she feels the IB training has improved her teaching. She defines inquiry-based instruction as "It is more thought provoking and more geared toward what the child's thinking, once you've front-loaded the information that you want them to hear. They can kind expand it, but it is still teacher directed."

The student desks in Cheryl's classroom were in two rows, facing each other. A carpeted area was in the middle of the room. One bulletin board hanging in the room contained the IB Student Profiles. Another one listed the classroom rules. A chart hanging in the front of the room contained key questions for the current unit of inquiry. Questions included "Why do people write stories?," "What are the different genres?," and "What lessons do stories teach us?" The lesson I observed was from the third grade unit entitled "How We Express Ourselves," created by the third grade teachers at Georgia Elementary School. The unit focused on different genres of writing. It is an inquiry into the ways that students can express their ideas, feelings, beliefs and values. According to the unit planner, the central idea is to show students how literature teaches and entertains us and how it can influence our beliefs and values.

Cheryl's lesson began by having students sit in rows on the carpet. She announced, "It's a boy's day today, so boys in front, girls in back." She began stating how literature teaches and entertains us. They discussed the meaning of the word "entertain". Then she reminded the students of the previous lesson's focus on the elements of fairy tales. Then she read *Hansel and Gretel* aloud. While reading, she asked questions such as "What is the problem?" and "What is the mom's solution?" Cheryl drew names of the students to answer the questions, ensuring that every child had a turn.

Students gave short responses to the questions asked. Cheryl showed a picture of the villain and asked, “How does her face look?” One student replied “Ugly.” Cheryl stated, “So because you are pretty you are good or if you are ugly you are bad?” The class discussed the fact that you cannot base character judgments by how people look.

Cheryl asked students to transition to their desks and remove the fairy tales they had previously written. Three students shared their stories orally, identifying the problem and the solution. When one student shared, she struggled with pronouncing the words; however the class clapped for her when she finished. When another student shared, it was obvious he had paraphrased a well-known fairy tale instead of creating a new one. Cheryl told the student he did a great job retelling a fairy tale instead of telling him he misunderstood the assignment. In her interview she stated that she wants students in her class to have “a feeling of acceptance, that, you know, whatever you say is going to be okay – I remember the first little guy today who rewrote the story, you know you take it and try to make it okay.” The lesson ended as the afternoon announcements began.

Lynda / Michelle.

My fourth and fifth participants worked together in co-teaching roles for my study. Michelle, the fifth participant, taught the lesson with supportive instruction from Lynda. I conducted their interviews together at the end of the lesson observation. Lynda teaches second grade and has eight years of teaching experience. She has taught at Georgia Elementary School for four years. Michelle has twenty-two years of experience, twenty at Georgia Elementary School. She serves in a support teacher role, co-teaching with teachers from all grade levels within the school.

The lesson I observed was from a science unit of inquiry entitled “Circle of Life” written by the second grade teacher team. The central idea was for students to understand plants and animals live in a natural state of constant growth and change. Michelle began the lesson by asking students to help her solve a problem. She needed to know about an ocelot. She led the students to generate questions she would need to answer when learning about an ocelot. As students called out questions, she wrote them on a white board in front of the room. She helped to guide their questioning by asking questions. Examples include “I wonder what it eats?” and “I wonder where it lives?” Both Lynda and Michelle agree that questioning is a vital part of student inquiry. During the interview, Lynda defined inquiry-based instruction as “Letting the kids initiate the learning and questions and getting them enthused about what they are learning so they own it; and not we dictate to them.” Michelle stated “Students are more interested in questions about their own topics, they are really looking and wanting to find out things, and they also connect it to their own experience and own lives which makes it personal for them.”

After generating questions, Michelle led a discussion of where to look for information. She shared a graphic organizer that contained space for students to write questions about an animal they would like to research. She told students they were going to create a presentation to teach a younger student about an animal. Then she helped the students get into pairs and asked them to choose a book from the table on an animal of their choice. Both Michelle and Lynda circulated around the room to help students as they worked together to generate questions and research information about their animal. Michelle reminded students to “Be sure and write questions that will give you answers

that you think younger students would be interested in knowing." The lesson ended as time ran out. Michelle reminded the students to list the title of the book they were using so they could use it again tomorrow when the research time continued.

Conclusion.

The descriptions above provide a unique image of each participant and classroom in my study. The classrooms ranged in grade levels from kindergarten to fourth grade. The participants have a variety of background experiences. The lessons I observed were from transdisciplinary units involving social studies, science and language arts. As I collected data from observations, interviews and lesson plans, I had three questions that guided my study into the visibility of Deweyan inquiry in an IB elementary school. The questions were:

1 What inquiry exists for students in the classroom?

2 What inquiry exists among the teachers?

3 What conditions influence inquiry in the classroom and in the school?

These questions guide my presentation of the results of my study in the context of my normative frameworks based on Deweyan inquiry.

What Inquiry Exists for Students in the Classroom?

According to Dewey (1910/1997; 1938/1991), students inquire through collaborative engagement and reflection on possible solutions to authentic problems. Through their experiences, they learn where to locate information and how to take what they are learning and apply it to their world (Dewey, 1916/1985; DeWitt, 2003).

Authentic problem.

The first theme involves students solving authentic problems. Two qualifiers define an authentic problem: the problem related to something the students know and understand, and the problem was identifiable by students or found in the school community. It is important to note, the assessment of an authentic problem is not in a literal sense of the term. The teachers often contrive the problems found in this study, however in most cases, students were able to understand the problem presented.

Data show students solving some type of problem in three of the four classrooms, however the problems are not the students' problems. Kindergarten students in Patsy's classroom were inquiring about the way things move. Open-ended questions such as "How do we get around the city?" and "How do we make things move?" began the discussion. The unit planner for kindergarten supported students solving problems with guiding questions such as "Why do some things stay in the sky while other things come back down to earth?" and having students experiment with Frisbees and kites. In Peter's fourth grade class, students were answering the question, "When are others' rights and interests more important than freedom of expression?" Students chose one of several social dilemmas and came to a group consensus at how best to handle the situation. Furthermore, in the co-teaching lesson by Lynda and Michelle, Michelle began by asking the students to help her solve her problem. She had to give a talk about an ocelot, but said she had no idea what it was. Through a discussion, students generated questions to research and decided on the best place to find the information. Then, she told the students they had a job to do. They were going to teach younger students information about animals they had to research.

In contrast, there was little evidence of students solving problems in Cheryl's third grade class. She asked students to identify the problem and solution in the story of Hansel and Gretel. Students had difficulty understanding why someone would fatten children to place them in an oven. For example, a few students gasped when Cheryl asked, "When is she going to eat Hansel?"

Meaningful experiences.

Inquiry involves learning through experiences (Chang & Mao, 2001; Dewey, 1938/1997; Haefner & Zembal-Saul, 2004). The qualifiers for meaningful experiences were students actively engaged in discussion on the topic of study, students generating questions, and students engaged in research. Evidence of some level of inquiry exists in three of the four classrooms. Students in Patsy's kindergarten class completed two experiential activities. One involved students choosing an object then generating questions about how that object moved. Students read books to find answers to their questions. The other activity involved students creating an object out of clay and explaining how it moved. The students were actively engaged in both activities. In Peters' class, students were actively engaged in the whole group discussion concerning the First Amendment as well as their small group discussion on solving a social dilemma. In Lynda/Michelle's class, students were actively engaged in generating questions for research in the whole group discussion. The student activity required students to generate their own questions on the plant or animal of their choice and research their answers. Michelle stated, "When [students] are on a hunt, it's so much more fun." Two students showed excitement as one called out, "Mrs. [Lynda], I found where it lives! In the rainforest!" and another student ran over the Michelle to tell her where raccoons live.

In contrast, there is a lack of evidence to support meaningful inquiry-based experiences in Cheryl's third grade class. Although the unit planner included experiential learning by having students sort a collection of books into different genres and research personal histories, the lesson observed did not provide opportunities for students to ask questions or research information. The observed lesson was teacher directed and the teacher generated the questions. Students were actively engaged in the whole group discussion of the book as the teacher was reading it; however, students were not actively inquiring.

Social connection.

Dewey's (1915/2001) theory is social and communicative; he believed students learn through interactions with people and the environment. The qualifiers for this theme were various student interactions (whole group interaction and/or small group interaction and students working in pairs) and a high level of communication (talking). Data show indications of social inquiry in three of the four participant's classrooms. Patsy's students interacted in a whole group setting and in small groups. Students talked throughout the lesson. Students asked questions, answered questions, and discussed information they found in books with other students. Students working with clay verbally described the object they made. Likewise, students in Peters' class were constantly interacting with the teacher and other students. During the whole group part of the lesson, students answered questions, asked questions and discussed information with partners. The small group activity was interactive as students discussed how to solve the social dilemma. In addition, the students in Lynda/Michelle's class inquired through social interaction. Lots of discussion, interaction and questioning took place in the whole group as students

brainstormed important questions about ocelots. Student interaction also occurred during the research activity as students worked with their partners to generate questions and search for answers about an animal.

Although there was interaction during the whole group discussion in Cheryl's lesson, students did not interact with each other. The only social experience I observed was students answering questions generated by Cheryl. I did not observe students working in pairs or groups. During the interview, Cheryl stated, "I allow much more talking, more groups, more listening to what kids have to say", however she also expressed "I'm pretty strict … I want them to listen to me ….I like it quiet when they are working."

Moral purpose.

A vital part of Dewey's theory (1916/1985), is his belief that education has a moral purpose which is to develop students into engaged social beings for the betterment of a democratic society. The topics students study should connect to their interests and the values of the community (Dewey, 1915/2001; Meier, 1993). The qualifier for moral purpose was "taking the learning beyond the classroom." This includes experiences that have a global focus; it helps students understand there is a purpose for learning outside the walls of the classroom and teaches students to value democratic society. Students are learning to work together; they are learning how things in the community affect them; and they are using what they learn to take action to improve society.

Patsy indicated students in her kindergarten class learn about things in their community such as how firefighters serve the city. Although this was not part of the observed lesson, during the interview, Patsy discussed IB's requirement that there be a

community aspect in all units designed. Teachers are teaching more than the curriculum; they are teaching community awareness and citizenship through the IB student profiles. The IB student profiles focus on students becoming inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced and reflective (IBO, 2007a, p. 4). Within this profile, there is a focus on teaching attitudes such as tolerance, respect, integrity, independence, cooperation, commitment and appreciation (IBO, 2007a, p. 8). Patsy stated, "The units include citizenship – attitude words such as appreciation, integrity, cooperation, respect, enthusiasm, and profile words such as principled, balanced and thinkers" She felt students in her classroom are more aware of what is going on outside of their classroom and how different community members work together to make their city safe. Students in Peters' class experienced discussions of what it means to be a citizen. They worked to come to an agreement on social dilemmas involving the First Amendment. During the interview, Peter indicated all units have a global perspective; ensuring students understand there is a world outside of their classroom. For example, Peter stated,

> Just because we have to, there are certain Georgia facts that are built into the unit, but the unit is written so it is just about – how does a country find freedom, and how does a country decide we need to rebel against our government to start a new government?

In addition, Peter spoke about the citizenship standards required by Georgia's Social Studies curriculum. He stated, "The units are written so that anyone in the world can do them, [for example] with the Constitution and citizenship, we talk about documents around the world, not just US documents." Another example surfaced from Lynda's interview. She said, "The students learn to work together, to cooperate … and then globally, we talk about how [things] effect us, you know, everything interacts with the

other, so I think they see that a lot with the inquiry lessons that we have here." Michelle indicated the importance for students to be able to relate to their environment and change their behavior, which in the case of the lesson I observed is teaching students to respect living things and provide for their needs.

Two additional themes emerged in data for student inquiry: building background knowledge and developing transdisciplinary units. Both are a requirement of the IB program. IB suggests teachers "front load" information to students after they have assessed the prior knowledge and skills (IBO, 2007a). In addition, the units of inquiry are transdisciplinary, incorporating various subject areas around the central idea of the unit.

Building background knowledge.

IBO (2002) states, "The PYP is based on the principle that children learn by using their previous experience to make sense of new information" (p.6). However, researchers believe it is important to build background knowledge for economically disadvantaged students since they often do not come to school with the knowledge they need to be successful in a high stakes culture (Marzano, 2004; Schiller & Muller, 2000). Likewise, teachers in my study indicated the need to build background knowledge for their students. However, according to Dewey (1902/2001), the child's experiences should be the starting point of the curriculum. The idea that we need to build background knowledge perpetuates the pedagogy of poverty described by Haberman (2005). I found evidence that teachers in this study helped their students build background knowledge. Patsy indicated if students do not know much about a topic, they would not be able to generate questions. However, Patsy believes, "Building background knowledge gets the students motivated and sparks their interest in the unit and lesson." In the previous lesson in

Peter's class, students read the background information about the constitutional protection of the freedom of expression. He stated, "…After we've front-loaded a bit, or we're telling some of the kids the things we have to learn, they start asking questions about it." In addition, Cheryl stated during her interview, that in a previous lesson her students did not comprehend the meaning of nursery rhymes because they had never heard them. Cheryl said, "We have to back up" to provide missing information for students before we start a unit. Michelle built background knowledge at the beginning of the lesson by reviewing the central idea of the unit – Plants and animals live in a natural state of constant growth and change. She also went through the process of asking questions and deciding where to look for answers, which built knowledge of the process of research.

Transdisciplinary units.

Another theme that emerged from data was transdisciplinary units. This is consistent with the IB requirement that units of inquiry connect more than one subject of study (IBO, 2008a). Dewey's (1902/2001) theory addressed the need to integrate subjects to show a natural connection between school and life. The transdisciplinary units at Georgia Elementary School integrated curriculum from various subjects throughout the units, however the purpose of the integration was not necessarily for students to solve problems. For example, Cheryl's students learned to connect fairy tale literature to the stories they were writing, however there was not a problem for students to solve. The unit planner for Patsy's kindergarten students included connections between science, social studies, art, music, PE, and technology. During the observed lesson, students studied transportation and communicated their learning through writing, speaking, and drawing.

They also used art to construct models of things that move out of clay. Through the integration of art, literature, writing, speaking and drawing, students were finding out how things moved. In addition, the unit planner suggested a connection to community resources. One suggestion for a lesson included a field trip to the police or fire station. The students in Peters' class made connections between their social studies unit, writing and math. Although it was not in the lesson I observe, during Peter's interview he indicated students had the experience of figuring out how many electoral votes colonies would receive based on their population, which incorporated math into the unit of inquiry. Another example he gave was having students write a persuasive paper, trying to convince someone their way to solve a social dilemma was best. In addition, in Lynda/Michelle's class, students were connecting science and literature; learning about plants and animals while preparing information for a presentation. They also connected their learning to being a good citizen – taking care of plants and animals in their environment. Although the units of inquiry are transdisciplinary, it is important to note that teachers have a separate time to teach math and language arts.

IBO Documents

A review of data showing how students inquire would not be complete without a review of Primary Year's Program documents purchased from IBO. I analyzed IBO documents entitled *Today's Students for Tomorrow's World*, the IB *Programme Standards and Practice*, the *PYP Coordinator's Handbook,* and *Developing a Transdisciplinary Programme of Inquiry* as they outlined the IB's program of inquiry for elementary schools. The first two documents I listed provide general information about

the IB Primary Years Program. They outline the philosophy and mission of the IB program. *The PYP Coordinator's Handbook* explains to PYP coordinators the process to lead teachers in the development of inquiry-based units. *Developing a Transdisciplinary Programme of Inquiry* explains the sections of the IB framework for unit planning. It contains specific examples of unit planners. Questions written on the unit planner provide a guide for teams of teachers as they develop a unit of inquiry. Examples include, What is our purpose? What are the possible ways of assessing student's understanding of the central idea? What evidence, including student-initiated actions, will we look for? What do we want to learn? What lines of inquiry will define the scope of the inquiry into the central idea? How best might we learn? (IBO, 2008a, p. 20-21). At the end of the unit, teachers meet to assess the unit. Questions that guide their reflection include, "To what extent did we achieve our purpose? What was the evidence that connections were made between the central idea and the transdisciplinary theme? And what student initiated inquiries arose from the learning?" (IBO, 2008a, p. 22-23). I examined the IB PYP policies and the examples of curriculum units outlined in the resource guides using the lens of my normative framework for student inquiry.

Authentic problem.

I found several examples of students solving authentic problems in IBO documents. Each unit has a transdisciplinary theme that falls under a heading related to the how students express themselves, how the world works, or how students share the planet (IBO, 2008a, p. 2). Students inquire and learn about globally significant issues in the context of the unit of inquiry. According to IBO (2008a), the unit begins with a central idea connected to students' prior knowledge. A line of questioning which

explored the central idea of the unit defined the scope of the inquiry and focused the students' research. IBO (2008a) warned that this is not a way to pre-package subject matter knowledge; instead it is method students use to develop a deeper understanding of a transdisciplinary theme. Although teachers develop the lines of inquiry, students generate questions during the unit (IBO, 2008a). The learner profile requires students "conduct inquiry and research, show independence in learning and actively enjoy learning…" and "give thoughtful consideration to their own learning and experience" (IBO, 2008a, p. i). Students are encouraged to inquire not only while studying a specific unit, but in subjects not included in the program of inquiry (IBO, 2007b).

Meaningful experiences.

The IBO documents require students to experience research on the central idea of each unit. For example, the central idea for a sample planner for second grade reveals students will understand how we organize ourselves and inquire into the "interconnectedness of human made systems and communities…" (IBO, 2008a, p. 27). One activity is to have students create a flowchart of the different organizational systems they use at school and at home. To be able to complete this task, students have to develop an understanding of organizational systems. The planner suggests students create questions to guide inquiry into different organizational systems, process their data and reflect as they develop their own flowcharts. They adjust their flowcharts and continue until they are satisfied that their chart reflects the organizational structure they have chosen to portray. Reflection at the end of the unit requires students to compare their organizational systems to the systems of children in other countries. This brings to light a world beyond the view of the classroom (IBO, 2008a).

IBO (2002) suggests another way for students to solve authentic problems is to learn about math by applying their understanding of numbers, patterns and measurements. Students may “learn to measure accurately by building a kite” or they may learn to “round numbers up or down by calculating how many buses are needed to bring all of the students to school” (p. 6). Using open-ended questions, teachers guide students to inquire into problems they understand.

Social connections.

Social aspects of inquiry were evident in the units suggested by IBO (2008a). Examples include having students communicate through play (p. 19), and inquire into human relationships including families, friends, communities and those from different cultures (p. 23). The planners also require students to work in groups to complete projects. Discussions are encouraged and students present projects orally. The units require active learning and self-management skills, such as staying involved in the learning process and avoiding distractions. For example, another sample planner suggests each student have “the opportunity to take on the role of a class conflict resolution manager” (IBO, 2008a, p. 35). His or her role is to assist in the managing and solving of various peer conflicts that may arise within the class.

Another indication of social experiences is in the student profile. IBO schools are required to embed student profiles in all of their units. According to IBO (2008a), the students become “inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced and reflective” (p. 4). These profiles promote social links by focusing on communication and collaboration. For example, as principled members of society students “act with integrity and honesty, with a strong sense of

fairness, justice and respect for the dignity of individuals, groups and communities" (IBO, 2008a, p. 4). Furthermore, the program requires students reflect on their own learning and experience.

Moral purpose.

IBO's (2008a) commitment to moral purpose is in the learner profile. It states, "The aim of all IB programs is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world" (p. i). The learning profile includes teaching students to have compassion, empathy and a personal commitment to the caring of others. It also includes having students respect the environment and become involved in the community (IBO, 2008a).

According to IBO (2007c), the IB curriculum framework helps teachers develop units that will persuade students to become conscious of individual, local, national and global matters. IBO's (2008a) sample units illustrated learning for a moral purpose. There is a focus on developing internationally minded students, who "recognize the importance of relationships by learning about other people's perspectives and communicating their own" (IBO, 2008a, p. 15). Additional evidence of moral purpose, found in the transdisciplinary themes, require student inquiry into the way we express our ideas, feeling, culture, beliefs and values while respecting the differences of others (IBO, 2008a, p. 2).

Conclusion.

IBO documents promote inquiry that is consistent with Dewey's (1938/1991) theory of inquiry. The IB curriculum framework uses guiding questions teachers answer

to help them develop transdisciplinary units of inquiry focused on a central idea. The units are designed for students to research and hypothesize answers to their questions about authentic problems. The IBO documents describe how students inquire through meaningful, social experiences while understanding a global perspective. The student profile reflects the commitment to teach students citizenship through an inquiry-based curriculum.

What Inquiry Exists Among the Teachers?

Are teachers involved in inquiry? Sergiovanni (1996) believed teachers are more likely to create a culture of inquiry for students if they are involved in inquiry. The participants' responses to interview questions most reflect the data gathered for this question; however, teacher inquiry is visible in documents as well. The only additional theme that emerged from the data for teacher inquiry was professional learning; however, I chose to place it with the conditions for inquiry.

Authentic problems.

To qualify as an authentic problem, the problem had to be identifiable as a problem solved by teachers. Teachers engaged in inquiry when they work together to write the unit planners. For teachers at Georgia Elementary School, the most immediately pressing authentic problem was to align their units of inquiry with the Georgia Performance Standards (GPS). For example, Peter described how his team worked together to develop units. They placed all of the Georgia Performance Standards (GPS) for science and social studies on the table and grouped them together to place under six categories. After providing details of the process he stated, "So, the short answer to that

question is backwards design." Peter added, "When developing the unit on the Revolutionary War, we had to write the unit of inquiry to include all the GPS [Georgia Performance Standards], then we had to take the Georgia out of it ….so you show the students how a Revolutionary War could take place in Australia." When Patsy described the process of developing units, she also started with the GPS. She said, "We would start with the key concepts of the whole [unit] based on our standards, then we based teachers questions on all of those." She added, "We formulated our questions that kind of go with, making sure that we were covering the standards in our unit as well." Secondly, all participants reported they are constantly improving the units, including making decisions on how to improve unit assessments. Patsy stated, "… the IB program itself … it keeps me thinking. It keeps me thinking in terms of … how I could do this differently." Peter and Cheryl described how their teams of teachers collaborate with the PYP coordinator at the end of every six weeks to refine the unit of inquiry they just taught. In addition, Lynda stated, "We meet ….and change [the units] depending on …how the kids have responded to the units, but every year we change and we fix them."

There is a small amount of evidence that teachers collectively solve problems as a staff. Patsy shared that during the first year of the IB authorization process the staff worked together to create what IB would look like at Georgia Elementary School. Lynda stated, "Our faculty meetings are ... just like our classroom – we are asked questions and we solve problems. We are given opportunities to provide input."

Meaningful experiences.

Are teachers engaged in planning, generating questions, and research? These are qualifiers for meaningful teacher inquiry. Data reflect teachers experience meaningful

inquiry on a personal level when they make curriculum decisions for their own students. For example, all participants report that the inquiry units change each time they teach them. They make notes of what went well when teaching the unit and what did not go well, and then they share them with their team and make decisions to refine the unit. Patsy and Peter reported that there is a list of possible activities in the unit planner and the teacher has the autonomy to choose which activity is best for their students. Michelle reported, "You never know where an inquiry lesson is going to go – you never know what is going to capture [the students'] interests" so a teacher can choose to allow the lesson to move toward the interest of the students.

Although not at a scholarly level, teachers at Georgia Elementary School are involved in research. When teachers have questions about curriculum, they turn to IBO and each other for resources. Michelle reported, "The IB philosophy has become infused with us – we start with questions...Questions have become the foundation of our information gathering." Peter reported he is constantly searching for new curriculum and classes he can take to learn more about inquiry-based curriculum. Cheryl reported discussing science topics with her team. She stated, "I've become well rounded on a lot of topics that I didn't necessarily know a lot about …I've had to push myself to learn more about science." Evidence support teachers are thinking about their questioning. Peter said, "The IB program teaches you to ask deeper and deeper questions." In essence, data showed evidence of teacher involvement in inquiry.

Social connections.

Numerous examples of social inquiry surfaced in the data. Patsy reported, "Teachers worked with their school teams to design how IB was going to look at their

school." All participants reported that they work with teammates to create and improve units of study. Cheryl stated, "We meet with our grade level teams weekly to discuss what we are teaching." Patsy added, "We meet with the PYP coordinator at the end of each unit to discuss how to improve the unit." Patsy also reported having weekly team meetings. She said her teammates ask each other "How's it going? Any different ideas? So there is always sharing going on." Patsy also reported that if anyone comes across a new website, book or idea, the teacher is always willing to share. Patsy and Peter describe how meeting with teachers from first through fifth grade to share their units of inquiry help teachers see what students are learning at different grade levels. Teachers also collaborate with support teachers such as the media specialist and the PYP coordinator. Michelle stated, "[The media specialist] meets with teams as often as possible", and was involved in writing the original units.

Moral purpose.

According to Dewey (1916/1985), the purpose of education is to create involved citizens to improve society. Data supports the idea that the teacher participants have a moral purpose in mind when inquiring. Patsy stated, "There is the community in terms of not just what [students] are noticing around them, but citizenship, good citizenship." She said they teach this through student attitudes such as appreciation, integrity, cooperation, respect, enthusiasm as well as the learner profile. She added, "We are building the citizens of our community." Peter added, "We talk about what it means to be a good citizen, not just a Georgia citizen, but a citizen of Mexico, or wherever."

For Peter, student learning involves thinking about their future. He states,

> You think of where the students will be 5, 10 years down the road and you want students to be able to connect things they are learning with previous learning – this will help them when they have jobs.

In addition, Michelle mentioned, "The goal of our units [of inquiry] is action, so taking what we've learned and applying it to our own lives, to translate into action – some sort of change, like how we … educate the community."

Conclusion.

In conclusion, the results show teacher participants at Georgia Elementary School inquire on a personal level and collectively. Although they deal with the constraints of Georgia's required curriculum, teacher participants feel empowered to inquire and make curriculum decisions. However, to sustain student and teacher inquiry certain conditions in the classroom and school institution must exist.

What Conditions Influence Inquiry in the Classroom and the School?

Dewey (1910/1997) suggests certain psychological, social and structural conditions must exist to develop a culture of inquiry. Student must have a safe and secure environment, multiple opportunities to collaborate, and time and freedom to inquire and reflect. The qualifiers for safe and secure environment included respect, trust and positive relationships. As stated in the results of student inquiry above, multiple opportunities existed for students to collaborate with other students, either through small groups or through working with a partner. The qualifiers for collaborative conditions include communication with others and classroom structure. Qualifiers for time and freedom to inquire and reflect include laying aside time constraints and providing opportunities for reflection. For classroom conditions, two additional themes arose. They were classroom support materials and a celebration of learning. Qualifiers for materials include posters,

classroom libraries, and items for exploration. Celebration of learning was visible through displays of student work and oral presentations.

Classroom Conditions

Safe and secure environment.

All teachers involved in my study created safe and secure environments in which students could inquire. Patsy seemed to have a great rapport with her kindergarten students. Students felt free to ask many questions and there was an acceptance of all answers. If the answers were not on the subject matter, the teacher handled it very carefully as not to demean the student. For example, during the discussion of how a helicopter moved one student said, “It has those things like a sled.” She praised him for making that connection. She also made statements like, “We are so knowledgeable!” to the whole group. During the interview, Patsy stressed the importance of building a trusting environment, making sure no one is going to laugh at an answer or question. She stated, “You have to create the assurance that everybody is comfortable in expressing their thoughts.” Peter’s constant interaction with his fourth grade students provided evidence of secure relationships. He also reported the importance of creating an environment where students could take risks; therefore, his students created essential agreements at the beginning of the year and posted them in the front of the room. The conditions in Cheryl’s third grade classroom were safe and secure. I noticed a lot of respect between the teacher and students and between the students. For example, Cheryl was careful not to embarrass a student in front of the class when the student did not follow directions when writing his fairy tale. Furthermore, when a student who spoke

very little English read her story orally, it was very slow, choppy and she missed several words. At the end of her presentation, the students clapped and cheered for her. During the interview, Cheryl expressed the importance of creating a supportive learning environment. She stated, “I want [my students] to know that it is okay to make mistakes. I want them to feel accepted that you know whatever you say it is going to be okay.” She believes support and encouragement is the key to learning. Lynda/Michelle created a supportive, safe classroom environment for the second graders. Even with two teachers in the room, students felt free to offer questions and answers. Lynda stated, “Students have to feel comfortable asking questions, so they need a warm atmosphere.” Michelle added, “We have to not let them feel criticized for their questions – it is a constant process.” In addition, students worked well with their partners to research animals.

Interaction and collaboration with others.

There was constant interaction and collaboration between students and fluidity of movement in and around Patsy’s kindergarten classroom. Students worked with partners and at table groups while discussing their research and clay creations. There were interactions between students in Peter’s fourth grade class throughout the observation. Students participated in a whole group discussion and worked in small groups to create a solution for a social dilemma. Numerous classroom configurations in Peter’s class, such as student desks in small groups and children sitting on the floor in small groups allowed for student interaction and collaboration. In Lynda/Michelle’s class, students worked in pairs to research their questions about animals. On the contrary, the interaction in Cheryl’s third grade class was only between teacher and student, as students answered

questions. Students did not have the opportunity to collaborate in pairs or with a small group. The lesson was whole group and teacher directed.

Time and freedom to inquire and reflect.

Students had time and the freedom to inquire and reflect in three of the four classrooms during their scheduled unit of inquiry time. Kindergarten students in Patsy's class had time and opportunity to inquire about objects that move. Statements such as "We may get to that part of the lesson today, or we may do it tomorrow" show inquiry lessons are carried over to the next day. Peter requires his fourth grade students to reflect at the end of each unit. He shared, "At the end of every unit they are almost always asked three questions: What did you enjoy about the unit? What did you dislike about the unit?, and What do you still wonder?" Michelle provided extended the time for inquiry for second grade students when she announced, "Write down the title of the book you are using at the top of your paper so … tomorrow you can continue your research."

On the other hand, the learning experience provided by Cheryl for her third grade students did not create the opportunity for students to inquire. In the interview, Cheryl described herself as "strict", which promoted a structured environment. The structure of the lesson had students answering factual questions about the story as Cheryl read it aloud.

Materials.

Often schools that teach students from impoverished backgrounds lack materials they need to teach (Bowers, 2000; Darling-Hammond, 2007b). At Georgia Elementary School, materials students needed for inquiry were available, although teachers expressed a desire to have more inquiry-based materials. In Patsy's kindergarten class, there was a

plentiful supply of clay, craft sticks, foam circles, a large classroom library, and science center. Materials in Peter's fourth grade class were available to students, such as computers with Internet capabilities and a classroom library. Peter also spoke of his use of supplemental inquiry-based social studies resource, not the traditional textbook that did not promote inquiry. He stated,

> Most of the year, we have been reading books that are related to the unit of inquiry we are doing…I have literature circles that we do, but only one of the groups is doing a related unit because I don't have enough. I can't find five different books that all relate to our unit of inquiry.

Cheryl's third grade classroom contained materials such as posters, big books, dictionaries and a classroom library that was readily available to students. She added, "In reading groups we use the Rigby series with the level readings and I always try to incorporate those [into the units]." Materials available to Lynda/Michelle's second graders included a vast amount of books, resource materials and computers with Internet capabilities, however Michelle stated there is a need for more books on various reading levels.

Celebrations of learning.

Celebrations of learning emerged as a theme. In Patsy's kindergarten class, there were student work displays on the walls and students verbally shared their clay creations and the information they found in the books. Students clapped at the end of each student's presentation. In Peter and Cheryl's classrooms, students celebrated learning through oral presentations. In contrast, for Lynda/Michelle's second graders, there was very little time for celebration of learning; however, students were going to continue the lesson the following day.

Conclusion.

In conclusion, the conditions for inquiry included safe and secure environments, where students felt free to ask questions and discuss what they had learned. Every participant in the study emphasized the importance of creating an environment where students were comfortable to take risks. This finding is consistent with Dewey's (1910/1997) ideas of the conditions needed for inquiry. Collaboration and opportunities for students to inquire and reflect was evident in three of the four classrooms. Classrooms had the materials they needed to support inquiry-based curriculum, although teachers expressed the need for more inquiry-based learning materials and books on various reading levels. Celebrations of student learning were evident in three of the four classrooms.

Institutional Conditions

Certain conditions must exist within the structure of the school institution for teachers to inquire. According to researchers, teachers must have a safe and secure environment, one of trusting relationships among staff members and trust from school administrators (Henderson, 1992; Tye, 2000). There should be multiple opportunities for interaction and collaboration between the adults in the building. School leaders must provide time and freedom for inquiry and reflection. Two additional themes emerged from the data. Teachers were engaged in inquiry-based professional learning and three of the four participants shared a passion for inquiry. Further, the teachers shared the common vision for developing inquiry-based curriculum for their students.

Safe / secure environment.

All participants reported that the school promoted trust and respect. They felt the principal trusts them to make curriculum decisions. Patsy shared that teachers choose from activities developed by the kindergarten teachers so teachers have freedom from administrative constraints to develop units and choose activities that are best for their students. Peter stated that although the principal is new to IB's inquiry-based environment, he has a lot of trust in his teachers to make educational decisions. Further, the principal involves teachers in decisions that affect the school environment. One example, reported by Michelle, is the faculty's involvement in creating the school map for next year. While this may not be an important curricula decision, asking for teacher input demonstrates the principal's respect for teachers' opinions.

There was also respect and trust among the members of the teams. Honawar (2008) suggests teachers have to lay aside their egos and open up to the ideas of others to build collegial relationships. Three of the participants reported the importance of being open-minded and willing to accept the ideas of others. Cheryl shared that teachers are open to share ideas. Lynda described the importance of "…being open minded to different ways of teaching and learning and [open to using] different strategies. I think being open minded is a big thing" and Michelle added, "I agree [that open-mindedness is a big thing]. Being open minded, willing to go out on a limb for one person's ideas, knowing that they'll return the favor to you."

Interaction and collaboration with others.

At Georgia Elementary School, all participants report there are multiple opportunities for interaction and collaboration with others. There are also opportunities

for collaboration with other educators within the IB organization. Within the school organization, teachers collaborate in numerous ways. They work together to develop the curriculum units. They have weekly team meetings to discuss the progress of their students and to share ideas. After teaching a unit, teams of teachers meet with the PYP coordinator to reflect and revise the unit. In Michelle's role as a support teacher, she interacts and collaborates with all teacher teams in the building. Patsy stated, "Our media specialist can also act as a, you know, as a big helper for our research" as she helps gather materials our students can use.

There are also opportunities for the school faculty to inquire. Peter reported faculty meetings as being inquiry-based. He stated, "Some of the [inquiry-based] exercises we did in faculty meetings … we turn around and do with our students, so we practiced inquiry before we had to teach [using inquiry-based curriculum]." He added, "It felt awkward, I mean, I was expecting in faculty meeting – you give me information I need to know and I take it in, and I go teach." He did not expect to be able to offer his thoughts and opinion about curriculum. He concluded, "It was the right process for a teacher to understand and to be able to teach the kinds to be inquirers. I mean, you've got to do it to know it." Patsy confirmed, "Our meetings are run just like the classroom because we are given an opportunity to give input …we are part of the decision making." In addition, Patsy and Michelle both reported the faculty was working together to develop the school map to help alleviate traffic congestion in the building. This provided an opportunity for teachers to discuss and provide input into the best classroom locations for different grade level teams within the building.

Within the IB organization, there are opportunities to collaborate with teachers from other IB schools. All participants attended collaborative professional learning sessions where teachers from different IB schools interacted and shared ideas. Patsy and Peter also visited other IB schools. Patsy said, “I had the opportunity to go on a trip to New York to visit a neighborhood IB school there...and that was neat.” Patsy stated she attended an IB Level 2 training session in Boston. There were opportunities to collaborate with IB consultants. During the authorization process, IB consultants work with the PYP coordinator and teacher teams to support successful implementation of the program. Patsy reported the IB consultants helped tweak the unit planners ensuring the use of inquiry-based instruction, IB vocabulary terms and the learner profile. They also guaranteed teachers were collaboratively developing and refining the units of inquiry.

Time and freedom for inquiry and reflection.

According to all participants, there is time and freedom to inquire and reflect as individuals and with colleagues. The principal provided time for teachers to meet for unit development and reflection by hiring substitutes. According to Peter, the principal encourages individual reflection as well as collaborative reflection. Patsy stated, “The inquiry-based program itself ... it keeps me thinking.” She constantly looks for ways to improve her questioning, especially open-ended questions. Peter reported reflecting on his first year teaching in an IB school. He said, “I did a whole lot of right things and I did a whole lot of wrong things and I’ve changed so much since then.” Cheryl feels inquiry has changed not only her teaching, but also her habits. She feels she is a better learner now and has the desire to learn more about science, and other subjects that previously did not interest her. Lynda reported the importance of team reflection after teaching the units

and being able to suggest improvements. Michelle said “I do think the IB philosophy has become infused in us … questions have become the foundation to our information gathering.”

Two additional themes arose from data on the conditions for teacher inquiry. The strongest theme was professional learning. All teacher participants are involved in professional learning through collaborative activities and by attending IB workshops. Three of the four participants have completed Level 2 of the IB training, and two have completed Level 3. The second emerging theme involved the passion, commitment and shared vision of the school faculty. The teachers share a commitment to the IB program and inquiry-based instruction.

Professional learning.

IB embeds professional learning within their Primary Years Program. IBO (2007a) states, “Becoming a PYP school and maintaining the climate of inquiry throughout the school community is considered to be an ongoing journey where all the members of the community are encouraged to become better lifelong learners” (p. 8). Likewise, the culture of Georgia Elementary School is one of continuous professional learning. All participants reported the presence of this culture; however, Patsy said it best, “I am constantly learning.” The school principal provided professional learning in several ways: through travel to IB workshops, through school level training with the PYP coordinator, and through the collaborative environment established at the school. All participants attended an IB professional workshop off campus and workshops located at Georgia Elementary school led by IB consultants. Patsy and Peter described learning the process of the IB program as difficult. Teachers had to learn a lot of vocabulary that is

unique to the IB program. Patsy stated, “It was intimidating for us when we first saw it and we wondered, ‘How do we put this together?’” During the professional learning sessions, IB consultants modeled inquiry-based instruction which gave teachers an idea of how students inquire. Peter believes the professional learning component of the IB program has accelerated his teaching. He states, “IB teaches you to ask deeper and deeper questions” and he felt without training, he would not be asking deep questions. He feels the school is further along on the IB implementation continuum due to the professional learning the faculty has attended. He recently attended level three training in Boston that focused on the culminating project for fifth grade students. When he returned, he shared what he had learned with the fifth grade teachers.

All participants confirmed the PYP coordinator worked with teachers to train them during the implementation process as well as throughout the year. Peter reported,

> Professional development is enormous because we have to do article studies, because of IB, we have to do book studies, and we have to meet in vertical teams as well as grade level teams. There is so much professional learning that I didn’t have to take a single [college] class to recertify [my teaching credentials].

Peter and Michelle reported school level training was provided in faculty meetings as well. Faculty meetings give faculty members opportunities to solve problems together and collaborate to make curriculum decisions.

A collaborative environment exists at Georgia Elementary School. As stated earlier, teachers are provided release time to collaborate with teammates concerning the curriculum. By critically engaging in curriculum discussions, teachers improve their understanding of practices and develop a professional learning community (DuFour & Eaker, 1998; Hammer & Schifter, 2001; Kraft, 2002). Several participants shared the

importance of gaining ideas from colleagues. Peter said, “Asking questions [when working with my team] keeps me learning” and visiting other classrooms within the school gave him great ideas. Cheryl said her teammates are very open to sharing ideas. Even though Michelle teaches all grade levels, she reported collaborating with teams of teachers throughout the school. Patsy and Lynda also reported the importance of collaborating with Michelle because she strongly supports her teaching.

Shared vision, commitment, and passion for inquiry.

Teachers in this study also shared the school’s vision and a commitment and passion for inquiry. Interviews with Patsy, Peter and Michelle confirmed their passion for inquiry. Michelle stated,

> Well, to me it’s like wandering in the woods, if you don’t have a place that you are trying to find, you will never ever feel like [you’ve] got it. That’s what questioning and inquiry does for me – it gives me a place to be aiming for – a target.

Patsy supports the shared vision of the school. She expressed that she has a yearning to inquire because, “You can’t just expect someone else to do it for you.” Peter shared that he has always had a passion for inquiry which came from his college field experiences. He shared that some teachers had left Georgia Elementary School to teach at different schools because of the amount of work involved and their lack of support of inquiry-based learning. He said,

> You can’t have a teacher that is in it for the money. You can’t have a teacher that is doing it to pass the time. They’re not going to survive in an IB school. It just won’t happen. It ends up being the teachers that care the most about their profession, about their trade that will flourish in an IB environment.

Michelle shared how she wants students to inquire more. She says she never knows where a lesson will take the students, however it is through questioning that students learn. She said,

> It's hard when [the topic of study] is not exactly one of those boxes [standards] you can check off, but the process is the lesson, not the facts. It's not that they've learned that a raccoon lives in North America; it's that they've learned where to find the answers to those questions. So the more often they come and [inquire] the more natural it will become.

There is evidence of commitment to shared vision of the school, which encompasses the IB philosophy. Patsy, Peter, and Michelle have attended multiple IB workshops, some of which occurred during the summer. On two different occasions, Peter attended inquiry-based professional learning conferences, not sponsored by IB. Furthermore, Cheryl stated, "I have learned to push myself because I want to learn more."

The principal's commitment to the shared vision of the school was evident in the data I collected. Peter shared, "The new principal has continued to cast the vision of the IB philosophy even though he has only been in the IB school for a year." In addition, Peter and Cheryl mentioned the principal's generous support of providing release time for teachers to collaborate. Cheryl stated, "We work together as a team and the school's administration has been really, really generous in giving us release time during the day." She added, "We have lots of support from the administration, which we definitely need."

Conclusion.

There is evidence that institutional conditions at Georgia Elementary School support a culture of inquiry for teachers. Trusting relationships and an openness to share exists among teachers on the kindergarten, second grade, third grade and fourth grade

teams. As indicated in teacher interviews, there are multiple opportunities for teachers to interact and collaborate with peers through weekly team meetings and meetings each six weeks with the PYP coordinator. Teachers have time and opportunity to reflect personally as they make curriculum decisions for their students; and collectively as they work with teammates to develop and refine inquiry-based units. The school principal continues to cast the shared vision of the IB philosophy. He trusts his teachers and provides opportunities for teacher inquiry and reflection. He provides support through professional learning. A passion for inquiry was evident in three of the four participants in my study.

Hindrances to Inquiry

When discussing the conditions needed for teacher and student inquiry, hindrances for inquiry surfaced. Three qualifiers emerged from this theme: lack of time, the constraints of high stakes assessment, and the need for materials. To have a complete understanding of hindrances to inquiry, I also include other qualifiers that emerged, even though they were from one participant.

Lack of time.

Consistent with research by Hammer & Schifter (2001) and research by Honawar (2008), all teacher participants noted that they needed more time to inquire. Teachers have only one hour per day to teach the unit of inquiry. Peter reported the lack of time to allow students to ask questions during the unit of study on the First Amendment. He shared, “What’s interesting is this unit we’ve been doing for about a month, I haven’t

gotten to let the kids ask questions. And I miss it if I don't [let the kids ask questions]." Lynda stated,

> We just have so many hours. We'd like to devote more hours to inquiry, you know. I guess I'm trying to figure out how to cover all the standards and do what I want to do with inquiry as well.

Michelle expressed the need for students to spend more time in the library for research. She felt the more they were able to visit the library, the more it would develop their abilities to research. She stated, "I want to grow the kids' independence level, ability to persist and to research."

Constraints of high stakes assessments.

The results of my study support the statement by Cuban (2003) that the bottom line for schools is test scores. Four of the five participants, all classroom teachers, shared that preparing for the CRCT, the high stakes assessment of Georgia's curriculum prevents them from providing more opportunities for students to inquire.

Even though kindergarten students do not take the CRCT, Patsy was aware of the pressure placed on first through fifth grade teachers. She states, "I think for grade levels that are stuck on testing and CRCT testing and things like that – that could get you frazzled … you know, having to prepare for a test of that nature which isn't inquiry-based at all." Further into the discussion, Patsy made reference to Deweyan inquiry. We were discussing how the units of inquiry incorporate the Georgia Performance Standards. She noted, "I'm sure we go back and forth with Dewey's theory." She referred to the fact that Dewey would not have required the teaching of a set of standards dictated by the state. However, through the IB framework, grade level teams work to incorporate standards into the practice of inquiry.

Peter stated, “CRCT holds up everybody.” He described how his team had to decide which unit to teach after CRCT. They had to figure out “….which unit can we relax and not worry so much that there is going to be questions [from the CRCT] on it. Which unit can be the fun unit at the end of the year?” When describing the curriculum in her classroom, Cheryl stated, “I basically try to incorporate the units; of course, right now we are doing CRCT prep stuff.” Lynda discussed how she was trying to figure out how to find time for student inquiry and cover all of the standards, knowing that she was accountable for teaching what is on the high stakes test.

Although I addressed overall teacher passion, commitment and a shared vision in the previous section, a lack of passion for inquiry in teachers hinders inquiry. Based on my interview and observation, Cheryl’s passion for inquiry appears mild. During the classroom observation, students were not involved in collaborative research. Furthermore, she admitted, “I’ve been here from the beginning [of the IB implementation process]. I wasn’t in on the decision.” She added,

> Let’s be honest, I’d say …. just like in certain subjects in the past. If I’m not really crazy about the unit, it is a little bit hard for me to teach… I never disliked them, but I might not feel competent.

She attended IB training two summers ago and she stated “...frankly, it was hard getting up in the summer [to attend training].” Cheryl also indicated that it is hard to teach students to inquire when they come to school without any background knowledge. She gave an example of having to teach nursery rhymes because her third graders had never heard the rhyme *This Little Piggy*. She stated, “I would have thought that would have been so far below their [level of learning], but we have to back up.” This takes time, which means less time for inquiry.

Need for additional resources and materials.

Three participants expressed the importance of having access to inquiry-based materials. While they mentioned they had access to many resources, they expressed a desire for additional inquiry-based resources. Peter shared his difficulty in leading student inquiry without inquiry-based materials. For example, he would like to incorporate reading standards in the unit of study on the First Amendment but he only has enough reading books for one small group of students. The other students are reading books on a different topic of study. He also shared that the social studies textbook is full of facts with a high reading level that is difficult for students and not useful with inquiry-based instruction. Therefore, he used external resources and received inquiry materials by attending a professional learning conference. Cheryl confirmed the need for lots of school level resources, such as additional books in the media center. Michelle mentioned the need for more technology so children can research, as well as larger classroom libraries containing books on various reading levels. She added, “It is hard when a person is alone in the classroom with limited resources.”

Summary

In summary, the results of my study show evidence of some level of inquiry within the IB PYP at Georgia Elementary School. The IB PYP framework and policies of the organization support the components of Dewey’s theory of inquiry and guides teachers in the creation of curriculum units. To some degree, student inquiry was present in three out of four classrooms. Students were engaged in discussing problems and various student groupings provided opportunities for social connections. Data supports

the finding that the students in Cheryl's classroom did not have the opportunity to inquire. While Cheryl created a safe and secure learning environment, she did not engage students in authentic problem solving, research or collaboration.

Three of the four classrooms in my study support Dewey's ideals for the conditions needed for inquiry. Teachers in all four of the classrooms provide safe and secure environments; however, opportunities for collaboration and freedom to inquiry existed in only three. The institutional structure provides opportunities for teacher inquiry. The teachers feel that the principal trusts them to make curriculum decisions for their students, although those decisions are within the constraints of Georgia's required curriculum. The IB framework provides the freedom for teachers to collectively design units of inquiry. Teachers have collaborative support from the PYP coordinator and non-classroom teachers such as the media specialist. The principal immerses professional learning into the culture of the school.

Several challenges to inquiry emerged from the data. Consistent with research, constraints of time limit student and teacher inquiry (Hammer & Schifter, 2001; Honawar, 2008). The teachers feel pressure to prepare their students for high-stakes assessments, which are not inquiry-based. This pressure works against a culture of inquiry (Joseph et al., 2002).

CHAPTER 5

DISCUSSION

Introduction

The purpose of my study was to gain an understanding of inquiry-based curriculum in an IB elementary school and to identify classroom and institutional conditions that influence inquiry. Research shows a curriculum rich in inquiry promotes student learning (Godbey et al., 2005; Haefner & Zembal-Saul, 2004; Miller, 2003). Using Dewey's (1938/1991) theory of inquiry as a lens, we know students learn through meaningful experiences involving inquiry within a social environment. These research questions guided my study of inquiry:

1. What inquiry exists for students in the classroom?
2. What inquiry exists among the teachers?
3. What conditions influence inquiry in the classroom and in the school?

Analysis of the data generated by my study of inquiry creates a picture of inquiry at Georgia Elementary School. Conditions to support student inquiry existed in three of the four classrooms in my study. In addition, institutional conditions support teacher inquiry. However, there are institutional structures which hinder student inquiry at a deep level. Furthermore, although the IB PYP framework provides the support needed for a deep level of inquiry-based curriculum, a deep level of inquiry is hindered by the constraints of

Georgia's required curriculum, high-stakes testing and the deep structures that exist in our schools today.

Supportive Cultural Conditions

The cultural conditions of the classroom and institution are crucial to promote an environment of inquiry (Dewey, 1938/1997; Garrison, 1997; Peck & Hughes, 1996). This environment- whether in the classroom or the institution- is one of trust, communication, and respect (Dewey, 1916/1985; Garrison, 1997). Students and teachers need a safe environment and positive relationships, so they feel free to inquire. The school environment at Georgia Elementary school promotes teacher inquiry. In addition, three of the four classroom environments provided a culture that supports student inquiry.

Classroom Conditions.

Dewey (1910/1997) stated, "Everything the teacher does, as well as the manner in which he does it, incites the child to respond in some way or other…" (p. 47). Because of the interaction between the teacher and students, every classroom has an environment that is unique to the teacher and students in that class. Jackson (1986) stated,

> …the crowds, the praise, and the power that combine to give a distinctive flavor to the classroom collectively form a hidden curriculum which each student (and teacher) must master if he is to make his way satisfactorily through the school. (p. 34)

In essence, Dewey (1938/1991; 1938/1997) believed the teacher and the students do not do anything that does not connect to the social world of a school. Jackson et al. (1993) describe the environment a teacher creates as the moral life of the classroom, and it is a vital part of the curriculum. It dictates how the teacher presents curricular content. In addition, the interactions among students and between the teacher and the students form

the social aspect of the classroom, which greatly influence the environment. To summarize findings by Jackson et al. (1993), there is an “unfathomable complexity” of shared interactions between the teacher and students that create the moral life of the classroom (p. 229). For example, students are keenly receptive to the looks, facial expressions and body posture of the teacher. Jackson et al. suggest, teachers’ “moral duty” is to behave sensitively towards students as to create the kind of environment that will enable students to interact harmoniously and work together as they learn (p. 292). To promote inquiry, the classroom environment should be a safe and secure place in which to learn. Teachers should create an environment where students feel comfortable to ask questions and interact with the teacher as well as the other students in the class. Three of the four classrooms in my study emulated a safe and secure environment. Although I only observed one time in each classroom, interactions between the students and teachers and among the students in all classrooms seemed to be amicable and pleasant. It could have been because I was visiting so teachers and students were on their best behavior. However, one example I noted was in Peter’s fourth grade classroom. Students respected the opinions of the group that shared the solution to their moral dilemma. These positive interactions emulated a sense of community within Peter’s fourth grade classroom (Meier, 1993).

In contrast, Cheryl’s third grade classroom environment was different than the other classrooms I observed. It was very formal. Students were very quiet and the Cheryl did most of the talking. Jackson et al. (1993) suggests teachers manage the moral life of the classroom through their classroom rules. For example, Cheryl stated, “I want them [her students] to listen to me” and “I like it quiet when they are working.” Jackson et al.,

(1993) suggest if the classroom is formal, much like Cheryl's class, the content tends to be teacher directed. Cheryl's statements are examples of her commitment to a structured environment, which she enacted through her teacher directed lesson. This type of structured environment does not encourage the social environment suggested by Dewey. However, when asked what conditions are necessary for students to inquire, Cheryl stated, "I think a lot of respect from the teacher … and definitely acceptance, that whatever you say is going to be okay." Showing respect to students builds a sense of trust (Fullan, 2006). The students in Cheryl's classroom seemed to trust and respect each other. For example, it was obvious the student who spoke little English trusted her peers as she struggled reading her story orally. Her classroom peers showed their respect by clapping for her when she finished. Although there appears to be a sense of trust and mutual respect, the formal structure of Cheryl's classroom does not create an environment for inquiry.

Institutional conditions.

Just as students need classroom conditions to promote inquiry, teachers need an institutional environment that promotes inquiry (Henderson, 1992). Creating an institutional culture that supports inquiry is not easy. However, research shows leaders who treat teachers as professionals give them opportunities to make decisions based on their inquiries. This practice creates a shared vision (Tanner & Tanner, 1995; Ulmer & Timothy, 2001). All participants shared that the environment at Georgia Elementary School supports teacher inquiry. Embedded in the school culture are a safe and secure environment, interaction and collaboration with others, and the time and freedom to reflect. The principal enabled teachers to develop curriculum with some level of freedom

within constraints of the required Georgia curriculum and the IB framework. This supportive environment worked positively for Patsy, Peter, Lynda and Michelle due to their shared commitment and belief in inquiry-based curriculum. These three teachers described the freedom they had to design inquiry-based curriculum for their students. In addition, teachers in my study spoke of their positive relationship with the principal, even though he had only worked at Georgia Elementary School a year and a half. According to Evans (1996), "Trust is the essential link between leader and led, vital to people's job satisfaction and loyalty, vital to followership" (p. 183). By asking for teachers' opinions and providing opportunities for them to solve problems, the principal built professional trust in his teachers and created an intellectually stimulating environment for collegial inquiry (Costa, 1985). Further, by creating environments of collective inquiry, teachers in my study indicated there were strong, positive relationships among the teachers (Donaldson, 2006; DuFour & Eaker, 1998). Teachers at Georgia Elementary School had multiple opportunities for social connections. Teachers interacted and collaborated with their peers through weekly team meetings and meetings every six weeks to refine curriculum units. They also collaborated with teachers from other grade levels during faculty meetings, and with the Primary Years Coordinator when assessing and refining the units of inquiry. Another example of the supportive conditions for teacher inquiry is embedded professional learning. Garrison (1997) stated, "Persons who declare their dedication to teaching, but are not constantly working to improve, are deceiving themselves" (p. 73). The culture of Georgia Elementary school promotes constant professional learning through IB workshops and collegial teacher inquiry. According to the definition provided by DuFour & Eaker (1998), Georgia Elementary School acts as a

professional learning community because there is a willingness among the teachers to seek solutions to issues they face by collaborating with other teachers. There was strong evidence that the principal supported professional learning. He provided release time by hiring substitutes so teachers had collaboration time once every six weeks. Teachers attended professional learning conferences taught by trained IBO professionals and the principal provided funds for conference fees and travel, even if the conference was out of state. However, it is important to note that the principal's support was not enough to encourage professional learning in Cheryl's case. She did not seem committed to attend the sessions, especially during the summer.

Institutional conditions support teacher inquiry at Georgia Elementary School, therefore teachers have freedom to collaborate and inquire when making curriculum decisions. As stated by IBO (2007a), "The continuing success of the [PYP] program depends on creating a community of learners where there is evidence of …a personal commitment on everyone's part to support [the principles and practices of the program] fully" (p. 2). Through the implementation of the IB program, there was a shared vision and commitment to inquiry-based instruction in three of the four classrooms in my study. A shared vision for teacher inquiry appeared throughout the conversations with all participants. For Georgia Elementary School, the IB program provided the shared purpose that pulled people in the school together (Donaldson, 2006).

Teacher Inquiry

The institutional conditions created the support needed for teacher inquiry. The IB PYP requires that teachers work together to develop curriculum units. When teachers

inquire it helps them see the importance of inquiry-based curriculum for students (Sergiovanni, 1996). When teachers are empowered to inquire about the problems they face, it liberates them. It alters the way they think about their teaching (Dewey 1929; Ulmer & Timothy, 2001). Teachers at Georgia Elementary school inquire both individually and collectively. However, it is important to note that when making decisions concerning what to teach, Georgia has a required curriculum. Therefore, when creating curriculum, teachers worked within the constraints of the Georgia Performance Standards. Teachers worked with their grade level teams and the PYP coordinator to develop and refine inquiry-based curriculum units.

Personal inquiry.

I observed personal inquiry, the basis of all other levels of inquiry, at Georgia Elementary School. According to Tanner & Tanner (1995), involving teachers in inquiry in their own classrooms will improve curriculum. It will also improve their teaching practices (Boody, 2008; Boyd & Boyd, 2005). Through personal reflection, teachers can learn from their mistakes and replicate success (Swain, 1998). Although teams of teachers wrote the curriculum units, the teachers were not required to use all of the inquiry-based activities in the unit planner; therefore teachers had the freedom to experiment with various inquiry-based activities and choose the ones that best fit the needs of their students. They also had the freedom to add additional lessons or resources as they taught the units. Patsy and Michelle demonstrated another example of personal reflection when they considered a solution to the time restriction for inquiry. In both cases, teachers decided to carry over the lesson to the next school day. In addition teachers constantly reflect on the questions they asked students as they received answers

from the students. As Lynda led the discussion concerning questions she should ask to find out about an ocelot, she changed the question based on what questions students were asking. In addition, as Peter circulated around the room to hear the students' discussions, he realized the students did not know the definition of the word *perjury*. He stopped the group discussions and provided instruction on the definition of the word. Kohn (2008) suggested teachers reflect on what they can say or do to make certain their students are successful. Through a natural act of reflection, Peter realized students would miss an important concept of the lesson if he did not address the definition of the word.

According to Jackson et al. (1993), teachers also reflect on their interactions with their students. This interaction is part of the moral complexity within the classroom. All participants mentioned their interactions with students when we discussed the conditions students needed to inquire. For example, during her interview Patsy mentioned, "You [teachers] have to create the assurance that everybody is comfortable in expressing their thoughts." Peter, Lynda and Michelle spoke about the importance of positive interactions with students. Statements like these show that the teachers in my study reflect upon their actions and the cultures of their classrooms. They feel it is an important part of creating an environment for inquiry. In addition, Jackson et al. (1993) suggested, "Classrooms do indeed develop climates of their own." This was true of the four classrooms I observed.

Collective inquiry.

Collectively, teacher teams design curriculum units and inquiry-based activities, embedding Georgia Performance Standards within them. Henderson (1992) discussed the characteristics of educational problem solving: "Teachers reflect on the learning situation, identify the problem, try out one or more solutions, and then engage in further

inquiry" (p. 49). This was evident as teachers shared how they met with the PYP coordinator to review curriculum after teaching the units each six weeks. They worked together to refine the activities, and reflected on improving questions that guide the unit. The cycle of collectively revisiting curriculum to improve instruction also provides teachers the opportunity to learn from each other (DuFour & Eaker, 1998; Honawar, 2008). According to the National Staff Development Council (2001), it is the highest level of professional learning.

Another example of collective inquiry was when teachers worked together as a faculty to design the IB program within the guidelines and framework provided by IBO. One of the first problems they addressed was how to teach the Georgia Performance Standards using units of inquiry. Grade level groups of teachers carefully placed the standards within the frameworks for inquiry. Teachers also worked together as a faculty to solve institutional problems. Lynda reported that staff meetings are inquiry-based and teachers have opportunities to provide input and solve problems together. When leaders ask for teachers' opinions, the teachers feel a shared purpose for improving the school (Darling-Hammond & Friedlaender, 2008).

Student Inquiry

When teachers inquire, they are more likely to promote inquiry-based curriculum (Peck & Hughes, 1996; Sergiovanni, 1996). Components of inquiry are visible at Georgia Elementary School; however, the level to which students inquire in the school setting is problematic. As defined by Dewey (1902/2001; 1910/1997; 1915/2001), inquiry-based curriculum involves authentic problems, meaningful experiences, social connections, and

moral purpose. Dewey believed students learn from interactions with others while inquiring to solve problems connected to their world. Through investigations and reflection, students create new meaning. It is within these meaningful experiences students learn (Dewey, 1938/1997). In addition to these experiences, his focus for education was for students to develop democratic principles they would use to improve society. Just as Lincoln described a "democracy of, by and for the people", Dewey (1938/1997) described his philosophy of education as "of, by and for experience" (p. 29). It is difficult to turn this theory of inquiry into the practice of inquiry in schools. Even Dewey (1938/1997) believed, "Each of them [of, by and for experience] is a challenge to discover and put into operation a principle of order and organization which follows from understanding what educative experiences signifies" (p. 29). In our schools today, often an inquiry-based curriculum focuses on the development of critical thinking or higher-order thinking skills such as generalizing, synthesizing and evaluating information (Ennis, 1993; DeWitt, 2003). However, the idea of critical thinking as it is carried out in schools is inconsistent with Dewey's theory because it ignores that fact that inquiry begins with a problem, the student's problem (Tanner, 1998). While components of inquiry are visible at Georgia Elementary School, they rest in the superficial image of activities and skills.

Superficial inquiry.

When creating the inquiry-based units, the curriculum decisions made by the teacher teams concerning social experiences are crucial. Even more important is the decision made by the individual teacher to put the curriculum into action (DeWitt, 2003; Hammer & Schifter, 2001). Three of the four teachers in my study created inquiry-based

activities; however the lessons did not offer experiences in a deep level of inquiry. As Kuhn, Black, Keselman, & Kaplan (2000) suggest, the younger kindergarten students had simple inquiry experiences of description and classification of things that moved, while the older fourth graders inquired into causes and effects of social dilemmas. Dewey's notions of inquiry involve students engaging in solving problems that are meaningful to them. Teachers in my study often contrived problems and sometimes stretched to relate them to the students' world. For example, Lynda and Michelle's lesson began with the problem having to create a presentation for teaching a younger student about an animal. This presents a purpose for students to research information and develop a presentation, but it is an authentic problem? However, Peter's fourth grade inquiry-based lesson presented more authentic problems as students discussed social dilemmas having to do with their rights and freedoms established by the First Amendment.

Inquiry acknowledges social connections within the learning experience (Dewey, 1938/1997). As such, student interaction is an important part of inquiry. For example, students learn when they hear the thought processes of how another student solved a problem. Cooperative reflection through social inquiry allows students to reflect upon different solutions before making final judgment (Hickman, 2007). In addition, when teachers allow social interactions they are more likely to create an experience where students are free from the teacher imparting knowledge through lecture (McBride & Bonnette, 1995). In the inquiry-based lessons that I observed, learning experiences involving social connections varied by teacher. Peter's fourth graders, Patsy's kindergarteners, and Lynda/ Michelle's second graders all had the opportunity to collaborate with other students. However, in Cheryl's third grade class, interaction

between students was non-existent. The only social interaction students had was when they answered questions asked by Cheryl as she read a story. Dewey (1916/1985) believed “all communication is educative” (p. 8). So, what are Cheryl’s students learning about communication? Are they learning that the only time to share their ideas is when asked? Are they learning that their thoughts and ideas are not as important as the teacher’s thoughts and ideas? This is an important point to consider when research shows the most influential person in the classroom is the teacher (Dewey, 1910/1997; DeWitt, 2003; Kinchin, 2004).

Creating experiences that interest the students is an important part of inquiry. Consistent with research by Godbey et al. (2005) and Miller (2003), both Lynda and Michelle mentioned that students are more interested in questions about their own topics, and their questions create an enthusiasm for learning. Patsy added, “So besides asking questions … you have to have some kind of yearning to find out the answers. [Because] … what we see, through playing, using, and doing, they’re learning.” This speaks to Dewey’s (1938/1997) notion of experience. He states, “Everything [about learning] depends on the quality of the experience which is had” (p. 27). The quality of the experience is two-fold. First, there is the immediate connection the student has to the experience as either enjoyable or not enjoyable. Secondly, there is the influence the experience has upon future experiences. In every experience, students draw information from previous experiences to make judgments about the current experience. Furthermore, you can have students generate questions and research to find the answers to those questions, but if the students are not interested in the topic of study, or if they do not make a connection to their world, the research experience will not be meaningful. Lynda

and Michelle's second graders enjoyed learning about the animal of their choice. This was evident when a student commented, "Mrs. [Michelle]! I found where it lives – in the rainforest!" and another student ran to tell her where raccoons lived. By providing choice to students, Lynda and Michelle were able to engage their students in meaningful research.

Moral purpose.

A crucial part of Dewey's theory of learning is the purpose of schools. It is to educate students for the betterment of a democratic society. He believed this so much that he dedicated an entire book, *Democracy and Education*, to this topic. He believed education was the means through which we understand how to live within and maintain a democratic society. Further, the mere process of living within society educates. Therefore, schools have the responsibility to teach students the attitudes and habits of mind that will promote the continuation of a democratic society (Jackson et al., 1993). According to Goodlad (2008), the idea that schools should promote democracy is lost in the common schools of today. Instead, he states, "The purpose of our schools is to prepare workers who will ensure the nation's leadership in the global economy" (p. 10). The IB program clearly states its position on the purpose of schooling. IBO's (2002) mission is, "…to develop inquiring, knowledgeable and caring young people who create a better and more peaceful world through intercultural understanding and respect (p. 2). The IB program requires that the curriculum contain the *PYP Student Profile*. IBO (2002) states, the Student Profile "…outlines the attributes and traits that characterize students with an international perspective (p. 4). Teachers teach students to become inquirers, thinkers, communicators, risk-takers, knowledgeable, principled, open-minded, well

balanced, caring and reflective (IBO, 2002). The IB framework provides structure for teaching students moral purpose. For example, when teachers design units of inquiry, links to the student profile are included in the unit plan. In addition, after teaching the unit the teachers discuss and record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act upon their learning (IBO, 2002).

Although the IB framework provides structure for moral purpose, teachers at Georgia Elementary School did not focus on it during the inquiry-based lessons I observed. Moral purpose is two-fold: students learning to become active citizens within the democratic society, and students seeing a purpose for their learning. While IBO student profile traits are hard to detect in the data from my study, in three of the four classrooms I observed, students were *communicating* with other students. Further, all four of my participants expressed the importance of creating a classroom environment where students *cared* about others' feelings. Peter's fourth graders discussed social dilemmas and had to arrive at consensus, so in a sense some students had to be more *open-minded* than others were as they negotiated their group answer. Peter also mentioned that he had his fourth graders *reflect* at the end of each unit by answering the following questions, "What do you enjoy about the unit? What did you dislike about the unit? What do you still wonder?" However, the other traits did not appear in my data.

Dewey's (1916/1985) belief of moral purpose extends his ideals to sustain a democratic society. For Dewey, democracy is more than a form of government; it is a means of collective living (Martin, 2008). The IBO frameworks offer the potential for students to connect with their community and take their learning beyond the classroom,

and in some cases this was evident at Georgia Elementary School. For example, Patsy described how the kindergarten unit planner contained a lesson where students interacted with firemen and policemen; and Michelle explained the purpose for students to learn about animals was for them to learn the importance of taking care of their habitat. While it is important for students to connect their learning to the world outside of the classroom, the curriculum connections to moral purpose do not mirror Dewey's notion of moral purpose (Dewey, 1916/1985). Conversely, the only indication in my study of a teacher explicitly addressing moral purpose was in Peter's fourth grade classroom. As one group of students shared their collaborative solution to the moral dilemma, Peter asked questions that sparked a response that offered another possible solution to that dilemma, sparking a discussion of how people interpret freedom of speech differently. In addition, Peter made a real-world connection through the example of the opinion letter he shared from the local newspaper. The lesson had the potential to open up many ideas, however time for the lesson ended before another group could share.

Institutional Organization

As stated in the sections above, the classroom and institutional conditions at Georgia Elementary School support inquiry; however there is a deeper level of teacher inquiry than student inquiry. In addition to supportive conditions, institutional structures are in place for teacher inquiry, but the institutional structures for student inquiry are problematic. The IB PYP offers a framework with the potential for student inquiry at a high level; therefore we must look at the implementation of this school reform model within the school structure. School reform models offer hope that changes in classroom

instruction will occur, however if the structure of the school does not fully support the reform effort, little change will take place (Kennedy, 2004). Just as the teacher is the deciding factor for inquiry in the classroom, the principal is the deciding factor for inquiry in a school institution (Donaldson, 2006; Sergiovanni, 1996). It is the primary obligation of the leader in an organization to build a shared vision (Balch-Gonzalez, 2002; Senge, 1990; Zaccaro & Banks, 2001). In the center of this vision in the school reform model offered by the IB PYP, is an inquiry-based curriculum.

Problematic Structures.

While a shared vision, time for teacher inquiry, and professional learning exist to support teacher inquiry at Georgia Elementary School, there are problematic structures that hinder student inquiry above the surface level. Our society views the principal as the decision maker in the school, yet there are many institutional factors to consider when leading a school. The school institution is a complex organization (Morrison, 2002). Leaders have to consider intricacies such as creating a master schedule that will work for all grade levels, providing common planning time for grade level teachers so they can meet to plan curriculum, and making the budget stretch so that all curriculum needs are met. Within the complexity of school operations, tensions emerge regarding the desired level of inquiry and the necessary daily interactions, routines and procedures.

First, there is a lack of a common definition of inquiry-based curriculum. Teacher participants' definitions of inquiry-based curriculum differ, and these definitions influence a teachers' understanding of inquiry and their practice (Kennedy, 2004). Teachers used terms like *questioning*, *front-loading* information, and *backwards design* when describing how they developed curriculum units of inquiry. Educators typically use

these terms to describe “best practices”, not inquiry-based curriculum (IBO, 2008a; Marzano, 2004; Wiggins & McTighe, 1998). Teachers’ various definitions show a range in their understanding of inquiry and their teaching practices reflect this understanding. For example, in Cheryl’s definition of inquiry-based curriculum she stated, “…it is still teacher directed.” Her misconceptions of inquiry possibly influenced her practice of direct instruction in her classroom. By way of her definition, she seems convinced she is leading student inquiry. However, direct instruction is the antithesis of inquiry. Withee & Lindell (2005) suggest teachers like Cheryl use a traditional method of teaching because that is what they know best. Her 26 years of traditional teaching experience control her current practice. Kennedy (2004) suggests teacher’s misinterpretations of a reform model can account for their failure to adopt the reform. Moreover, it takes more than the two inquiry-based training sessions Cheryl attended to break the mold of traditional teaching methods (Haefner & Zembal-Saul, 2004). The other three participants used some form of the term *questioning* as part of their definitions. Patsy’s definition included the need to start with questions, including questions with more than one answer. Her belief that kindergarten students were inquiring when trying to think of more than one answer to a question misrepresents inquiry-based curriculum. Compared to factual questions, open-ended questions may create an opportunity for deeper inquiry; however, Dewey (1938/1991) believed students must also reflect and create new meaning. The beginning of Peter’s definition was “Letting the kids ask questions about things they are curious about…” is more consistent with Dewey’s (1902/2001) notion that the students’ interests should be the starting point of the curriculum. Further, the definition of inquiry-based curriculum Lynda stated, “I think it is about getting the kids to initiate the learning and

questioning and getting them enthused about what they are learning so that they own it", provides an understanding of the beginning of inquiry. Michelle agreed by adding, "Students are more interested in [answering] questions about their own topics." Their definition came alive as students chose which animal to research, and generated their own questions. Students experienced meaningful research, although they were not actually solving a problem. These examples of varying definitions show teacher participants lacked a common understanding of inquiry-based curriculum.

Second, the structure of the school's master schedule does not enable students to inquire in large blocks of time. All participants indicated the need for more time for students to inquire. According to Donaldson (2006), the typical elementary school requires teachers work directly with students 92% of the students' day. This creates time constraints for student inquiry because teachers often interpret the notion of working directly with students to mean direct, whole group instruction (Townsend, 2002). Teachers at Georgia Elementary School only have a one-hour block of time to teach the unit of inquiry. Peter stated his fourth graders had been working on a unit of inquiry for a month, but he had not allowed the students to generate questions for that unit. He stated, "I miss it if I don't do it." Teacher participants spent the other parts of their day teaching other subject matter, such as reading, writing and math. Although the IB curriculum framework requires transdisciplinary units, the units are mostly social studies or science content. IBO does not have a requirement of how long students should spend inquiring throughout a school day; however, they encourage student inquiry throughout the curriculum. IBO (2007a) states, "Inquiry is encouraged particularly when students are investigating and developing an understanding of the central idea in a unit of inquiry, but

also when students are learning about any subject outside of the program of inquiry" (p. 9). Peter was the only participant who indicated that he often integrates reading and writing into the units of inquiry, however he stated math is difficult to incorporate. Although teachers felt they had autonomy to carry over an inquiry unit lesson to the next day, teachers in my study did not indicate the curriculum was inquiry-based learning during other parts of the day. Joseph et al. (2002) suggest, daily tasks take up most of the teacher's time leaving little opportunity for them to plan meaningful educational experiences.

Third, teachers need materials and resources to support student inquiry, therefore financial resources of the school should support inquiry-based instruction. In Dewey's lab school, his teachers used authentic materials that supported the inquiry-based curriculum (Tanner, 1997). For example, if kindergarten students were learning to cook, they used a real stove. Typically, the materials needed for student inquiry are often different from materials provided in traditional classrooms (Haberman, 2005). Peter spoke about the need for inquiry-based materials when he described how he used a supplemental social studies book because it promoted student inquiry much more than the traditional social studies book. While all of the classrooms I observed at Georgia Elementary School had classroom libraries, the teachers expressed the need for additional books on a variety of subjects and reading levels to promote student inquiry.

School Reform

The IB PYP has the potential to provide students with meaningful inquiry-based learning experiences. While there are institutional structures at Georgia Elementary

School that prohibit a deep level of student inquiry, researchers suggest reforming the structure of schools is almost impossible due to the deep structure embedded in the common school (Noblit & Dempsey, 1996; Tye, 2000). Tye (2000) suggests this "deep structure" is composed of the values and assumptions about education that are shared throughout our society. Schools have always been places where children go to gain knowledge, memorize facts and pass tests (Darling-Hammond, 2007a; Tye, 2000). These ideas are promoted by social context, structural characteristics, as well as parent and community expectations. Subconscious assumptions such as schools play a custodial role, that there is certain subject matter that should be taught, and that teaching methods should deposit information in student's heads, play a role in this deep structure (Tye, 2000). Tye suggests, "Any one of these inhibiting forces may be strong enough to defeat change" (p. 3). Further, it is difficult for schools to sustain the implementation of a school reform model for more than a few years, and especially through a change in leadership. The principal at Georgia Elementary School changed in 2008. This offers a possible reason for the lack of structural support for the full implementation of inquiry-based curriculum at this school.

In addition, Americans are convinced that our schools are failing to produce students who can compete globally (Cuban, 2007; Goodlad, 2008; Noblit & Dempsey, 1996). This fear has lead to increased accountability measures on schools. Researchers agree that the policies evoked by NCLB have perpetuated the idea that an accountability system measured through test scores will improve schools (Cuban, 2003; Darling-Hammond, 2007a; LeFloch, et al., 2006). Furthermore, it has enabled a focus on teaching what is tested through basic skill and drill curriculum (Darling-Hammond, 2007a). Due to

NCLB legislation, Georgia created the required curriculum for elementary schools, the Georgia Performance Standards. In addition, students in third, fourth and fifth grade must pass the state test (Georgia Department of Education, 2007). This policy creates curriculum restraints for schools like Georgia Elementary School who attempt to adopt inquiry-based curriculum reform models.

Policy constraints of Georgia Performance Standards.

We do not see inquiry based on Dewey's ideas in schools today due to the coercive nature of bureaucracy perpetuated by NCLB. Embedded in the organization of our schools are educational policies constraints that arise from the required testing of the taught curriculum (Cuban, 2003). Teachers are busy planning lessons to teach Georgia's required curriculum so students can pass the high-stakes assessment, and this leaves little time for curriculum that interests the students. LeFloch, et al. (2006) found schools implementing a comprehensive school reform model had difficulties due to NCLB constraints. Teachers who taught in one district shared that the reform model had to be put aside so they could focus on teaching what was tested. In addition, Kennedy (2004) found teachers' primary area of concern when implementing school reform was the time the reform model took away from their teaching of the tested curriculum. Consistent with research by LeFloch, et al. and Kennedy (2004), teachers at Georgia Elementary School spent most of their day teaching subjects that are tested on Georgia's high-stakes assessment, leaving only one hour for inquiry-based curriculum.

In addition to the time constraints placed on inquiry, teachers had difficulty meshing the Georgia Performance Standards within the IB framework. IBO suggests

teachers create transdisciplinary units of inquiry. However, teacher participants indicated their difficulty in ensuring all Georgia Performance Standards (GPS) fit inside the units of inquiry. As Kennedy (2004) suggests, teachers often veer from reform models because they fear the model will distract and disrupt the teaching of the required curriculum. Peter shared the difficulty the team of teachers had when trying ensure the requirement of IB for the unit to have a global focus, while ensuring they were teaching the GPS. In addition, the units focus on the curriculum topics required by GPS, not on students' interests.

Influences of high-stakes assessments.

I found evidence that the constraints of high stakes assessment prevent student inquiry at Georgia Elementary School. Elementary schools are accountable for student performance on the Georgia Criterion Reference Competency Test; therefore, teachers at Georgia Elementary School felt pressure for their students to perform well on this test. Even Patsy, who teaches kindergarten, mentioned that although she doesn't feel the pressure of CRCT, she knows teachers in higher grade levels do. The participants expressed concern for the time constraints placed on inquiry due to the requirements for this test. Teachers in my study would agree with Kohn (1999), who stated standardized tests get in the way of students' learning. A school leader's focus on inquiry-based instruction should override the pressure placed on teachers for students to perform well on high stakes assessments. The push for better test scores creates a time constraint for inquiry, which Peter, Cheryl, and Lynda mentioned. Research shows high-stakes testing influences curricular decisions (Townsend, 2002; Jones, Jones, Hardin, Chapman, Yarbrough, & Davis, 1999). Peter commented, "CRCT holds up everybody," adding the

fact that fourth grade teachers teach the “fun unit at the end of the year” once the high-stakes testing is over. In addition, Townsend (2002) found school personnel typically buy into the myth that the only way to raise test scores is the use teacher directed instruction for test preparation on skills that are tested. This is the case with Cheryl, as she stated she was busy doing “CRCT prep stuff.” Further, Lynda was having trouble figuring out how to give students time to inquire and cover all of the standards so students could pass the high-stakes test. Just as Kohn (1999) and Cuban (2007) suggest, the policy constraints of testing are real. In addition, Tye (2000) suggests students are tested using inappropriate tests that provide meaningless scores, and then retained in third or fifth grade while ignoring the research that shows retention leads to higher drop-out rates. This is especially true for students from economically disadvantaged families.

Culturally responsive school reform.

The IB curriculum is not typical of the curriculum found in schools with high populations of economically disadvantaged students (Kyburg et al., 2007). According to Jackson (1986), Cuban (2003) and Kohn (1999), schools with students from economically disadvantaged families are more likely to have a curriculum focused on learning basic facts through drill and practice. This was not the case at Georgia Elementary School, where 97% of the students’ families are economically disadvantaged. While teachers expressed difficulty balancing inquiry-based instruction with the accountability of high-stakes assessments, the IB PYP framework provided the scaffolding teachers needed to develop inquiry-based curriculum units to teach the Georgia Performance Standards. However, Spillane (2002) suggests, teachers beliefs about educating economically disadvantage students can influence the curriculum. For

example, teachers like Cheryl often resort to teaching basic skills while rejecting intellectually challenging pedagogy. In addition, Anyon (1981) suggests the decisions teachers make about what to teach and how to teach it are constrained to some degree by what they know and believe about educating economically disadvantaged students. Therefore, teachers need to develop a belief system that students from economically disadvantaged families can be successful when taught using an intellectually challenging curriculum. In Cheryl's case, her beliefs about the abilities of her students will need to change in order for her to believe third grade students can inquire. Even though the student inquiry at Georgia Elementary School was not to consistent with Dewey's ideas, students in three of the four classrooms I observed at this high poverty school experienced some level of inquiry-based activities part of their school day.

Lessons from Cheryl.

Another problem that exists within the deep structure of schools is the complexity of the school faculty and staff (Tye, 2000). For example, a teacher who does not share the vision of the school or support a reform model places a leader in a difficult situation. While the IBO has deemed the level of implementation of the PYP as satisfactory at Georgia Elementary School, data from Cheryl's observation and interview indicate she did not seem to share the same passion for inquiry-based curriculum as the other participants in my study. As suggested by Supovitz et al. (2000), immersion within a culture of inquiry does not guarantee teachers such as Cheryl will change their beliefs about inquiry-based curriculum. Implementing change depends significantly on the meaning the change has to those who must implement it (Evans, 1996). Furthermore,

according to Eaker (2002), fundamental changes in teaching practices will not take place without altering teachers' belief system.

While the safe and free environment created by the principal at Georgia Elementary School provided the flexibility for teachers to design units of inquiry, this freedom is problematic in the case of Cheryl. As suggested by Evans (1996), the principal's commitment to a particular reform model and authority to enforce it does not guarantee successful implementation. Once the classroom door closes, teachers are in charge of their classrooms. In the lesson I observed, Cheryl did not choose to use inquiry-based curriculum with her students. Consistent with research by Roehrig & Kruse (2005) and Tung & Feldman (2001), Cheryl's beliefs about curriculum play a role in her decision to use a more traditional curriculum. In Cheryl's case, she appears to have a misunderstanding of inquiry-based curriculum, or she is resistant to change. Balch-Gonzalez (2002) found in any school reform model, having a shared definition is crucial. When defining inquiry-based curriculum Cheryl described it as "teacher directed." In addition, as Tung and Feldman (2001) suggest, Cheryl's resistance could be caused by her attitude which stems from years of teaching in isolation and seeing initiatives come and go. Cheryl indicated she had taught for 26 years, and she was not in on the decision to become an IB school. She joined the staff the first year of the authorization process. As Svec, Pourdavood & Cowen (1999) propose, teachers often resist because they feel unsecure and inadequate implementing the reform model. Cheryl's statement "I've had to push myself to learn more about science" reveals her impression that she lacks content-area knowledge. Researchers suggest the lack of content-area knowledge may affect a teacher's ability to use inquiry-based lessons (Roehrig & Kruse, 2005; Svec et al., 1999).

The principal plays a key role in the implementation of any school reform model (Fullan, 2006). For the successful implementation of any reform model the principal must be aware of teachers' lack of support for the model and teachers' attachment to traditional teaching practices (Costa, 1985; Evans, 1996). In Cheryl's case, the principal needs to be aware of her lack of understanding of inquiry-based instruction as well as her commitment to direct instruction. The role of the principal is to observe instructional decision-making and address specific classroom level problems of reform implementation (Costa, 1985; Holdzkom, 2002). According to Dewey (1910/1997), a teacher's lack of providing meaningful inquiry-based experiences could be a problem of depth. Cheryl touches lightly on what she believes is inquiry and acts superficially. During the observation, Cheryl asked factual questions that did not require much thought to answer. It is possible her students are busy trying to get the correct answer by guessing what the teacher is thinking rather than independently engaging in deep thought. Dewey (1910/1997) suggested, the mind needs training in the mental habits of deep thought, therefore teachers should create meaningful learning experiences that require deep thought. Researchers would agree teachers like Cheryl need additional professional learning (Dewey, 1910/1997; Svec et al., 1999). Furthermore, Cheryl needs to develop a personal sense of confidence in inquiry-based instruction. Researchers suggest success is dependent upon the teacher's ability to take risks and collaborate with others (Svec et al., 1999; Tung & Feldman, 2001; Wahlstrom & Louis, 2008).

Implications of my study

My qualitative study of inquiry provides a deeper understanding of inquiry-based curriculum in an IB elementary school. While it does not provide evidence that inquiry is

present in all IB elementary schools, my normative framework provides the lens for understanding student and teacher inquiry at Georgia Elementary School. There are several implications of my study.

Although the IB PYP provides structure for student and teacher inquiry, weaving the Georgia Performance Standards into the IB units of inquiry is a large, time-consuming task (Yonezawa & Datnow, 1999). However, evidence from my study reveals the IB Primary Years Program offers the flexibility needed for teachers to incorporate the Georgia Performance Standards within the IB framework and provide a level of inquiry-based experiences for students. It is particularly noteworthy, that teachers at Georgia Elementary School are teaching social studies and science standards. This practice is inconsistent with researchers who suggest social studies and science are usually the first subjects left out of the day's lessons because the accountability measures are in reading and math only (McCaw, 2007; Rothstein & Jacobsen, 2006; Rothstein & Jacobsen, 2007). My study informs educators of how teachers can navigate the state curriculum restraints, high stakes testing accountability and the inquiry-based curriculum of the IB PYP.

Secondly, my study shows the importance of a school leader's support of an environment for inquiry. The principal of Georgia Elementary School appeared to be committed to the success of the IB PYP, creating an environment that encouraged collegial relationships and teacher collaboration (DuFour & Eaker, 1998). He developed trusting relationships and gave teachers the autonomy to make curricula decisions for their students as much as Georgia policy would allow. As suggested by Tanner & Tanner (1995), he provided release time and professional learning which are crucial for teachers

if they are to improve teaching and learning through inquiry. However, he did not ensure a common definition of inquiry-based curriculum. The lack of a common understanding of inquiry–based curriculum played out in the different inquiry-based experiences teachers in my study provided. It is important for school leaders in an IB school to work towards a common vision for a reform model and to provide the professional learning teachers need to develop a deeper understanding of inquiry-based curriculum (Costa, 1985; Supovitz et al., 2000). In addition, a school leader should provide the time needed to support student inquiry through a flexible master schedule and resources. Furthermore, it is important for a school leader to select teachers who value inquiry-based instruction and carefully train all teachers, especially when implementing the IB Primary Years Program.

Thirdly, my study informs educators of the use of an inquiry-based curriculum within a high-poverty school. Researchers believe schools that serve students from economically disadvantaged families use traditional teaching methods which perpetuate the pedagogy of poverty (Kohn, 1999; Haberman, 2005). These methods involve direct instruction, memorization of facts and basic skills practice (Jackson, 1986; Haberman, 2005). However, at Georgia Elementary School, where 97% of their students are from economically disadvantaged families, four out of the five teachers in my study were providing some level of inquiry-based activities for students. Munns (2007) suggested, students from economically disadvantaged families often resist high-level tasks and their engagement involves more compliance than enjoyment. Data from my study showed student actions reflected their emotional engagement and excitement for research. By using the IB curriculum frameworks, teachers were able to develop a level of inquiry that

is not described in traditional teaching methods, even though this level did not reflect all aspects of Deweyan inquiry. To use the definition of success established by Georgia policy, we can say these students are successful because their school met adequate yearly progress benchmarks as measured by Georgia's high stakes assessment. However, to use Dewey's ideas, students were successful because they were actively engaged in meaningful learning experiences.

In conclusion, my study supports the fact that school reform does not come without cost. There is the cost of time for implementation as well as financial resources to implement the reform model. In fact, Tye (2000) suggests, there is big business in school reform models because federal monies offered through Title III grants are intended to stimulate educational problem solving and innovative programs. The IB PYP is expensive, due to the cost for professional learning sessions, cost of travel, and the cost of IB staff support throughout the authorization process. Schools with high populations of economically disadvantaged students often receive government Title funds that can help pay for the cost of the program. However, non-title schools do not have the same access to these government funds. As Tye (2000) suggested, money often plays a role in deciding what experiences children have in schools.

Recommendations for Future Research

Although my study is limited to the inquiry that exists at Georgia Elementary School, it adds to the small amount of research available on the IB Primary Years Program. My recommendations for future research are to replicate my qualitative study in other IB elementary schools to compare the levels of inquiry. Each school environment is

unique to the individuals who work within that school (Jackson et al., 1993). Therefore, the level of inquiry may be lower or greater in a different IB elementary school. We do not know the level of inquiry in a school without the IB program; therefore, a replication of my study in a non-IB school would inform educational leaders of the value of the IB program in providing a framework for inquiry-based instruction and teacher inquiry. In addition, it would be beneficial to explore the level of inquiry in an IB private school, as they do not participate in the high-stakes assessments required in Georgia public schools.

My study barely scratched the surface of the conditions needed for student and teacher inquiry. As stated by Jackson et al. (1993), the moral life of the classroom is extremely complex. By observing four different lessons taught in four different grade levels, I did not generate enough data on the conditions that promote or hinder inquiry within the classroom. We need additional research to identify the classroom and institutional conditions that influence or hinder student and teacher inquiry.

Hickman (2007) said inquiry is an "organic activity" that requires constant revision, because our experiences are constantly changing as we take into account the materials and tools currently available. The world of education is constantly changing as new research emerges; in the words of Garrison (1997), "inquiry is never complete" (p. 85). We must constantly reflect on our actions and their results. Therefore, as new theories of inquiry emerge from the literature, researchers should use these theories to study inquiry in elementary schools.

Conclusion

Noblit & Dempsey (1996) suggest, "It is time to face the inescapable conclusion. We are unable to reform American Education" (p. 1). Even though the deep structures of

Georgia Elementary School prohibited inquiry at a deep level, the structure of the IB framework has potential for creating meaningful inquiry-based experiences for students. The conditions that influenced teacher inquiry at Georgia Elementary School were consistent with my framework for inquiry. A collaborative, professional learning community existed in the school. It is important to note, the school principal played an important role in providing the conditions necessary to promote teacher inquiry. Sergiovanni (1996) suggests effective leaders focus on human relations that are sensitive to the needs of teachers, which in turn motivates teachers to accept or implement change. Through a supportive environment, Georgia Elementary School's principal built trusting relationships with his faculty as well as among the school faculty members. He built capacity within his building by giving teachers autonomy to make curricula decisions, even though they worked within the constraints of Georgia curriculum (Donaldson, 2006).

Hindrances of inquiry that I found provide caution for leaders who want to create a culture of inquiry within their schools. The strongest theme that emerged was the lack of time for student inquiry. In addition to creating a culture for inquiry, principals and teachers need to provide time for students to inquire. Dewey (1902/2001) believed the curriculum should interconnect and not separate areas of subject matter content. Therefore, the master schedule should be flexible enough to allow teachers to teach transdisciplinary units throughout the day.

As suggested by Cuban (2007), the policy constraints of NCLB are real at Georgia Elementary School. Teachers feel the pressure to ensure the teaching of all Georgia Performance Standards so their students will do well on the high-stakes

assessment. However, Mintrop & Suderman (2009) suggest “Raising the overall achievement of a whole national educational system and closing the achievement gap is obviously an enormously complex problem” (p. 354). Will the curriculum constraints be lifted in the future, providing a greater opportunity for successful implementation of inquiry-based curriculum like that in the IB program? Mintrop & Suderman suggest although the current system is in danger of failing, there will always be some type of accountability and mandates on the curriculum in schools. However, Tye (2000) states, “Hope lies in the unique personality of every school” (p. 155). With a supportive structure, a leader and faculty with a shared vision and commitment to inquiry, schools who adopt the IB PYP can provide meaningful inquiry-based learning experiences for their students.

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APPENDIXES

APPENDIX A

Georgia State University
Department of Educational Policy Studies
Informed Consent

Title: The Visibility of Deweyan Inquiry in an International Baccalaureate Elementary School

Principal Investigator: Dr. Donna Breault – Principal Investigator
Sabrina May – Student Principal Investigator

I. Purpose:

You are invited to participate in a research study being conducted at your school. The purpose of the study is to learn how students inquire in the classroom, how teachers inquire and what conditions influence inquiry in an International Baccalaureate (IB) elementary school. The study seeks to answer the following questions:

What inquiry exists for students in the classroom?
What inquiry exists among the teachers?
What conditions influence a culture of inquiry in the classrooms and the school?

A total of four teacher participants are being recruited for this study. You are invited to participate because you have at least two years of teaching experience at this IB elementary school. Participation will require three hours of your time over a four-month period, between February 2009 and May 2009.

II. Procedures:

If you decide to participate, your classroom will be observed for approximately one hour while you are teaching an inquiry-based lesson. You are also asked to participate in an audio-taped, individual interview lasting approximately one hour. Lastly, you will be asked to read the transcribed interview to provide reliability, which will take up to one hour of your time.

III. Risks:

In this study, your will not have any more risks than those in a normal day of life.

IV. Benefits:

Participation in this study may not benefit you personally. Overall, we hope to gain information about how students and teachers inquire, as well as what influences a culture of inquiry in an IB elementary school. The information gained in this observation will add to the body of research on inquiry-based instruction, conditions that influence inquiry and inquiry in the IB elementary school.

V. Voluntary Participation and Withdrawal:

You do not have to participate this study. If you decide to participate in the study and change your mind, you have the right to withdraw at any time. Whatever you decide, your will not lose any benefits or suffer any repercussion from the investigator or Georgia State.

VI. Confidentiality:

The notes from the observation and interview will be kept private to the extent allowed by law. We will use a code (Teacher 1, Teacher 2, etc.) rather than your name on research records. Only the PI and SI will have access to the information. The notes and transcriptions will be stored electronically on a computer hard drive (with firewall protection). The key for the teacher codes will be stored on a jump drive separate from the data to protect your privacy. All information will be destroyed after the study is complete.

VII. Contact Persons:

Contact Sabrina May, SI at smay4@student.gsu.edu if you have questions about this study. If you have questions or concerns about your child's rights as a participant in this research study, you may contact Susan Vogtner in the Office of Research Integrity at 404-413-3513 or svogtner1@gsu.edu.

VIII. Copy of Consent Form to Subject:

You will be given a copy of this consent form to keep. If you are willing to participate and be auditaped please sign below.

_____ _____
Participant Date

_____ _____
Principal Investigator or Researcher Obtaining Consent Date

APPENDIX B

Georgia State University
Department of Education Policy Studies Interview Schedule

Title: The Visibility of Deweyan Inquiry in an International Baccalaureate Elementary School

Principal Investigator: Dr. Donna Breault – Principal Investigator
Mrs. Sabrina K. May – Student Principal Investigator

Questions for teachers concerning inquiry-based curriculum and classroom culture:

1. How do you define inquiry-based curriculum?
2. Give examples of lessons that require student inquiry.
3. How do you develop inquiry-based units?
4. Describe a classroom setting used to promote inquiry.
5. What is your description of learning with a moral purpose? Give examples of curriculum that has a moral purpose.
6. Give examples of how you promote an inquiry-based environment in your classroom.
7. What conditions do you feel are necessary to promote a culture of inquiry for your students?
8. Are there any conditions that hinder inquiry in your classroom? If so, what are they?

Questions about teacher-inquiry and school culture

1. How do you describe inquiry at the teacher level?
2. Give examples of your involvement in teacher inquiry.
3. Describe a reflective experience you have had as a teacher.
4. Describe an experience of inquiring with other teachers.
5. Give examples of the conditions in your school that promote teacher inquiry.
6. Do any conditions hinder teacher inquiry? If so, what are they?

APPENDIX C

FRAMWORKS

I Frame Work for Inquiry

A. Solving an Authentic Problem

B. Meaningful Experience

C. Social Connection

D. Moral Purpose

E. Other Emerging Themes

II Conditions for Inquiry

A. Safe / Secure Environment

B. Interaction and Collaboration with Others

C. Time and Freedom for Inquiry and Reflection

D. Other Emerging Themes