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Evaluation of the State of Georgia's School Instructional Extension Program (SIEP) at One Middle School

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MA, American Intercontinental University, 2007

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

This study examined the implementation of the State of Georgia's School Instructional Extension Program (SIEP) at one middle school in a rural school district. SIEP was adopted in this district in an effort to improve outcomes for students who demonstrate deficiencies in core-academic subjects. For the past 2 years, SIEP has been used at this study site to address low academic performance in the area of mathematics. However, to date, school leaders have not developed a system to evaluate the efficacy of the program. The purpose of this project study was to conduct a comprehensive program evaluation that addressed the program's strengths and weaknesses in terms of student achievement. Bandura's self-efficacy theory was used as a theoretical framework. The formative component of the evaluation used a concurrent, mixed-methods design to analyze data from program stakeholders through student surveys ($n = 36$), teacher surveys ($n = 8$), and a teacher focus group ($n = 5$). The summative component used 2 years' scores for the mathematics Georgia Criterion-Referenced Competency Test (GCRCT) to conduct 2-way ANOVAs that compared the SIEP students' mean gains scores to the mean gains score of low-performing students who qualified for SIEP but did not participate in the program. Summative findings indicated that the program did not significantly impact students' mathematics GCRCT gains scores. Moreover, formative data revealed suggestions for the program's insignificant impact including lack of teacher preparation time and program schedule time. Implications for positive social change that should follow program reform include: (a) improving student achievement in mathematics, (b) making evidence-based decisions regarding best practices for teachers, and (c) using data to implement effective academic programs.

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Dedication

This dissertation is dedicated to my mother, Theresa Adams. Thank you for passing down to me your persistence, resilience, and endurance. Although you are no longer here with me, I will always strive to make you proud. I love you, Mommy, and may you always rest in peace!

I am also extremely grateful for the support, encouragement, and prayers from my family, friends, and church members. Thank you for listening to me and for helping make this dream become a reality! A special thank you also goes out to my sister and brother who were probably my biggest cheerleaders throughout this entire process! You knew that I would finish this journey, even when I didn't know if I would. I love you and appreciate you both very much!

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Section 1: The Problem

Introduction

Educational researchers in the 21st century have given significant attention to instituting reforms to close achievement gaps in American education (Balfanz & Byrnes, 2006; Goddard, Sweetland, & Hoy, 2000). There is a growing nationwide trend to hold teachers, schools, and districts accountable for what teachers teach and for what students learn. The National Assessment of Educational Progress (NAEP) is one national, criterion-referenced competency assessment developed to assess whether states are actually improving their students' academic achievement. More specifically, the NAEP (2011), as mandated under the No Child Left Behind Act (NCLB) of 2001, is designed to provide a general picture of what standards American students have mastered and can perform in reading and mathematics (NCES, 2011).

One stated goal of NCLB is to ensure that by the year 2014, all students will perform at the *proficient* level of competency in both areas. Results from the most recent NAEP assessment (2011) involving a sampling of 175,200 eighth-grade students indicated that 25% of students nation-wide performed at the *below basic* level of competency in mathematics (NAEP, 2011). This same assessment found that in the State of Georgia, 26% of a sample of 4,169 eighth-grade students also performed *below basic* competency in mathematics (Georgia Department of Education [GaDOE], 2011).

The Georgia Criterion-Referenced Competency Test (GCRCT) is another assessment designed to measure student performance in the area of mathematics. Test data from the 2013 GCRCT administration indicated that nearly 20% of 122,487 eighth-grade students in the state of Georgia did not meet grade-level expectations in mathematics for the 2012-2013 school year (GaDOE, 2013a). This problem is not regionally isolated: data shows that out of the 180 school districts in Georgia, 108 of them had 15% or more of their students not meeting the standards for eighth-grade (GaDOE, 2013a). One school district within this subgroup is Harris County School District (pseudonym). GCRCT score reports for the 2012-2013 school year show that 15.1% of eighth-grade students did not meet grade-level expectations, compared to 12.7% sixth-grade students and 6.7% seventh-grade students within this same district. (GaDOE, 2013a).

For this project study, I conducted a formative evaluation of an academic remediation program that targeted struggling students in the area of mathematics in a rural middle school located in Harris County School District in south Georgia. The program under study, the School Instructional Extension Program (SIEP), was put in place by the school's administrative team to provide support to address the academic needs of students who perform below grade-level expectations in mathematics (Anonymous, 2012). The SIEP is funded by the state, but was implemented at the local district level to satisfy Georgia Code § 20-2-184.1a, which states that "Such funds shall be used for addressing the academic needs of low-performing students with programming, but not limited to, instructional opportunities for students beyond the regular school day, Saturday classes, intersession classes, and summer school classes" (State of Georgia, 2011, p. 647).

Each year, schools are allotted a specific sum of money to compensate teachers for their participation in SIEP. These funds are distributed evenly to each of the schools within the district. Elementary schools are required to use these funds for implementing SIEP outside of normal school hours; however, middle and high schools are allowed to use their funds to implement SIEP during the school day provided sessions are held during teachers' planning time (J. Callaway, personal communication, June 13, 2013). The schools leaders will interpret how to best use these funds to provide instructional programming that meets the needs of students who struggle academically. Therefore, the design, process, components, and assessment systems for SIEP are not always the same at each school within the district (J. Callaway, personal communication, June 13, 2013). This study examined how one school in the district, Jones Middle School (pseudonym), used SIEP funds to create effective programming to promote academic achievement in mathematics for middle school students. Approximately $270 per week is used to compensate teachers at Jones Middle School for their participation in the program.

Moreover, this project study was especially important due to a lack of evidence suggesting that SIEP at Jones Middle School was developed according to any specific research-based program design. The components of SIEP, however, are very closely aligned to Alessi and Trollip's (2001) Process of Instruction instructional model. According to that model, the following four activities, or phases of instruction, should occur in each learning session: (a) presentation of the material; (b) guide the learner through the material; (c) allow time for the student to practice the material to enhance retention; and (d) assess the learner to determine how well he has learned the material.

The authors also suggested that their model of instructional design is appropriate for classrooms in which the teacher blends direct instruction with computer-aided instruction (CAI) to deliver content. Alessi and Trollip describe the blended-learning environment as:

> Present initial information after which the learner receives guidance from an instructor and practices using a workbook. One may learn initial information from a lecture, after which the computer is used to practice some parts of the material for fluency (p. 10).

In SIEP, teachers use direct instruction and CAI to enable students to understand specific skills and improve their performance in mathematics. Direct instruction combined with CAI has been proven to have a positive influence on student achievement in mathematics (Al-Makahleh, 2011; Wintz, 2009). CAI is intended to supplement, not eliminate quality instruction and is most effective on student performance when coupled with other instructional strategies (Mills & Tincher, 2003). CAI was implemented in SIEP during the 2013-2014 academic year, so empirical evidence does not exist to validate its effect on achievement levels for students participating in SIEP. The administrative team does not specify which computer-aided instructional program must be used in SIEP.

SIEP is used at Jones Middle School to help remediate deficit areas in student performance and to close achievement gaps in mathematics (HMS Continuous School Improvement Plan, 2013). These gaps are assessed using the mathematics Georgia Criterion-Referenced Competency Test (GCRCT). The mathematics GCRCT is administered annually at public schools in the state of Georgia to measure how well students in first- through eighth-grade have mastered the standards outlined in the Georgia mathematics curriculum (GaDOE, 2013a). Mathematics GCRCT scores that are below 800 are an indication that a student does not meet the standard for that grade-level. Therefore, a student that achieves a score below 800 on the mathematics GCRCT is said to perform below grade-level expectations and will be invited to participate in SIEP. For the 2013-2014 school year, SIEP was offered to students in grades six through eight who performed below grade-level expectations in addition to those who scored between 800 and 810 on the mathematics GCRCT. Students who scored between 800 and 810 met the standard for their grade-level, but were recommended for additional support in mathematics as determined by the mathematics teacher. For the 2013-2014 school year, there were 136 students that met the qualifications for participation in SIEP (GaDOE, 2013a).

Participation in SIEP at this school is strongly urged, but it is not mandatory. Students participate in SIEP two days each week with each session lasting no longer than 45 minutes, giving students an opportunity to receive an additional 90 minutes of instruction per week. Sessions begin in September and end in April of each school year. Every six to nine weeks, per a directive from the administration, a new teacher assumes the role as SIEP teacher and eithers continue with the curriculum established by the previous teacher or develops their own. By the end of the program, students will have been exposed to various instructional activities and teaching styles that may fluctuate in terms of quality and effectiveness.

Although the United States Department of Education exempted the state of Georgia from the mandate that all students must be proficient in mathematics by 2014 as outlined in the NCLB Act, students are still expected to meet grade-level expectations (GaDOE, 2014). District- and school-level administrators are charged with the responsibility of ensuring that teachers are using educational practices in the classroom to help students demonstrate proficiency in mathematics. In meeting the needs of Georgia's students, the district- and school-level administrators recognize that meeting the academic needs of all students requires extended learning time by increasing the number of hours or days in the school schedule or by implementing out-of-school programs like summer school that function separately from the regular school day (Chalkboard Project, 2008). The typical academic schedule does not necessarily reflect how much instructional time is truly needed for *all* students to demonstrate success. Therefore, additional instructional time is needed in cases where students fall deficient in the regular mathematics classroom under a typical academic schedule.

In lieu of having to meet NCLB demands, Georgia schools are currently evaluated using the data-driven School Keys: Unlocking Excellence through the Georgia School Standards protocol that describes "what Georgia schools need to know, understand, and be able to do" (GaDOE, 2008, p. 3). School Keys was inspired by the works of Marzano (2003); Marzano, Walters, and McNulty (2005); and the standards of the Southern Association of Colleges and Schools (SACS) Council on Accreditation and School Improvement (AdvancED, 2007). In his book, *What Works in Schools,* Marzano (2003) highlighted three research-based factors that impact student achievement and provide information to help schools identify their strengths and weaknesses in order to implement a solid school improvement plan: (1) school-level variables, (2) classroom-level variables, and (3) student variables. Additionally, School Keys takes into account that school leaders play a vital role in how successful students are in attaining academic achievement and mastering state standards (Marzano et al., 2005). These works, coupled with SACS's standards for quality and effective practices in support of student learning, make School Keys a dynamic tool to help Georgia's schools commit to a continuous process of improvement.

According to the GaDOE (2008), schools are evaluated in eight major areas of school improvement: (a) Curriculum; (b) Instruction; (c) Assessment; (d) Planning and Organization; (e) Student, Family, and Community Support; (f) Professional Learning; (g) Leadership; and (h) School Culture. This project study explored one rural middle school's approach to satisfying the requirements of School Keys in the area of Instruction through the use of SIEP. The Instruction strand is defined as, "Designing and implementing teaching, learning, and assessment tasks and activities to ensure that all students achieve proficiency relative to the Georgia Performance Standards (GPS)" (GaDOE, 2008, p. 19). Direct instruction and CAI are the primary models of instruction used in SIEP for teaching, learning, and assessment tasks and activities. Therefore, teachers include direct explanation, modeling, guided practice, and skill application through CAI in their instruction to help students achieve proficiency in mathematics.

In this section, the problem is defined and supported with evidence from the local school, the school district, and the available research literature on mathematics instruction, mathematics school remediation programs, and program evaluations. In addition, important terms for this study are explained. The overall results of this project evaluation study will be significant to both local- and district-level administrators for the purpose of making any necessary changes to SIEP.

Definition of Problem

A program evaluation is an efficient way to collect and analyze data for the purpose of making evidence-based decisions to reform a program and, consequently, enhance student learning (Cook, 2010, p. 297). Although the school district used in the study does not infringe upon how each local school uses SIEP funds to provide instructional programming for low-performing students, it does expect that each school ensure the program's success by implementing a systematic progress for monitoring both the instructor and student progress. School leaders should adhere to the following as it relates to SIEP at their respective schools (personal communication with district's SIEP Coordinator, June 13, 2013):

> Review of teacher lesson plans, classroom visits, and analysis of student data are measures that should be in place to ensure appropriate use and maximization of SIEP funding. SIEP plans should be embedded in your School Improvement Plan (SIP) and a part of the continued monitoring of strategies and interventions.

According to district administration, there is no evidence that the above referenced expectations were adhered to at Jones Middle School. In addition, prior to this study no research had been conducted to show the impact or effectiveness of SIEP on student performance in mathematics at Jones Middle School.

The specific problem investigated by this study was that Jones Middle School lacked a systematic and meaningful program evaluation for monitoring both the instructor and student progress in SIEP. No evaluation provided substantial information for decision-making and reform related to SIEP; this was problematic because evaluation is vital to the success of any program, particularly in understanding the impact that the program has on student outcomes from the stakeholder’s perspective (Baehr, 2010; Stufflebeam & Shinkfield, 2007). Because the program had never been evaluated, the local school leaders knew little information about the challenges or the effectiveness of the program. Although it appeared that Jones Middle School was making targeted efforts by using SIEP to improve performance outcomes for students who struggle in mathematics (HMS Continuous School Improvement Plan, 2013), the administrative team could not concretely demonstrate that SIEP was helping to close achievement gaps in mathematics in the most effective way.

The purpose of this study was to address Jones Middle School’s lack of a systematic and meaningful evaluation tool for monitoring both teacher and student progress in SIEP. It was designed to provide the administrative team with data that can be used to make improvements and adjustments to the program. First, I created and conducted a formative evaluation of SIEP during the second half of the 2013-2014 school year. This evaluation was used to determine which components of SIEP worked, why they worked, and which components needed improvement for the following school year. School and district administrators depend on SIEP as mathematics remediation for low-performing students. Second, I conducted a summative evaluation to test the efficacy of the program on student achievement in mathematics. Using the data from the formative and summative evaluations, I developed a full executive report that emphasized recommendations for directions to take to improve SIEP and positively impact student outcomes.

There is no published literature providing an empirical assessment evaluating whether SIEP actually improves the academic experience of middle school students who struggle in mathematics at Jones Middle School. Because school leaders have never evaluated SIEP, the strengths and weaknesses in addition to the impact of the program on student achievement in mathematics is unknown. Therefore, an evaluation of SIEP was necessary to determine if the school's goals for the program were being achieved. Accordingly, this study was an initial step in evaluating the efficacy of the program. Data from this evaluation study could support the local school leader's decisions to change or enhance the program. The data could also provide evidence for the school administrators should they decide to advocate for more support from district, state, and federal level officials.

Rationale

Evidence of the Problem at the Local Level

Success for all students is the primary mission of Jones Middle School. The administrative team would like for students to achieve excellence and pride through rigorous academic standards, high expectations, and incorporating real-world applications (Jones Middle School, 2012). To achieve this mission, all teachers are expected to maintain a standards-based classroom where routines and standards are posted, rubrics are used and posted, students are engaged, and assessments are used to guide instruction so that the academic needs of all students are satisfied. Along with the school's mission statement, the school leaders also developed a school improvement plan which highlighted very specific academic goals for all students in all subjects.

According to GCRCT data for the 2012 and 2013 school years, students at Jones Middle School have demonstrated an increase in mathematics achievement in grades six through eight (see Table 1). Despite the increase, there still remains a wide achievement gap for eighth-grade students at Jones Middle School when compared to student achievement at the district- and state-level as well as student performance in grades six and seven for both years. The percentage of students not meeting the standards in seventh-grade at the school level (8.5%) remains below state-level percentages (9%), but are higher than district-level percentages (6.4%). Nonetheless, percentages for seventh-grade students are below that of the sixth- and eighth-grade students at the state, district, and school levels for both the 2012 and 2013 school years.

Table 1

Comparison of the Percentage of Students Not Meeting the Standards on the GCRCT

Grade	2012 State Level	2012 District Level	2012 School Level	2013 State Level	2013 District Level	2013 School Level
	N = 367,833	*N* = 9,200	*N* =769	*N* =371,753	*N* = 9,066	*N* = 730
6th	20.6%	17%	21.4%	17.3%	12.7%	12.5%
7th	9%	6.4%	8.5%	10.1%	6.7%	6.3%
8th	23.35%	20.5%	27.8%	17%	15.1%	21.1%

Note. GCRCT score comparison. Adapted from "GCRCT Statewide Scores,"by the GaDOE, *2013b*, Retrieved from http://www.doe.k12.ga.us/Curriculum-Instruction-and Assessment/Assessment/Pages/GCRCT-Statewide-Scores.aspx

These data do not directly indicate to what degree SIEP contributed to the increase and decrease in performance as no prior research exists on the effectiveness and impact that the program has on student achievement and GCRCT scores in mathematics. The changes in scores, then, can very well be attributed to other mathematics-centered, instructional programs provided by the school such as before-school tutoring, after-school tutoring, math enrichment class, and Saturday School. To date, no definite factors outside of regular classroom instruction can be credited for how students perform at Jones Middle School.

School officials at Jones Middle School use GCRCT data to make school improvement decisions for the upcoming year. Due to the achievement gaps recognized in the mathematics GCRCT data for previous years, improving student achievement in mathematics was emphasized in the school's continuous improvement plan. According to the school's continuous improvement plan for the 2013-2014 school year, the overall measurable goal for students in mathematics is to increase the meets and exceeds percentages in sixth-grade from 87% to 89%, in seventh-grade from 94% to 95%, and in eighth-grade from 79% to 82% (HMS Continuous School Improvement Plan, 2013).

The school has attempted to lower the percentage of those students who do not meet the state standards on the mathematics GCRCT by implementing SIEP. In past years, SIEP was conducted before- and after-school on Tuesday and Thursday of each week for 60 minutes session. During that time, instruction was geared towards remediation in reading and mathematics. SIEP has been instituted at Jones Middle since the 2009-2010 school year, yet has not been formally evaluated to determine its impact on student achievement or to address the concerns and needs of teachers. Therefore, an evaluation was needed in order to allow the administrative team an opportunity to consider elements of SIEP that need to remain in place and elements that need to be improved. This study purposed to provide the administrative team with such data. Improvements to SIEP are one way in which the administrative team can ensure that there are opportunities for all students to improve their academic achievement. Because SIEP had not been evaluated since its implementation, the school leaders do not know if the program's goal to improve student achievement in mathematics is being met from year to year.

Evidence of the Problem from the Professional Literature

Program evaluations are a systematic way to assess if a program needs to be refined, if it is appropriate for the targeted population, if the program activities should continue, or if there are any issues that need to be resolved (Gurau & Drillon, 2009; Zohrabi, 2012). As it relates to this study, intervention programs in the field of education are essential to curriculum development and improving student achievement (Black, Somers, Doolittle, & Unterman, 2009; Ryan, 2007; Slavin, 2008). Findings from intervention program evaluations have not only yielded data on student achievement, but also scheduling conflicts, recommendations for teaching materials, opportunities for staff professional development, and student satisfaction (Fashola, 2001; National Center for Education Evaluation and Regional Assistance, 2009; What Works Clearinghouse, 2010).

Utilizing program evaluations at the local school-level is one way to respond to Georgia's push to make all schools more data-driven. School leaders, teachers, and other decision-makers recognize the necessity for data-driven program evaluation for the remediation programs in place to improve student achievement (Baroody, Bajwa, & Eiland, 2009; Goertz, Olah, & Riggan, 2009; Ikemoto & Marsh, 2007). Data-driven program evaluations offer educators ideas about the strengths and weaknesses of the program (North Central Regional Educational Laboratory [NCREL], 2006).

Nonetheless, schools continue to implement educational programs year after year without conducting any evaluation (Chatterji, 2008; Green & Skukauskaite, 2008; Love, 2002; Olsen, 2003). Despite its significance to the success of a program, program evaluations in education are often disregarded or so poorly performed that it does not produce any substantial data (Grubb, 2001). Failing to conduct a program evaluation jeopardizes the school’s improvement process and hinders the school’s movement towards creating a positive change in the achievement levels for students. For newer programs, the evaluation process is not likely to be in the forefront of the implementation process (Fashola, 2001). However, a school’s failure to evaluate its programming could result in the loss of federal funding and, more importantly, hamper the increase in student achievement (Levine & Swerdzewski, 2010).

This project study was based on current research literature for data-driven program evaluations, particularly at the local school-level. Research has supported the need for program evaluations of academic intervention programs in order to determine what works as well as what does not work, to suggest effective instructional strategies for low-achieving students, to inform decision-makers, and to consider teacher input (Fashola, 2001; Magnolia Consulting, 2011; Metz, 2007; Slavin & Lake, 2008; Young, 2006). Students at Jones Middle School have demonstrated increases in mathematics achievement when judged by GCRCT scores. However, whether SIEP has played any role in student's improved achievements had not been determined prior to this project study. Without any continuous, data-driven evaluation tool, the school leaders at Jones Middle School will continue to employ SIEP at the risk of not making any necessary adjustments to the program. The lack of a systematic evaluation stymies the growth of SIEP and, potentially, the increase in student achievement. This study evaluated how SIEP is currently implemented at Jones Middle School by determining which components worked and which components need to be adjusted, in addition to how the program impacts student achievement as measured by the mathematics GCRCT.

Definitions

Connections: A time set aside in the regular school day in which students participate in courses outside of the normal curriculum of mathematics, English/language arts, social studies, and science. Connections classes include SIEP, home economics, band, art, chorus, physical education, and keyboarding.

Georgia Criterion - Referenced Competency Test (GCRCT): A summative assessment which measures how well students have mastered standards outlined in the Common Core Georgia Performance Standards (CCGPS). The information is used to guide instructional decisions and to monitor the quality of education in Georgia's schools (GaDOE, 2010).

Measurable Goal: A measure of student achievement as judged by Georgia's statewide-standardized tests, Georgia Criterion-Referenced Competency Test (GGCRCT).

School Instructional Extension Program (SIEP): A remediation program designed to enhance how students who struggle in mathematics (as judged by the GCRCT) perform in the regular classroom setting. SIEP is used to provide additional mathematics instruction to sixth- through eighth-grade students to support their learning during the Connections time of the regular school day. Teachers use direct instruction and computer-aided instruction to get students to understand specific skills and improve performance in mathematics.

Significance of the Study

The significance of this evaluation study is to add to the existing body of knowledge in education concerning the effectiveness of mathematics intervention programs that use direct instruction and computer-aided instruction to remediate student learning and promote positive student performance outcomes. The findings of this program evaluation study may contribute to an area of research in the field of education that has not received as much attention as other concerns. This project study used evaluation to drive a reformation of the mathematics remediation program at Jones Middle School in order to improve student performance for students participating in the program.

Schools in Georgia which have opted to implement mathematics intervention programs should ensure that their programs are improving student's performance and, ultimately, state test scores in mathematics per the mathematics GCRCT. This study, then, initiates an effort to adequately evaluate the effectiveness of one mathematics program that is intended to enrich learning and student performance. Improved student achievement in mathematics fosters social change as students, teachers, and administrators are all benefited.

The evaluation of mathematics programs are useful for the purpose of determining if students are acquiring knowledge and showing growth in learning mathematics (Cai, 2010). Without a systematic, program evaluation of SIEP, gaps in mathematics achievement may continue, increase, or be overlooked. If SIEP is not evaluated, then problems can continue and the future impact of the program will remain unknown. School Keys challenges schools to continuously improve in all areas (GaDOE, 2008). A program evaluation of SIEP is a one method that the local school could use to meet this challenge of facilitating growth.

Program evaluations are also essential for recognizing challenges and problems (Green, 2011). Weaknesses exposed through the data collected for this program evaluation study can help the administrative team to revise and restructure SIEP in order to improve student achievement. Georgia's schools have been waived from NCLB provisions, yet it is the still the goal of many local school and district officials to ensure that every student is proficient in mathematics. As a solid base for research, the study can guide administration and teachers in addressing student needs and teacher concerns in mathematics. The project study contributes to a site specific process of planning, implementing, and revising the school's improvement plans. As part of professional development, teachers can consider and make more informed instructional decisions to better support student's learning. The most effective professional development is ongoing, cultivates collaboration, and is inspired from experiences with students (Edutopia Staff, 2008). Therefore, social change is fostered because professional development is not only a gain for the teacher, but for the students as well.

This project study is an evaluation consisting of formative and summative components. The formative evaluation was a client-centered one in which both quantitative and qualitative data were collected to gauge participant perspectives of how and in what ways the program meets its goals of improving student performance in mathematics. In this collaborative evaluation approach, the evaluator develops his understanding of the program based on the perspectives of the clients. The clients for this project study were the students and teachers who participated in SIEP for the 2013-2014 school year. Through the use of a client-centered formative program evaluation, the students and teachers had an opportunity to help in evaluating and improving SIEP, which in turn, highlighted the essential role that they can play in developing, directing, and operating a successful program (Mertens, 2002). Amba (2006) proposes that this type of program evaluation is meaningful to program enhancement and improvement. Additionally, a quasi-experimental, non-equivalent control group design was utilized for the summative evaluation by comparing the GCRCT mean gains scores for students involved in SIEP to those mean gains scores of students that are deemed low-performing based on GCRCT scores but who are not involved in SIEP (Campbell & Stanley, 1966;

Cohen, Manion, & Morrison, 2011). Overall, the summative evaluation was designed to test the efficacy of the program based on the GCRCT mathematics test scores.

Evaluation Questions

The primary research question for this project study was: What are the students' and teachers' perspectives of the effectiveness of the current components of SIEP?

Formative Evaluation

Various sub-questions were crafted to guide the formative evaluation of SIEP:

1. What are the strengths and weaknesses of the program from the teacher and student perspective?
2. What are their recommendations for improving the program?
3. What do teachers in the program need in order to make the improvements?
4. What is the relationship between the student and teacher perceptions of the strengths and weaknesses of SIEP?

Summative Evaluation

A single sub-question was crafted to guide the summative evaluation of SIEP:

5. Does participation in SIEP raise the achievement level of students who struggle with math as measured by the GCRCT?

Conducting this program evaluation study exposed the strengths and weaknesses of SIEP as well as ways in which the program can be improved from two stakeholder perspectives; the teacher and students participating in SIEP for the 2013-2014 school year. Results of this study will help the administrative team make improvements and adjustments to SIEP for the purpose of enhancing student performance in mathematics.

To best answer the questions guiding this study, it was necessary to pursue a mixed-methods approach that combined qualitative data from the focus group interviews with quantitative and qualitative data from the surveys and qualitative data from student mathematics GCRCT scores.

The complete evaluation design of this study consisted of (a) a formative component that analyzed data from anonymous surveys, teacher focus group interviews, and (b) a summative component that analyzed assessment data to determine the extent of student growth after participation in SIEP. The project component is a responsive executive summary that includes suggestions for program improvement according to the results of the study and a review of appropriate literature. The data collected from the formative and summative evaluations were used to guide the creation of the project.

Review of the Literature

Schools are faced with the unparalleled pressure from state and district levels to improve achievement for all students in mathematics. Remediation programs such as SIEP respond to these demands; however, in order for these programs to be effective, school leaders and other decision-makers need to know what specific strategies will likely improve achievement (Slavin, 2006). Therefore, in meeting the challenge to make gains in student performance levels, there was a need to evaluate the effectiveness of the program. School leaders are better equipped to reform SIEP when they are knowledgeable of the relationship that exists between mathematics achievement and program effectiveness.

A variety of literature was reviewed in order to understand the problem of improving mathematics achievement through the use of remediation programming and evaluating the effectiveness of such programs. Because the local school leaders at Jones Middle School chose to implement a remediation program to improve the academic performance of low-performing students in mathematics, a portion of the review focuses on the necessity for program evaluation. Researchers propose that program evaluations are necessary because they provide decision-makers with valuable information about the program's strengths, weaknesses, worth, and overall impact on student achievement (Cook, 2010; Kahan & Goodstadt, 2005; Wandersman et al., 2005). If improving student achievement is the primary goal of remediation programs, then it was also important to consider issues that impede student achievement in mathematics. Therefore, the literature review focused on student self-efficacy as a primary issue for middle school students who struggle in mathematics (Bandura, 1997; Stevens, Olivarez, & Hamman 2006). Researchers agree that by improving student self-efficacy and increasing opportunities for mastery experiences, students will enhance academically in mathematics (Seigle & McCoach, 2007). Additionally, a section of this literature review focuses on types of instruction used in remediation programs that have proven to have a positive impact on student achievement in mathematics including direct instruction and computer-aided instruction (Al-Makahleh, 2011; Kausar, 2010; Mendicino, Razzaq, & Heffaman, 2009). As the Access Center (2004) points out, most computer-aided instruction-based programs for mathematics include direct instruction as a guide for instruction.

The sources used for this literature review were retrieved from the following databases: EbscoHost, Academic Search Premier, ERIC, and Proquest. The specific search terms used were: *remediation/intervention programs, mathematics remediation/intervention programs, program evaluation, social cognitive theorists, self-efficacy, self-efficacy and mathematics achievement, Bandura and self-efficacy, mathematics achievement, mathematics instructional strategies, middle grades mathematics, middle school students,* and *computer-aided programs*.

Theoretical Framework

SIEP is a mathematics remediation program that was implemented at Jones Middle School to address the academic needs of students with deficiencies in mathematics and to improve their success in mathematics as measured by state assessments. Mathematics intervention programs such as SIEP can no longer focus on a child's intellectual capabilities, but should integrate and focus on the whole child. Students that perform low in mathematics will most often suffer from deficits that are not related to intelligence including difficulty retaining information and delays in mathematical procedures (Geary, 2011). These factors, along with intellectual deficits, can contribute to how students feel and think about mathematics and their capability to succeed in related skills.

Middle school students will have diverse perceptions of and experiences with mathematics. Research shows that a component of helping students improve in mathematics is to help them improve the way that they feel, think, and respond to mathematics (Parajes, 2005; Zimmerman & Cleary, 2008). The way a student feels about his or her ability to perform certain tasks and objectives is known as *self-efficacy* (Bandura, 2006). Not only are schools challenged to address the academic needs of students who struggle in math, but they are also faced with improving their self-efficacy. Bandura (1977) was the first of many social and emotional learning theorists to use the term *self-efficacy* defining it as a, "belief in one's capacity to organize and execute the courses of action required to manage prospective situations" (p. 2). Bandura more specifically describes this as *perceived self-efficacy*, or how strongly an individual feels that his personal competence will in any manner impact the outcome. Self-efficacy is the core of student's performance in mathematics. Therefore, enhancing student achievement involves enhancing student self-efficacy (Alkharusi, 2009).

Bandura (1977) also identified four sources of information that are used to influence self-efficacy beliefs: past performance, vicarious experiences, verbal persuasion, and physiological states. Among the four sources, past performance, or *mastery experience*, is found to be the most significant way to build a student's self-efficacy and improve his chances to demonstrate success in school (Bandura, 1995; Siegle & McCoach, 2007). Bandura's (1997) perspective of self-efficacy implies that a student's success or failure on a given task is related to a personal perception of his ability to perform the task. After several successful efforts to perform a learning task, a student will develop high efficacy toward mastering that specific task. To that end, mastery experiences will breed success and increase self-efficacy. A student that maintains continued mastery experiences will most often have a high degree of self-efficacy (Seifert, 2004). On the other hand, repeated failures in attaining the same goal will produce low efficacy and likely lower the student's academic performance.

Teachers play a huge role in providing opportunities for students to experience mastery experiences. Manning (2007) suggests, "Teachers can prevent or reduce feelings of low self-concept by reducing social comparisons cues in the classroom" (p. 41). When teachers understand their student's self-efficacy levels, they can use this knowledge to guide their instruction and help students meet academic goals. It is not enough for today's educators to focus only on a student's actual mathematical ability. Since studies have found that a strong correlation between student self-efficacy and student achievement exists, teachers should undergo training in order to effectively increase students' self-efficacy and mastery goal levels in mathematics (Stevens, Harris, Aguirre-Munoz, & Cobbs, 2009). Siegle and McCoach (2007) found that teachers who modified their instructional strategies based on Bandura's four sources of information produced more confident learners and increased student's self-efficacy. The authors also proposed that students can make gains in achievement when the teacher fosters a learning environment that promotes growth and progress. Based on their findings, Siegle and McCoach recommended instructional strategies for improving student's self-efficacy in mathematics. Recommendations included monitoring student progress, modeling lessons, and using positive reinforcements; all of which are consistent with the direct instruction model of teaching.

Accordingly, a student that continues to perform at below-grade-level expectations in SIEP will likely have low self-efficacy and be in jeopardy of not demonstrating academic success within the program or in the regular classroom setting. As he succeeds in mastery experiences, however, both his level of efficacy and academic performance will improve. Self-efficacy is just as important as effort and persistence are in strengthening student performance in the mathematics classroom. Understanding how a student feels about his mathematical ability is not only essential information for teachers, parents, and administrators in helping him improve academically, but it can also help guide educational reform in mathematics (Weidmann & Humphrey 2002). That said, the research for this evaluation study was examined through the theoretical framework of student self-efficacy and mastery experiences because it has been identified as the optimal framework to adapt when providing remediation for low-performing students.

In their study on self-efficacy and student achievement, cognitive theorists Barnyak and McNelly (2009) uncovered that self-efficacy is task or context specific, meaning that a person’s behavioral patterns is predicted more by his personal beliefs about his competence than what he can actually accomplish. A student’s self-efficacy for mathematics can vary, then, depending upon the rigor of the learning task assigned. Consequently, modifying learning tasks to increase student’s self-efficacy is an ideal way to turn “I cannot” statements to “I can statements” in the mathematics classroom. Building strong self-efficacy for mathematics will help students improve academic performance in the regular mathematics classroom as well as in SIEP.

Mills, Pajares, and Herron (2007) conducted a study on self-efficacy with intermediate-level learners of the French language. The researchers discovered that self-efficacy is a substantial judge of student achievement. They also shared that learners who feel and think that they can master a task and use techniques to assess their progress and performance as they work to achieve the tasks will more likely experience success. By evaluating their progress, the researchers believed that students will change their beliefs and mindsets about their abilities in order to fulfill the desired goal. Additionally, they added that learners with higher self-efficacy are more susceptible to attempt challenging tasks opposed to tasks that are less difficult to master.

Moreover, students will not only experience changes in the way that they perceive mathematics over time, but their intentions for learning and completing tasks, or goal orientation, will also change as they get older (Bong, 2009). Goal orientation is described as a students' ultimate purpose for engaging in a learning task (Midgley et al., 2000). Mastery goals, one type of goal orientation, have received much attention due to its influence on student performance. Numerous research studies have examined the relationship between self-efficacy and mastery goals in calculating learning and achievement outcomes (e.g. Alkharusi, 2009; Kaplan, Lichtinger, & Gorodetsky, 2007, Liem, Lau, & Nie, 2008). For example, Alkharusi (2009) used a path analysis to explore the correlation between the perceptions of 242 college students in the areas of assessment environment, self-efficacy, and motivation levels. Alkharusi found that, as predicted, self-efficacy has a positive impact on mastery goals. He also discovered that classroom assessment environments which allow students to improve performance and offer informative feedback will typically have a positive influence on increasing self-efficacy and mastery goals. Similarly, Liem et al. (2008) conducted a study using a sample of 1475, year-nine students to examine the role of task value, self-efficacy, and achievement goals (mastery goals being one of them) on student achievement. Surveys were used to assess each student's self-efficacy as it pertains to the lessons and skills taught in their class. The researchers discovered that self-efficacy directly influenced achievement outcomes, but task value, or how students perceive the worth of an assignment, had a slightly greater effect. The researchers simply credited this difference to student preference of value over ability.

Kaplan and Maehr's (1999) study highlighted the impact of self-efficacy on mastery goals and two other orientation goals: performance goals and avoidance goals. Results from their study showed that performance goals and avoidance goals were strongly correlated to each other, but were both weakly correlated to self-efficacy. Mastery goals, however, were strongly correlated to self-efficacy and student achievement on tasks. Their postulation is line with Pajares, Britner and Valiente (2000) who contended that lower levels of self-efficacy have been found amongst students who have performance and avoidance goals.

Rationale for Program Evaluation for Mathematics Education

Systematic program evaluations are an effective vehicle for improving educational results for low-performing children in mathematics (Cai, 2010). It is important to take into consideration the impact that a student's confidence level has on his academic performance and his potential to succeed. Students who demonstrate difficulties in mathematics need a variety of opportunities to improve their self-efficacy and demonstrate academic achievement. Remediation programs such as the one under study are a possible solution to addressing this need. Federal and state decision-makers have stressed the use of research-based programs for helping students improve academically; however, schools are only able to satisfy this goal if school leaders know which programs will have an impact on student achievement or which components of existing programs need improvement (Slavin & Lake, 2008). Program evaluations, then, help school leaders in guiding program reform (Cook, Shadish, & Wong, 2008).

A review of the program evaluation literature (Baehr, 2010; Cai, 2010; Cook, 2010; Flores & Kaylor, 2007; Wintz, 2009) shows that the chief objective of program evaluation is to provide local stakeholders with evidence and data that can be used for the purpose of guiding decisions and improving the program. Taylor-Powell, Steele, and Douglah (1996) defined program evaluation as a "thoughtful process of focusing on questions and topics of concern, collecting appropriate information, and then analyzing and interpreting the information for a specific use and purpose" (p. 2). Chelimsky (1997) identified three categories of program evaluation:

1. Evaluation for accountability (measurement of results of efficacy).
2. Evaluation for development (the provision of evaluative help to strengthen institutions).
3. Evaluation for knowledge (acquisition of a more profound understanding in same specific area or field) (p. 10).

More specifically, program evaluations are beneficial to decision-makers because they identify areas of concern, determine the effects of the program, answer questions about the program, tell whether the program has value, and are purposeful for empowering key stakeholders (Cook, 2010; Kahan & Goodstadt, 2005; Wandersman et al., 2005).

Educational studies reveal that systematic program evaluations have contributed to the improvement of academic performance for students who demonstrate weakness in mathematics. Considering the demand for accountability and improving achievement gaps for low performing students, it is critical for schools to embrace evaluation as a guide for program reform (Latchat & Smith, 2005). Program evaluations in mathematics education are important because they help decision-makers make judgments about the program and its effect on student achievement (Cai, 2010). The absence of evaluation systems force local school leaders to rely only on quantitative data from performance measurements to judge if students improved academically due to their participation in the program (Frethcling-Westat, 2010). Performance measurements such as the GCRCT and diagnostic tests administered in SIEP, for example, are effective tools to measure growth, but they do not offer any information about the worth of the overall program. Though they serve complimentary functions, program evaluations differ from performance measurements (Slavin & Lake, 2008).

Baehr (2010) highlighted two valuable, yet distinct functions of performance measurements and evaluation:

1. Assessment provides feedback on knowledge, skills, attitudes, and work products for the purpose of elevating future performances and learning outcomes.
2. Evaluation determines the level of quality of a performance or outcome and enables decision-making based on the level of quality demonstrated. These two processes are complementary and necessary in education. (p. 7)

Accordingly, performance measurements inform stakeholders of the performance levels of students involved with the program, but do not necessarily mention the quality or value of the program itself (United States General Accounting Office [USGAO], 1998). Because performance measurements provide information to show how well students performed, they can be used as a tool in the evaluation process, but not as the evaluation measure alone (Gadja & Jewiss, 2004). The National Research Center for the Community-Based Child Abuse Prevention (2009) supports this argument in suggesting that:

> By intentionally and thoughtfully using qualitative evaluation methods, one can understand why certain results were achieved or not achieved, explain unexpected outcomes, and inform decisions about modifications to service provision. (p. 3)

Relative to this evaluation study, students' scores on the mathematics GCRCT are not substantial enough data to determine the strengths and weaknesses of SIEP. Given that SIEP is included on the school's continuous improvement plan as a strategy for enhancing academic performance in mathematics for all students, a program evaluation was needed to determine how to best improve students' achievement in mathematics.

Functions of Program Evaluation

Program evaluation has made impressive gains in education since the 1930s (Hogan 2007; Madaus & Stufflebaum, 2002). Over the course of years, a variety of program evaluations have been employed, each having its own nature and purpose (Hogan, 2007). Largely, program evaluations in mathematics education function to provide either *formative feedback* or *summative feedback* (Darusslam, 2010). Selecting the appropriate form of evaluation rests on: (a) the purpose, (b) the intended audience, and (c) what information would be most meaningful to the audience (Cook, 2010; Davidson, 2005).

Formative evaluation. Formative evaluation is an on-going method of evaluating a program that focuses on the *process* as a means to determine the merit of the program, including finding areas of strength and areas of weaknesses that need to be adjusted (Bhola, 1990; Kealey, 2010). Formative evaluation of a mathematics program occurs at different stages during the time that the program is taking place so that decision-makers can be informed of how well the program is progressing and meeting the intended goals (Grayson, 2012). One effective, formative evaluation measure is Curriculum-Based Measurement (CBM) (Deno, 1985), a data-based system of progress monitoring for students in mathematics and other academic areas (Deno, 2003; McLane, 2007). Research supports the use of CBM in mathematics to screen and monitor student progress to increase student achievement as early as the elementary years (Lembke & Stecker, 2007; McLane, 2007). CBM is appropriate for use in remediation programs as a way to monitor student progress and determine if instructional modifications are needed. Merrell, Ervin, and Gimpel (2006) said the following about CBM:

These tools have demonstrated efficacy for direct assessment and monitoring of student academic performance within the curriculum. They provide an alternative to traditional norm-referenced assessment practices and have the advantage of being more closely tied to the curriculum, they are of shorter duration, they are sensitive to incremental changes, and they can be used repeatedly to monitor growth formatively. (p. 147)

Given the premise of formative evaluation, the local school leaders at Jones Middle School may find that a formative evaluation is most suiting for improving the components of the program to enhance its effectiveness on student achievement, meet the goals outlined in the school's continuous improvement plan, and avoid stagnation (Davidson, 2005).

Summative evaluation. This type of evaluation typically takes place after the program has concluded its activities and is meaningful to decision-makers when the intent is to declare if the mathematics program worked or not (Kealey, 2010). Summative evaluations are *outcome-driven* and help generalize if a program produced positive change and growth in skill acquisition by the end of the program (Cai, 2010; Grayson, 2012, Scriven, 1991). Summative evaluation is not an on-going process (Lenze &Warner, 1995). The evaluation might hint towards improvement, but is more appropriate for determining (a) if the program should continue or discontinue and (b) if the program measured up to in costs when compared to performance outcomes (McDavid & Hawthorn, 2006). Contrary to formative evaluations, summative evaluations are not suitable for progress monitoring because they do not provide useful and immediate feedback about student performance that can drive improvement throughout the program (Lenze & Warner, 1995; Shinn, Shinn, Hamilton, & Clark, 2002). Therefore, summative evaluations do not provide empirical data that supports a need for program improvement. Shinn (2008) asserts, "as schools move away from traditional systems of determining placement and services to systems with a problem-solving or solution focused orientation, the use of measurement procedures that can be administered efficiently and linked directly to intervention are required" (p. 245).

Studies Conducted on Interventions for Low-Achieving Students

Schools are responding to district- and state-level requirements to enhance student performance and increase test scores in mathematics by seeking for and implementing educational programs to support low-performing students. One such mathematics program, SIEP, has been implemented at the school under study to provide students with opportunities to increase their mathematical abilities. There is little to no research that identifies specific strengths and weaknesses of the program's components; however, significant research does exist to support the teacher's use of direct instruction as the primary mode of instruction in the program. Direct instruction is proven to have a positive influence on student achievement (Al-Makahleh, 2011; Byers, 2009; Flores & Kaylor; 2007; Gersten et al. 2009). The direct instruction in SIEP is used in conjunction with computer-aided instruction which, according to researchers, also has positive effects on improving the performance levels of underachieving students in mathematics (Al-Shammari, Aqeel, Faulkner, & Ansari, 2012; Mendicino, Razzaq & Heffernan; 2009; Wintz 2009). If students with deficiency in mathematics are systematically taught using researched-based instructional strategies, then the academic challenges that many of them face can be minimized (Mills & Tincher, 2003). Lessening the students' academic challenges should, in turn, increase their performance levels and improve student self-efficacy in the mathematics classroom.

Direct instruction. Direct instruction is a teacher-centered, instructional strategy that utilizes modeling, scaffolded lessons, intensive drill and practice, and positive reinforcers to maximize student learning time and promote academic achievement (Al-Makahleh, 2011; Emecen, 2011; Ragnarsdóttir, 2007). Direct instruction stems from the work of Siegfried Englemann and Carl Bereiter on effective ways to teach disadvantaged children (Bereiter & Englemann, 1966). In 1967, the team became involved with one of the largest educational investigations of Direct Instruction approaches called Project Follow Through (Meyer, Gersten, & Gutkin, 1983). The target audience for this study was economically disadvantaged children in Kindergarten through third-grade throughout 180 schools. The program was introduced by the U.S. Office of Education in 1968 to identify which of eight major instructional approaches to instruction had the greatest impact on improving the academic levels of disadvantaged students. Some of the models used in this study were behaviorism, open classroom model, and constructivist approaches based on theories of Piaget (Hersen et al., 2005). Of all the instructional approaches that were surveyed in this study, researchers found that the direct instruction contributed the most to the academic achievement of the students.

Direct instruction has been a powerful instructional approach in the mathematics classroom. It is a highly-structured, skills-oriented approach to curriculum and instruction that is beneficial for learning concepts. Direct instruction is found to be effective when used for intervention purposes with students who struggle in mathematics as well as reading, grammar, and social skills (Al-Makahlen, 2011; Din, 2000; Emecen, 2011; Kausar, 2010). Teachers in SIEP employed the direct instruction approach by modeling and demonstrating all the components of each lesson that is taught. The teachers engaged students in interactive lessons that encourage class participation or class discussions. The teachers also incorporated time for both guided and independent practice following their structured presentation.

Direct instruction in mathematics intervention programs. In his article, *The BASICS Mathematics Intervention Program*, Byers (2009) discussed the Building Accuracy and Speed in Core Skills (Basics) Mathematics Intervention program which was implemented to help students who are low-achievers or have some type of learning disability in mathematics. The main goals in the program were to reverse the cycle of low-academic achievement in mathematics, to help students improve their chance of being successful in math at the secondary- and post-secondary-levels, and to empower students to use high-order-thinking skills more efficiently (Byers, 2009). Byers suggested that an intervention program focused on improving the automaticity and accuracy of basic mathematical skills and concepts enables students to engage in higher-order cognitive tasks. The BASICS program followed a pyramid intervention structure in which students were instructed in three different levels: (a) direct instruction; (b) problem-solving, and (c) inquiry-based. At each level, the teachers used both formative and summative assessments to track student data and measure their academic progress. Data showed that students made the most progress at the level of direct instruction.

A study conducted by Flores and Kaylor (2007) examined the effects of a Direct Instruction program that was implemented to assist thirty, seventh-grade students who were identified as at-risk for low-achievement in mathematics. These students did not meet the required score to pass the state-mandated assessment for at least two test administrations in the content area of mathematics. The results of the state-mandated test indicated that the greatest area of concern was fraction computation. The school responded to this concern by implementing a Direct Instruction program which was tailored to the needs of each student. After a pre-test was administered, the students were divided into two groups. The groups alternated between receiving direct instruction and traditional instruction in the area of fraction computation. A post-test was later administered to measure student growth. Data from the tests were analyzed using a *t*-test. The researchers found that there were significant increases in the student's fraction skills due to their participation in the Direct Instruction program.

Critics of direct instruction. Despite its success over the past 40 years, direct instruction has drawn its share of criticism (Kozloff & Bessellieu, 2000; Kuhn, 2007). A study that included a sample of 44 students in a fourth-grade science classroom compared direct instruction to discovery learning. Dean and Kuhn (2006) examined the students' acquisition of the control-of-variables strategy to the scientific-methods strategy for a length of 10 weeks. This study was adapted from Klahr and Nigam's (2004) study which reported that direct instruction had a greater impact on student performance than discovery learning. Dean and Kuhn (2006) continued their study and examined the impact of direct instruction over time. They reported that while direct instruction may be effective for immediate feedback, it was insignificant for achievement over time. The researchers also reported that the direct instruction was only effective when coupled with consistent, routine practice. Similarly, Muijs and Reynolds (2005) found that direct instruction is not effective for teaching students high-order thinking skills nor is it the most effective strategy for addressing and satisfying the academic needs of all students within the same classroom setting.

Computer-aided instruction. The use of computer-aided instruction (CAI) and other technologies provide guidelines for skill acquisition and have been effective in the mathematics classroom (Al-Shammari, Aqeel, Faulkner, & Ansari, 2012; Bottge, Grant, Stephens, & Rueda, 2009; and Lin, 2008). CAI is not new to the middle and high school classrooms. CAI is being used within these learning environments as supplemental instruction to help at-risk students improve their basic math computation skills. Not only is CAI effective for enhancing student achievement, but it also beneficial for providing immediate feedback and reducing math anxiety for students (Van, Morton, Liu, & Kline, 2006). CAI is intended to supplement, not eliminate quality instruction; it should be coupled with instructional strategies for better student performances (Mills & Tincher, 2003).

Computer-aided instruction in mathematics intervention programs. Wintz (2009) studied the impact of computer-aided instruction on student performance outcomes in the mathematics class. The participants were randomly selected for the experimental group which received the computer-aided instruction and the control group which received the standard conventional instruction. The 190 participants were seventh- and eighth-grade students ranging in age from 10-14. Students participated in 10-12 lessons on algebra, geometry, and measurement. Both groups were assigned pre-and post-tests and the researcher used statistical software to analyze the data. Results showed that the computer-aided instruction improved student performance in the math skills as well as increased their retention level of knowledge.

A study was conducted that examined the benefits of teaching mathematics through the use of direct-instruction, information computer technology (ICT) to 12th grade students (*n* = 13) at an all-girls high school in Kuwait. The students attended a 45-minute mathematics class where they participated in several instructional activities through ICT. Pre- and post-tests measures were used to assess the students' knowledge and understanding of graphing equations. Data were analyzed using the *t*-test and the correlation test. The authors found that there was a significant increase in student learning and achievement of the mathematical skills using ICT (Al-Shammari et al, 2012).

A study by Mendicino, Razzaq, and Heffernan (2009) compared the effects of the traditional, pencil-and-paper homework method to the web-based instructional homework method on fifth-grade students in the mathematics classroom. The study involved four classrooms of 93students in all. Students in two of the classrooms completed pencil-and-paper homework assignments and students in the other two classrooms completed web-based homework assignments. Each night, homework was 10 math problems from either Set 1 (Number Sense) or Set 2 (Algebra, Geometry, Probability, Data Analysis). At the start of the study, all students were assigned the same pre-test. A post-test was given on the following day after the homework was completed. The student's scores were recorded and analyzed using *t*-tests. The researchers found that students showed more gain and acquired more knowledge with web-based homework than with pencil-and-paper homework.

Summary

Student achievement in mathematics has been the focus of educational research and school reform initiatives for a number of years (Byers, 2009; Kuhn 2007; Meyer, Gersten, & Gutkin, 1983). Officials at the school- and district-level respond to meeting the educational needs of students who struggle in mathematics by developing and implementing remediation programs to supplement their regular instruction. These programs, while potentially effective, need to be evaluated. Educational studies reveal the need for and the benefits of evaluating these programs to determine if improvements are necessary and if they should continue. Systematic program evaluations have contributed to the improvement of student academic performance (Cai, 2010; Deno, 2003; Wintz, 2009). Golan and Peterson (2001) suggest that intervention programs such as the one that is the focus of this study need to be evaluated on a consistent basis through the use of both formative and summative measures. Program evaluation is beneficial to the success of the program and, consequently, the success for all students being served. Students that demonstrate academic success will also improve their self-efficacy. The intent of this program evaluation study is to evaluate a mathematics intervention program in order to provide school leaders with data necessary for making improvements and adjustments.

Section 2 of this project study describes the methodology of the program evaluation. It consists of a description of the setting, population, data collection and analysis process, and role of the researcher.

Section 2: Methodology

Introduction

The purpose of this study was to test the efficacy of the School Instructional Extension Program (SIEP) from the perspectives of stakeholders at a local middle school. The study used formative evaluation and summative evaluation measures. The formative evaluation was used to judge the merits of the program, particularly with respect to which components were successful and which components need to be improved. The summative evaluation examined the program's impact on student achievement, specifically to determine if there was a significant difference between the mathematics scores of students who participated in SIEP and the scores of students that qualified for, but did not participate in SIEP as measured by the Georgia Criterion-Referenced Competency Test (GCRCT).

Evaluation Questions

The primary research question for this project study was: What are the students' and teachers' perspectives of the effectiveness of the current components of SIEP?

Formative Evaluation

Various sub-questions were crafted to guide the formative evaluation of SIEP:

1. What are the strengths and weaknesses of the program from the teacher and student perspective?
2. What are their recommendations for improving the program?
3. What do teachers in the program need in order to make the improvements?

4. What is the relationship between the student and teacher perceptions of the strengths and weaknesses of SIEP?

Summative Evaluation

A single sub-question was crafted to guide the summative evaluation of SIEP:

1. Does participation in SIEP raise the achievement level of students who struggle with math as measured by the GCRCT?

This study was designed to use both a formative evaluation and a summative evaluation to collect data from the local stakeholders, including both students and teachers. The formative evaluation component used a concurrent mixed-methods design to explore the stakeholders' experience with SIEP as well as to determine recommendations for improving the program. I used a concurrent triangulation strategy in order to corroborate findings from open-ended survey item responses, Likert-scale survey items, and focus group interview data. The rationale for using a mixed-methods design for this study was that a quantitative survey coupled with qualitative, open-ended questions and teacher focus group interviews would produce considerable evidence of the students' and teachers' experiences with SIEP (Johnson, Onwuegbuzie, & Turner, 2007).

The quantitative phase of the formative evaluation consisted of anonymous student and teacher surveys. These surveys were used to collect information regarding the quality of the components of SIEP and to assess their perceptions of the program's impact on student achievement. The student surveys were administered by teachers participating in SIEP as part of the regular SIEP curriculum. The school's principal granted me access to the de-identified student responses. The teacher surveys were self-administered via Survey Monkey. All SIEP teachers had participated in at least one SIEP session at the school prior to participating in the survey.

The qualitative phase of the formative evaluation consisted of a semi-structured teacher focus group interview to get a deeper understanding of what teachers think about the program, particularly the purpose, strengths, weaknesses, and components of SIEP. The teachers were also invited to make suggestions for improving SIEP and to describe the resources they would need in order to make the improvements. Data from the teacher surveys, student surveys, and teacher focus group interviews were then integrated in order to create a series of findings for this study.

The summative component of the evaluation used quantitative methods to compare the SIEP students' mean gains score on the mathematics GCRCT to the mean gains score of low-performing students who qualified for SIEP but did not participate in the program. These GCRCT data were used to evaluate the impact that the program has had on student achievement. These findings were also considered while generating the series of recommendations to present to the school leaders for improving SIEP.

Research Design

The research design for this study was a concurrent, mixed-methods approach with a client-centered perspective used for the formative component. Data were collected from the clients using anonymous surveys and a focus group interview. The data sets were merged together during the data analysis stage to obtain a more complete understanding of participants' perspectives of SIEP.

Mixed-Methods Design

Rao and Woolcock (2003) suggested that quantitative approaches in program evaluation studies are appropriate when the researcher wants to (a) make generalizations of a larger population given a selected sample, or (b) establish the impact of the program on performance outcomes. One major benefit for program evaluators is that quantitative data allows for a sophisticated, statistical analysis that is helpful in quantifiably showing how stakeholders and participants answered questions pertaining to the program (Babbie, 2006). Although quantitative data is useful, this approach does not give insight into understanding a process, concept, or phenomenon related to the program (Rao & Woolcock, 2003). It would be difficult to understand the context of the program while relying exclusively on quantitative data.

Qualitative data, on the other hand, allows the researcher to explore participants' perceptions and to interpret the meaning they have established from their experiences (Turner, 2010). The purpose of a qualitative approach to research in program evaluation is to explore how people feel about the components of the program and why they feel as such (Taylor-Powell & Renner, 2003). Data analysis, then, is based on how these participants perceive their own world. The benefit of this type of analysis is that it highlights the components of the program that worked and those that did not, in addition to describing why they did or did not work (Guion, et al., 2011). Consequently, the evaluator can gain a deeper understanding of the phenomenon. The primary weaknesses to design in program evaluation; however, are (a) it cannot provide the statistical data that quantitative data can, and (b) it has the potential to be more time-consuming than other research designs (Bamberger, 2000; Guion et al, 2011).

Justification for Mixed-Methods Design

The concurrent mixed-methods approach used in this study for the formative evaluation was supported by research-based recommendations for designing program evaluations (Bamberger, Rao, & Woolcock, 2009; Chen, 2006). Johnson et al. (2007) defined the mixed-methods approach as a design in which “a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration” (p. 123). Statistical information combined with sound explanations will generate an acceptable representation of the context of a program’s activities and its impact on performance objectives. Therefore, the rationale for using a mixed-methods approach for evaluating SIEP was to gain substantial, yet rich data to better understand the program’s accomplishments and to make evidence-based recommendations for program reform. According to Wimmer and Dominick (2006), “qualitative data can aid in the interpretation of the quantitative data and provides insight that might have been missed” (p. 233). In essence, combining qualitative and quantitative data creates a balance in which the weaknesses of one method of data are steadied by the strengths of the other method. As it relates to this study, quantitative data from the teacher and student survey alone was not sufficient evidence to make suggestions for the program. Accordingly, data collected from the qualitative survey responses and focus group interview were used to complement the quantitative survey items related to the strengths and weaknesses of SIEP. Combining the quantitative evidence with a comprehensive summarization of the program's component validated the recommendations for improving the program.

Client-Centered/Responsive Program Evaluation

A client-centered evaluation or what Stake (1975) has termed as the *responsive evaluation*, was conducted for the formative evaluation component of this project study. A client-centered evaluation is a democratic-like approach to program evaluation that invites clients to participate as much as possible in evaluating and reforming the program (Bloom, 2010; Stufflebeam & Shinkfield, 2007). A client-centered evaluation was deemed appropriate for this study because I attempted to support the clients by assessing their needs, concerns, and perspectives related to the mathematics program under study. Because the program had never been evaluated, the specific needs and concerns of the clients were unknown and, therefore, could not be formally addressed. For this project study, the clients were students and teachers involved with SIEP because they participate in, support, or operate the program's components. Involving the clients was important because, "sustained, consequential involvement positions them to contribute information and valuable insights and inclines them to study, accept, value, and act on evaluation reports" (Stufflebeam & Shinkfield, 2007, p. 330). Their input was encouraged in determining which components of SIEP worked and which components need to be improved as a guide for program reform.

Client-centered evaluations recognize that “practitioners do not only require knowledge of scientific studies, but that they need information about the specific needs, life-style, preferences, problems, history and other particularities of the community or target group in order to make the right decisions” (Amba, 2005, p. 288). Scientific inquiry on its own is not sufficient for evaluators to make sound, generalizations about the perspectives of the clients as well as the value of the program (Worthen, Sanders, & Fitzpatrick, 1997). A more in-depth review of the literature surrounding client-centered evaluation is presented in Section 3 of this study.

Concurrent Design

A concurrent design was used to corroborate findings from the multiple data collection tools used in this study. During the first week of the study, the teacher survey instrument and teacher focus group interview protocol were reviewed by four teachers familiar with SIEP. A brief meeting was held to gather information on the clarity of the survey questions and their relevance to the study’s inquiry. After the survey and focus group protocol was reviewed and modified, I issued the anonymous survey to teachers that qualified for the study to generate staff perceptions of the strengths and weaknesses of SIEP. At the end of the teacher survey, teachers were asked to email me if they were interested in participating in a focus group interview; five teachers expressed interest. The purpose of the focus group interview was to validate the survey data. While survey data from the teachers were being collected, one focus group interview consisting of three teachers was conducted. This project study was conducted within the GCRCT testing window; therefore, due to time constraints, the remaining two teachers were not able to

(a) meet for the second focus group interview or (b) administer the student survey, until after the GCRCT had ended. Once testing was concluded, a second focus group interview of two teachers was formed and the student surveys were administered. The teacher survey, teacher focus group interview, and student survey data were collected and analyzed concurrently, then integrated in order to generate credible, triangulated findings. The findings were used to produce recommendations to help school leaders make informed decisions regarding the implementation, evaluation, and reformation of SIEP.

Explanation of the Summative Evaluation

A summative evaluation using a quasi-experimental, non-equivalent control group design was conducted (Campbell & Stanley, 1966). SIEP student's mean gains scores on the GCRCT mathematics test were compared to the mean gains scores of low-performing students who did not participate in SIEP to evaluate how effective the program has been in increasing student learning of the Georgia State Mathematics Standards. Using de-identified GCRCT data provided by the school district, I calculated the student's 2013 and 2014 GCRCT gains scores and then compared each group's scores using multiple two-way ANOVAs.

Students were selected to be in SIEP based on their score on the previous year's GCRCT scores (those that fall below a score of 810 are considered low-performing). Teachers select students from this group and a sub-group of other low performers (based on classroom observations) to compile a list of 18 SIEP students for each grade-level. However, for the 2013-2014 school year, there were 36 eighth-grade students that were placed in the SIEP group because there were more students that qualified for the program than in previous years. A total of 107 students were in the low-performing category after the 2012 mathematics GCRCT. Of those students, 45 participated in SIEP during the 2012-2013 academic year. The remaining 62 were placed in the control group. A total of 145 students were in this low-performing category after the 2013 GCRCT. Seventy-four of these students were placed in SIEP for the 2013-2014 academic year. The remaining 71 of these students were placed in the control group. The mean gains score of the students in the SIEP group were compared to the mean gains scores of the students in the control group in order to test whether low performing students that participate in SIEP gain more than low performing students who do not participate in SIEP.

Participants

Setting

This program evaluation study was limited to one middle school in southwest Georgia, Jones Middle School, which has a diverse culture of students and teachers. Jones Middle School represents schools in the United States that are located in low, socioeconomic areas with high percentages of students receiving free or reduced lunch (Georgia Department of Early Care and Learning, 2012). Jones Middle School is one of 11 middle schools in the Harris County School District (pseudonym). The Harris County School District is the seventh largest district in the state and encompasses 50 schools: 29 elementary, 11 middle, and 10 high. The Harris County School District also serves a diverse group of students including African Americans (49.4%) Whites (35.3%), Hispanics (8.2%), Interracial (4.1%), and Asian (2.7%) (see Table 2).

Jones Middle School also represents schools that offer mathematics remediation programs such as SIEP to the students functioning within the lowest 10% of academic performance as judged by the GCRCT. There are approximately 900 students attending the school in grades sixth through eight. Similar to Harris County School District, Jones Middle School also has diverse student population including African Americans (50.4%), Whites (38.3%), Asians (0.9%), Hispanics (7.5%), and Interracial (2.7%). The educational staff at Jones Middle School includes 27 regular education teachers and nine special education teachers. The administrative team is made up of two assistant principals and one principal.

Table 2

Demographic Data for Harris County Schools and Jones Middle School

Variable	Total Student Enrollment (District Level) *n* = 45,663	Percentage	Total Student Enrollment (School Level) *n* = 904	Percentage
Students with Disabilities	6,531	14.3%	174	19.2%
American Indian/Alaska Native	71	0.2%	2	0.2%
Asian	1,215	2.7%	8	0.9%
Black/African American	22,576	49.4%	456	50.4%
White	16,141	35.3%	346	38.3%
Native Hawaiian/Pacific Islander	43	0.1%	n/a	n/a
Hispanic/Latino	3,750	8.2%	68	7.5%
Interracial	1,867	4.1%	24	2.7%

Note. Demographic data for Harris County Schools and Jones Middle Schools. From “Historical District Enrollment”, by Statewide Longitudinal Data System [SLDS], *2013*. Retrieved https://slds.gadoe.org/sldsweb/Dashboard.aspx

Jones Middle School was selected for this study because of student performance on the mathematics GCRCT for the 2012 and 2013 test administrations. In both school years, students performed within the bottom 40% of mathematics achievement when compared to student performance at the other 10 middle school schools in the district (GaDOE, 2011; GaDOE, 2013b). In the same two years, data shows that students at Jones Middle School also performed below the state average scale score in each grade level.

Formative Evaluation Selection Process

Eleven teachers were invited to participate in this study. All teacher respondents for this study were purposely selected for participation. There were a total of eight teachers that participated in the quantitative and qualitative phases of the study. The eight teachers that participated in this study represent 20% of the teacher population at Jones Middle School, but 73% of the teachers that actually qualified to participate in this study according to their experience as a SIEP teacher. The population of qualifying teachers consisted of both regular and special education, certified mathematics teachers that had participated in SIEP by the time of data collection. Regular education mathematics teachers are required by the school's principal to teach in at least one session of SIEP. However, special education and other academic teachers are allowed to participate. Of the 11 teachers that qualified to participate in this study, a total of eight teachers agreed to participate in the survey portion of this study, and five of those eight agreed to participate in the focus group interview portion. The demographics of the teacher participants include 7 females, 1 male, 2 sixth-grade teachers, 1 seventh-grade teacher, 5 eighth-grade teachers, 2 special education teachers, and 6 regular education teachers (see Table 3).

Table 3

Frequency Counts for Teacher Survey Variables (n = 8 teachers)

Variable	Category	*n*	%
Gender	Male	1	12.5%
	Female	7	87.5%
Grade Level	6	2	25%
	7	1	12.5%
	8	5	62.5%
Teaching Assignment	Regular Education	6	75%
	Special Education	2	25%
Years teaching middle school mathematics	0-5		25%
	6-10	2	25%
	11-15	3	37.5%
	16-20	1	12.5%
Degree	Bachelors	1	12.5%
	Masters	5	62.5%
	Educational Specialist	2	25%
Years of Experience with SIEP	0-2	4	50%
	3-5	4	50%

Student respondents were not considered as “participants” in this study as the survey was administered through the school as part of the regular SIEP curriculum and not by the researcher. Of the 72 students that were enrolled in SIEP at some point in the school year, there were 36 that responded to the survey. The demographics of the student respondents include 19 females, 16 males, 9 sixth-graders, 10 seventh-grades, and 17 eighth-graders (see Table 4). One student respondent did not indicate his or her gender. Teachers expressed that there was a decline in attendance which resulted in the limited number of available student respondents.

Table 4

Frequency Counts for Student Survey Variables (n = 36 students)

Grade	male	female	unspecified
Grade 6	5 (56%)	3 (33%)	1 (11%)
Grade 7	4 (40%)	6 (60%)	
Grade 8	7 (41%)	10 (59%)	

By using the anonymous surveys, I was able to collect a great deal of data consisting of a variety of responses related to the strengths and weaknesses of SIEP. The anonymity of the surveys provided a sense of comfort and security such that the teachers and students could respond honestly and without fear of consequence. To add depth of inquiry to the survey data, two teacher focus group interviews were designed (see Appendix A). Teacher participants for the interviews were recruited based on their participation in SIEP, their experience as a middle school mathematics teacher, and their willingness to participate. The first focus group consisted of three SIEP teachers. All of the teachers were females, two of the three were 7th grade teachers and one was an 8th grade teacher. The second focus group interview consisted of two SIEP teachers; both were female, eighth-grade teachers. To ensure an open and safe environment for discussion, the teachers were assured that the interviews were an opportunity to make recommendations for improving SIEP as a means to improving student achievement in mathematics. All teachers were provided consent forms (see Appendix A) explaining the nature of the study, how the data would be used, their rights as participants, and an assurance that confidentiality would be protected throughout the entire study. The discussion was centered around the program's strengths and weaknesses, the program's impact on student motivation and academic performance, and suggestions for improving the program. The teachers were protected from harm and were provided an opportunity to voice their honest opinions about SIEP.

Summative Evaluation Selection Process

For the summative evaluation component of this study, I created two groups using de-identified mathematics GCRCT data provided by the school district: (a) SIEP group and (b) control group. The SIEP group was comprised of the 6th, 7th and 8th grade students who scored below 810 on the spring 2012 mathematics GCRCT or were recommended by a teacher based on classroom observation (and participated in SIEP during the 2012-2013 academic year) and those students who scored below 810 on the Spring 2013 mathematics GCRCT or were recommended by a teacher based on classroom observation (and participated in SIEP during the 2013-2014 academic year). The control group consisted of the 6th, 7th and 8th grade students who scored below 810 on the mathematics GCRCT but did not participate in SIEP during the 2012-2013 and 2013-2014 school years. For the 2012-2013 school year, there are 45 students in the SIEP group and 62 students in the control group. For the 2013-2014 school year, there are 74 students in the SIEP group and 71 in the control group. For both school years, there are 119 students in the SIEP group and 133 students in the control group. To obtain a power of 80% with an alpha level of .05, for a moderate effect size and an F-statistic, 64 students are needed per group (Cohen, 1988). Hence the sample size was deemed sufficient.

Justification for Participants

The client-centered nature of this program evaluation study invited all clients with any association with SIEP to take part in the evaluation process. Their collaboration could positively impact their interest and participation in the program (Amba, 2005). Because the clients have a personal experience with SIEP, they can provide a real portrayal of the educational experience provided through participation in the program (Stake, 1980).

In order for teachers to provide a valid portrayal of SIEP, they must have been associated with the program in some manner and be familiar with the newly implemented state standards. During the 2012-2013 school, Georgia dismissed the Georgia Performance Standards (GPS) and implemented the Common Core Georgia Performance Standards (CCGPS). Having the background knowledge of both standards may be an advantage to determining which components of SIEP need improvement to satisfy the new state standard requirements, but was not a requirement for this study.

Each teacher brought a different perspective to the evaluation which helped me better understand the program (Stake, 1980). Their input was valuable to determining the worth of the program and their participation could affect their interest and participation in SIEP. This evaluation sought to determine how the clients perceive the program, how it impacts the clients, and what improvements need to be made. Consequently, their input would be the most essential element leading to program reform.

Access to Participants

Permission to conduct this study at the school of interest was granted from the school district and the school's principal. Data collection for this study did not begin until approval was granted from the Institutional Review Board (03-11-14-0137878) at Walden University. Once consent was granted from the IRB, I contacted the school's principal to inform her that I was ready to begin the data collection process.

For the quantitative phase of the formative evaluation, I obtained anonymous student responses to the SIEP survey that the school administered as part of the regular SIEP program. The school's principal provided granted me access to the de-identified student responses for this research study for the purpose of data analysis. The school's administration team plans to use the data for their own purposes.

Additionally, I solicited the participation of teachers for the quantitative and qualitative phase of the formative evaluation who met the criteria for the study. With permission from the district and school's principal, access to the teachers was gained by using the school's distribution email list of faculty and staff. These teachers were extended an invitation to participate in the study by completing an anonymous survey and participating in a confidential teacher focus group interview. Individuals who did not meet the criteria for the study were removed from the distribution list.

For the summative component of this study involving the mean gains score analysis, I used de-identified mathematics GCRCT data provided by the school district official responsible for data reporting. This data included de-identified test scores for students enrolled in SIEP and those who qualified for the program but did not participate during the 2012-2013 and 2013-2014 school years.

Researcher-Participant Relationship

By the time of data collection, I was no longer a teacher at the research site chosen for this study. Instead, I was functioning within my new role as the Assessment and Data Response Facilitator for the school district. However, the principal at the research site asked that I continue to serve as the SIEP coordinator for the school. This responsibility only involved collecting and submitting timesheets for individuals who teach in SIEP. The role of the SIEP coordinator is not an administrative position. Consequently, I held no supervisory or evaluative authority over the participants for this study. Additionally, I did not work directly with any teachers involved in this study.

Protection of Participants

A variety of strategies were put in place to ensure the ethical protection of participants. First and foremost, I obtained permission from the principal to conduct this project study. The next step was to make contact with potential teacher participants. The first contact to teacher participants was through a written invitation sent from my Walden University email to the teacher's work email which explained the purpose and nature of the evaluation study as well as how the results of the study will be used for program reform. The invitation also included a statement that participation in this study is done so on a voluntary basis only and that teachers will not be compensated for their involvement. Implied consent was used for the survey portion of this study. The teachers implied their consent to participate in the study by completing the online survey at the link provided in the invitation letter. By using implied consent, I did not need to obtain a signed consent form from the participants for the survey portion of the formative evaluation. If the teachers wanted to participate in the focus group interview, he or she informed me at the email address provided at the end of the survey. I then contacted the individual to send him or her an informed consent form to sign, and to arrange a date and time for the interview.

Moreover, a survey was administered to the students in SIEP as a part of the school's regular SIEP curriculum. Accordingly, students in this study were considered as "respondents" and "clients" as opposed to "participants." The principal granted me access to the de-identified survey responses as data for the formative component of this study.

Teachers participated in the study on a voluntary basis. Coercion was not exercised at any point by me or other participants. Participants were granted the opportunity to ask questions and to express any concerns related to the study. I employed a coding system to protect participant privacy and confidentiality. Identifiers such as names and personal information were removed during data collection and analysis process. Identification numbers were used instead for all participants. This information is electronically stored in password-protected Microsoft ® Office Word and Microsoft ® Office Excel documents. All audio tape recordings of the focus group interviews are stored under lock-and-key at the home of the researcher. All collected data will be securely stored for a minimum of 5 years with participant anonymity protected at all times.

Role of Researcher

The issue of low achievement in mathematics has long been a concern of the researcher. What strikes my interest most is the impact that programs such as SIEP have on student performance outcomes and student self-efficacy. I have been a teacher in SIEP at three different schools within the district. At each school, I have witnessed the lack of an effective evaluation process for the program to determine the needs and concerns of teachers and students, which components of the program worked and why, and which components need to be improved. This also appears to be a problem at the local school under study. That said, I felt obligated to explore this issue to gain a deeper understanding of the components of SIEP and how they impact students at the local school.

At the time of the data collection, I was no longer a teacher at the research site. However, I was still very interested in exploring the research problem at this school. At the request of the principal, I continued to serve as the SIEP coordinator, but only for the purpose of collecting and submitting timesheets for teachers in the program. This position did not hold administrative or supervisory authority over the teachers participating in SIEP.

For the formative component of this study, I was responsible for developing the survey items and arranging the reliability and validity checks of the survey instrument. For the qualitative component of the formative evaluation phase of this study, I assumed a more participatory role in the data collection due to the personal nature of the interview procedures, the context of the study, and my effect on the subjects (Rubin & Rubin, 2005). After data was coded and analyzed, a series of findings and recommendations was compiled for use by the school's administrative team.

I am a former co-worker of the teacher participants. While these experiences may have created a pre-existing level of trust and comfort, it also introduced a potential for bias and the possibility that participants would withhold honest responses during the interviews (Rubin & Rubin, 2005). Therefore, steps were put in place to avoid the "backyard bias" issues that can arise during the data collection process. Triangulation of data sources, verification procedures, and member checking were used to establish the accuracy of findings. The personal bias was avoided by formulating questions to offset biases (Fern, 2001; Rubin & Rubin, 2005).

Data Collection

This project study sought to identify the strengths and weaknesses of a school-wide mathematics program from the student and teachers perspective. The data collection and analysis process for this evaluation study took place in two phases. The first phase was the formative evaluation portion in which the researcher collected data from teachers that participated in SIEP using a survey and two focus group interviews. Key components of the program that were evaluated by the teacher and student respondents were (a) the program's strengths and weaknesses, and (b) the program's impact on student motivation and achievement. The second phase of the data collection and analysis process was a mean gains score analysis using the GCRCT scores of 119 students who participated in SIEP and 133 students that qualified to participate in the program, but did not. These data covered GCRCT administrations for the 2012-2013 and 2013-2014 school years. These scores were provided by district-level personnel. Data collection did not commence until after IRB approval. A total of eight teachers and 36 students responded to the SIEP evaluation survey. Of those eight teachers, five agreed to participate in the focus group interview.

Instrumentation

A variety of data collection instruments were used for this concurrent mixed-methods, program evaluation study. The formative evaluation component used anonymous student and teacher surveys, with follow-up semi-structured teacher focus group interviews within a concurrent triangulation methodology. The summative evaluation component used de-identified test scores from the GCRCT in the area of mathematics for students participating in SIEP for the 2012-2013 and 2013-2014 school years.

Formative Evaluation Component

The purpose of the formative evaluation data collection was to address the following evaluation questions (see Table 5):

1. What are the strengths and weaknesses of the program from the teacher and student perspective?
2. What are their recommendations for improving the program?
3. What do teachers in the program need in order to make the improvements?
4. What is the relationship between the student and teacher perceptions of the strengths and weaknesses of SIEP?

Accordingly, the evaluation survey was an effective tool for collecting relevant data from program participants.

Table 5

Relationship Between Evaluation Questions and Survey Items

Evaluation Question	Sample Items Teacher SIEP Evaluation Survey	Sample Items Student SIEP Evaluation Survey
1.) What are the strengths and weaknesses of the program from the teacher and student perspective?	#10: Rotating teachers in SIEP is an effective way to help students learn grade-level mathematics standards.	#8: Learning from different teachers in SIEP helps me better understand math.
	#13: The small classroom setting is an effective way to help students learn grade-level mathematics standards.	#11: The small classroom setting helps me learn math.
	#15: Students in my mathematics class have improved their grades as a result of participation in SIEP.	#14: Being in SIEP has improved my grades in my regular mathematics class.
	#20: The instructional activities used in SIEP are fun and engaging.	#18: The activities that we do in SIEP are fun and engaging.
	#32: What components of SIEP do you feel are least successful? Why?	#29: What components of SIEP do you feel are least successful? Why?
2.) What are their recommendations for improving the program?	#33: What recommendations do you have for improving SIEP?	#30: What recommendations do you have for improving SIEP?
3.) What do teachers in the program need in order to make the improvements?	#34: What resources would you suggest teachers need in order to support effective instruction in SIEP?	N/A

Data for this formative component was collected using a mixed-methods approach consisting of anonymous teacher surveys and anonymous student surveys and confidential focus group interviews. A concurrent triangulation methodology was used to balance the qualitative data from teacher focus group interviews and quantitative survey data to address the study's evaluation questions and strengthen the internal validity of the study (Driscoll et al., 2007).

Quantitative sequence. The first data collection instruments were anonymous cross-sectional surveys administered to teacher and student program participants to gain insight into their perspective of what components of SIEP worked and why, and which need improvement. A survey was chosen for the quantitative phase of the formative evaluation because information can be obtained quickly and reliably from a large sample and in a cost effective way (Adams & Cox, 2008). The SIEP evaluation student surveys were created by the researcher as a part of her role as the coordinator for the program. The teacher and student surveys are based directly on the components of the program as they relate to the study's evaluation questions. The surveys were peer-reviewed by four teachers that have experience with SIEP. A brief meeting was held with the teachers to gather information on the clarity of the survey questions and their relevance to the study's inquiry. The results of the peer-review revealed minor adjustments including removing the word "regular" from item numbers 15, 16, and 23 on the teacher survey and correcting a grammatical error. The peer-review process helped to ensure validity and explore reliability of the instruments.

The self-administered teacher survey included two sections and used both closed- and open-ended questions (see Appendix A). Section one targeted teacher background information such as gender, grade level taught, current teaching assignment, years of experience teaching mathematics, educational level, and years of experience teaching in SIEP. Section two solicited the teacher's perspective of the components of SIEP and the program's impact on student motivation and achievement in mathematics using a Likert scale that rated each statement on a scale of *strongly agree* to *strongly disagree*. Following each Likert scale survey item was an option for teachers to provide a comment regarding that particular statement. Section two also afforded teachers open-ended opportunities to provide feedback about the components of SIEP and to provide suggestions for improvements.

A similar survey was administered to the students as part of the regular SIEP curriculum (see Appendix A). Like the teacher survey, section one targeted student background information such as gender and grade level. The purpose of section two was to gather the students' perception on the program's component and how those components impacted their learning. Section two also used a Likert scale with a comment option and included open-ended questions to provide specific feedback about the program. The SIEP Evaluation survey was administered to the students during one regularly scheduled session of SIEP in the month of April 2014. The SIEP teacher at the time administered the survey per school administration. Parental consent was not necessary for the student surveys as the surveys were anonymous and administered by the school's staff as part of the regular SIEP curriculum. Access to the student survey data was permitted by the principal of the school.

During the data analysis phase, the quantitative survey data was transformed into qualitative data. The survey data were coded using the same code tree developed for the focus group interview phase. The coded survey data were then triangulated with coded interview data to establish a series of patterns consistent among the three data sources.

The teacher and student responses to the Likert scale items and open-ended questions on the SIEP evaluation survey were stored, organized, sorted, and analyzed using Microsoft ® Office Excel and IBM SPSS Statistics software. Likert scale items on the survey were given meaning via graphic representation while open-ended responses were coded using the qualitative code tree used for the teacher focus group interviews. The survey instruments are available in Appendix A of this research paper. This survey produced a substantial amount of data to generate recommendations for improving SIEP.

Qualitative sequence. The second phase of the data collection process included focus group interviews with the teachers. The focus group interviews were used to further explore which components of SIEP were viewed by teachers as strengths and weaknesses of the program. A secondary use of the focus group was to gather information about how the teachers perceive the impact of SIEP on student performance outcomes and student self-efficacy as well as to assess their needs and concerns related to the program. See Appendix A for an example of the focus group interview protocol. The decision to use focus group interviews opposed to individual interviews with the teachers was primarily based upon research. A focus group interview was necessary as this study purposed to elicit a multiplicity of attitudes, views, and unique experiences within a group or social context (Kress & Shoffner, 2007). Because the participants were subject to give frank opinions, an environment in which participants could freely express themselves was fostered by reiterating that their identity and responses were completely confidential.

The teachers were recruited for the focus group interview based upon predetermined selection and their willingness to participate. At the end of the teacher survey, teachers were asked to contact me if they were interested in participating in the focus group interview. After receiving contact from willing participants, a time and date were arranged to conduct the focus group interviews. Two focus group interviews were conducted in this study with a total of five teachers. The first session consisted of two seventh-grade teachers and one eighth-grade teacher. The second session consisted of two eighth-grade teachers. All participants received a copy of the interview questions prior to the scheduled time and were asked to complete a consent form prior to participating in the focus group. The consent form explained the purpose and procedures of the study. Conducting the interviews in April 2014 was an ideal time as the program was coming to an end for the 2013-2014 school year. By this time in the school year, teachers had experience with the program's components and could thus readily identify the strengths and weaknesses and make suggestions for improvement. Both focus group interviews were held during the afternoon hours and lasted no more than 50 minutes. The interviews were conducted on the grounds of the school during after-school hours.

Participants were made aware that the interview would be audio-recorded on a digital recorder and transcribed verbatim. Responses were also recorded on the interview protocol to prevent loss of data in the event that the recording device unexpectedly malfunctioned (Chenail, 2011).

The focus group interview protocol included open-ended questions to acquire meaningful information about the needs of the teachers based upon the strengths and weaknesses of the program (Adams & Cox, 2008; Kress & Shoffner, 2007). Consequently, to ensure validity, the interview protocol was designed with questions related to this study's evaluation questions resulting in an effective collection of data from the teacher participants (see Table 6). Additionally, member checking was used so that the participants could judge the accuracy and credibility of the reports (Lodico et al, 2010). Member checking occurred throughout the focus group interviews as I restated and summarized the participant's responses to affirm accuracy and completeness and I also asked participants to confirm their responses. Both teacher focus group interviews were audio-recorded on a digital recorder. The data was transcribed verbatim using Microsoft ® Office Word to get a precise understanding from each participant. The interview data was then organized, sorted, and coded using Microsoft ® Excel. Data from the interviews were organized using hierarchical-coding which helped in assigning specific meaning to the data (Turner, 2010). Focus group interview data were then triangulated with teacher and student survey data during the data analysis phase in order to generate findings and conclusions regarding the strengths and weaknesses of SIEP and how those weak components could be improved. The focus group interview guide is available in Appendix A of this research paper.

Table 6

Relationship Between Evaluation Questions and Focus Group Interview Items

Evaluation Question	Sample Items Teacher Focus Group Interview Protocol
1.) What are the strengths and weaknesses of the program from the teacher and student perspective?	#3: What components of SIEP are successful? #4: What components of SIEP are unsuccessful?
2.) What are their recommendations for improving the program?	#5: How might this be improved?
3.) What do teachers in the program need in order to make the improvements?	#6: What support/resources do you need in order to make the suggested improvements?

Summative Evaluation Component

The purpose of the summative evaluation data collection was to address the evaluation question: Does participation in SIEP improve the mathematics skills of students who struggle with math as measured by the GCRCT? Specifically, mean gains score analyses were conducted at each grade level in order to measure whether the program had an effect on the student performance. A district-level personnel provided the de-identified mathematics GCRCT data for this study following IRB approval. The interval mathematics GCRCT data reflected scores from the 2011-2012, 2012-2013 and 2013-2014 school year test administrations. The data were received in an Excel document with variables for placement (SIEP or not-in-SIEP), grade level, pretest GCRCT score, and posttest GCRCT scores for those students who participated in SIEP during the 2012-

2013 or 2013-2014 academic years and those students who did not participate in SIEP during those years but who had GCRCT scores at or less than 810. Gains scores were calculated by subtracting the pre-GCRCT score from the post GCRCT score.

Georgia Criterion Referenced Competency Test (GCRCT). Since the spring of 2010, Jones Middle School has been administering the GCRCT. The GCRCT is a state-mandated assessment that is administered to students in grades three through eight to measure performance as determined by the Common Core Georgia Performance Standards (CCGPS) or the Georgia Performance Standards (GPS) where the CCGPS are not implemented. In 2010, the state of Georgia adopted the CCGPS for grades K-12 in English/language arts and mathematics but the standards were not fully implemented in Georgia schools until the 2012-2013 school year (GaDOE, 2010). The CCGPS are described as a “consistent framework to prepare students for success in college and/or the 21st century workplace. These standards represent a common sense next step from the Georgia Performance Standards (GPS)” (GaDOE, 2010, para. 1). Teachers have been trained on the newly implemented CCGPS in order to adequately prepare students for success on the GCRCT.

The GCRCT is a summative assessment that is typically administered to students in the spring of each school year. The state window for GCRCT testing is approximately one month which includes time for make-up testing and retesting. Students are allowed 70 minutes to complete both sections of the test for each subject area unless stated otherwise in a student’s individualized education plan (IEP). Originally, the assessment was administered to students in grades one through eight. However, due to budget constraints for the 2012-2013 school year, first and second grade students were no longer required to take the GCRCT (GaDOE, 2013a). According to the amended Georgia law and the amended Georgia Department of Education (2013a) law, all students in grades three through eight are required to take the GCRCT in the content areas of reading, English/language arts, mathematics, science, and social studies. Performance level descriptors are used to help determine if students met the state standards. Student performance on the GCRCT is categorized into three levels: level one (does not meet the standard); level two (meets the standard); level (exceeds the standard). Students must achieve a score of 810 in order to receive a level two (meets the standard) rating.

To be considered for promotion to the next grade level, the state law for Georgia requires that students in the third grade meet or exceed the standard in the area of reading while fifth and eighth-grade students are required to meet or exceed the standard in the areas of reading and mathematics. Students that fail to meet the standard are given the opportunity to attend summer school or remediation courses during the school day to prepare to retake the assessment.

Criterion-referenced tests, like the GCRCT, are designed to serve as accountability measures for students, classes, schools, school systems, and the state. These types of assessments are also designed to measure to what degree students have learned and achieved the skills set forth in a specific curriculum or set of standards for their grade level. The GCRCT, therefore, is specifically designed to test Georgia's standards outlined in the CCGPS and GPS (GaDOE, 2013a). Data from the GCRCT is not used to compare students to each other, rather to measure how well they are meeting the grade-level standards.

This program evaluation study used data from the mathematics GCRCT for students in grades six through eight that participated in SIEP during the 2012-2013 and 2013-2014 school years. Permission to use the GCRCT data was obtained from the principal of Jones Middle School and the Coordinator of Learning and Leadership Services for Harris County Schools. The GCRCT is valuable for this study because it yields disaggregated reports on academic achievement which helped in measuring the performance growth in mathematics from one test administration to the next with regard to the scale score. The scale score is a uniform metric for comparing students' scores within the same academic discipline (i.e., mathematics) and grade-level. Therefore, students with the same scale score will demonstrate the same level of performance as judged against the mathematics standards. More specifically, the scale score is determined by converting the students' total number of correct test items to the GCRCT scale (GaDOE, 2013a). Scale scores on this CCGPS/GPS-based assessment are generally structured to range from 0 to 950 with 800 being the minimum scale score that a student needs to achieve in order to demonstrate that he or she has met the proficiency standard set for that grade-level. The mean score, an average of a group of scores, and is calculated by dividing the sum of a group of scores by the total numbers of scores in that given distribution (GaDOE, 2013a). The GCRCT scores are also used to calculate a percentage for the schools, districts, and state. The percentage score is used to summarize how groups of students perform in different subjects (by class, school, system, and state level) in addition to suggesting the group's relative strengths and weaknesses in regard to the CCGPS/GPS. This score is derived by dividing the total number of correct test items by the number of items in a particular domain (GaDOE, 2013a).

The mathematics GCRCT for sixth-grade students is broken down into four domains: (a) Numbers and Operations; (b) Geometry and Measurement; (c) Algebra; and (d) Data Analysis and Probability. The mathematics GCRCT for seventh- and eighth-grade students is also broken down into four similar domains: (a) Numbers and Operations; (b) Geometry; (c) Algebra; and (d) Data Analysis and Probability. According to the GaDOE (2013c):

> For class and school reports, the mean number correct and percent correct are reported for each content domain. Because these numbers are based on ten or more students, they can be used for evaluating curricular and instructional strengths and weaknesses. (p. 5)

Not only will these reports provide stakeholders with information to identify instructional strengths and weaknesses, but these reports will also measure the quality of education throughout Georgia.

Validity of the GCRCT. The validity of the GCRCT was established in the process of its test development. The first step of test development for the GCRCT is to determine the purpose of the test. Since 2001, when the test was first implemented, the purpose of the GCRCT has been to measure how well students have mastered the state's curriculum (GaDOE, 2013a). Second, committees of teachers from across the state are formed to review the curriculum (currently the CCGPS/GPS) and establish the concepts and skills that will be assessed for the school year (GaDOE, 2007). The result of this meeting should produce a document that specifies the complexity, format, and limits of the selected test items. Content domain specifications will also be established. Together, the item specifications and content domain specifications will become the GCRCT Content Descriptions which describes the test's content, method of scoring, and organizational layout. A committee of assessment specialists and Georgia educators will then write the test items and place approved items on a field tests for students. Field testing is used to ensure that questions are appropriate and not confusing to the students (GaDOE, 2009a). After the items are written and field tested, another committee of Georgia educators will evaluate each item (along with field test data) for overall quality and clarity, grade level appropriateness, and alignment to the CCGPS/GPS. Items that pass the final inspection will appear on the actual GCRCT that students will take. Multiple test forms are created and will undergo a statistical procedure called equating to make sure that the tests are technically sound and are of equal difficulty (GaDOE, 2007). The method described by the GaDOE (2009a) to establish validity appears to be what is called *content validity* because valid judgments are made by professionals or content experts to select test items that are reasonable and appropriate for the intended purpose of the test (Bannigan & Watson, 2009).

Reliability of the GCRCT. Reliability is the extent to which an experiment or test can be depended upon to yield consistent results (Trochim, 2006). Consistency of test scores for the GCRCT is measured by Cronbach's alpha reliability coefficient and the standard error of measurement (SEM)(GaDOE, 2009a). The Cronbach's alpha measures the internal consistency of the test which "describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test" (Tavakol & Dennick, 2011, p.53). The GCRCT has moderate to strong internal item-consistency based on Cronbach's alpha coefficients ranging from 0.858 to 0.932 for the reading, English/language arts, and mathematics tests. The closer the coefficient is to 1, the more reliable the test (Tavakol & Dennick, 2011). Table 7 shows the alpha coefficient for the sixth- through eighth-grade mathematics GCRCT to be a 0.92. This means that the assessment is internally consistent 92% of the time (Cortina, 1993).

Table 7

Reliability Coefficients (Cronbach's Alpha) for Mathematics by Grade Level

Grade	Mathematics Alpha
6	0.92
7	0.92
8	0.92

**Note*. Reliability coefficients for mathematics GCRCT. Adapted from "An Accountability & Assessment Brief" by the GaDOE, 2009b. Retrieved from http://archives.gadoe.org/DMGetDocument.aspx/2009%20Accommodations%20Technical%20Brief%20Final.pdf?p=6CC6799F8C1371F69F24BC99BEC56A98CE99F28C0DF8B764CB5F8A462EE6F759&Type=D

The SEM defines the score that students must achieve in order to meet the standards for the GCRCT. It is an estimate measure of how students will hypothetically perform if given the same assessment several without any time to study or prepare. In the given situation, the student would likely score higher or lower on the repeated tests than on the first time it was administered. A test that has is highly reliable will have a low SEM (Tavakol & Dennick, 2011).

Data Analysis

The purpose of this study was to evaluate the components of a school-wide, mathematics program from the perspective of teachers and students involved with the program. This study used a mixed-methods design and data were analyzed in two concurrent phases. Combining the two methods of inquiry allowed for greater understanding of the study problem in the analysis process (Johnson et al., 2007). Survey data and focus group interview data were analyzed for the formative evaluation component and quantitative GCRCT scores for the summative evaluation component. Descriptive statistics were used for the survey data and inductive analysis for the focus group interview data. The data were analyzed concurrently and then integrated in order to generate credible, triangulated findings. A total of eight teachers and 36 students responded to the survey, 5 teachers participated in the focus group interview. A total of 252 student GCRCT scores were used to conduct the ANOVAs in the summative phase. Scatter plots were created and a Levene's Test of Equality of Error Variances was completed to ensure that these data met the ANOVA assumptions of normality and equality of variances between groups, respectively (Stevens, 1996).

Formative Evaluation Data Analysis

The data analysis for the formative evaluation component analyzed quantitative survey data, qualitative survey data, and qualitative focus group interview data. The survey was designed to address the evaluation questions guiding this study, namely, how students and teachers view the components of SIEP and what recommendations they have for improving the program. Data for each item in the survey was summarized in table form using Excel. Frequency distributions were calculated to describe the number of times a variable was observed in the data file for both the student and teacher surveys. A total of 21 Likert scale items were created on the teacher survey and 19 Likert scale items on the student survey. There were 17 Likert scale items that were used to explore the relationship between teacher and student perceptions of the program. The survey used a four-point scale (1 = *strongly disagree* to 4 = *strongly agree*). Using this format allowed me to more proficiently determine the difference between how teachers and students responded to survey statements regarding the quality of the components of SIEP.

Furthermore, data from the quantitative portion of the survey were transformed so that it could be coded and compared to the focus group interview data (Driscoll, Appiah-Yeboah, Salib, & Rupert, 2007). Responses were categorized and coded for the purpose of triangulation and to further determine if there are consistencies across both teacher and student survey responses and between survey and interview/focus group themes. Analysis of the survey data and focus group data occurred concurrently. The same code tree was used to code both the survey and focus group interview data (see Appendix D). Over the course of the data analysis process, the code tree was expanded to include sub-elements related to the components of SIEP. Following the coding process, the data was examined to determine patterns to address the research's evaluation questions. The Likert scale items from each survey were coded according to frequency statistics indicated in the survey results (see Appendix G).

Qualitative data analysis occurred immediately after data collection so not to jeopardize the potential to obtain useful data and findings (Merriam, 2009). The focus group data was transcribed using Microsoft ® Word and organized using Microsoft ® Excel. The open-ended survey data were organized and sorted in an Excel document. Data were then coded using an inductive analysis to establish a clear relationship between the evaluation questions and the findings derived from the data (Turner, 2010). The process of coding began on the day immediately following the interviews in order to stimulate the emerging theory process and to help keep the data organized. Throughout the analysis process, I continued to return back to the focus group transcripts and survey data notes to examine emergent themes and constructs in light of what they reveal about the strengths and weaknesses of SIEP. Consequently categories and subcategories emerged as I gradually gained a better understand of the patterns existing in the open-ended responses. With the focus group interview data and survey data coded and transcribed, I was then able to start the triangulation process.

Summative Evaluation Data Analysis

To answer evaluation question 5: Does participation in SIEP help raise the achievement level of students who struggle with math as measured by the GCRCT, multiple two-way ANOVAs were conducted that examined the effect of both participation in SIEP and non-participation in SIEP and the year of program participation on GCRCT gain scores. Table 8 below depicts the data received from the school district. During the 2013-2014 school year, there were 74 students who participated in the SIEP group and 71 students who did not participate in SIEP, but had mathematics GCRCT scores the previous year at or below 810. During the 2012-2013 school year, there were 45 students who participated in SIEP and 62 students who did not participate in SIEP but who had mathematics test scores the previous year at or below 810. The total number of students in the SIEP group for both years was 119 and the total number of students in the control group for both years was 133.

Table 8

GCRCT Data Received From the School District

Variable	2013-2014 School Year		2012-2013 School Year	
	SIEP Group	Control Group	SIEP Group	Control Group
# 6th grade scores	11	10	13	11
#7th grade scores	17	40	17	19
#8th grade scores	46	21	15	32
Total # GCRCT scores	74	71	45	62

At each grade level, an independent ANOVA was completed to compare the SIEP group GCRCT mean gain scores to the control group GCRCT mean gains scores to test if participation in SIEP improved student achievement in mathematics. This gains score analysis was completed using IBM SPSS Statistics (version 21) software. The statistical results are presented in table and graphical form (Young, Valero-Mora & Friendly, 2006).

Findings

The evaluation questions for this study were explored in the data collection process using a quantitative survey with open-ended questions administered to teachers and students and focus group interviews conducted with teachers. To gain a better interpretation of which components of SIEP were successful and which needed to be improved, data were triangulated using data from teacher and student surveys and qualitative data from teacher focus group interviews. The findings were used to generate a series of recommendations for the future of SIEP.

Formative Evaluation Findings

The purpose of the formative evaluation component was to identity the strengths and weaknesses of SIEP as well as to obtain a collection of suggestions for improving the program. To address the evaluation questions of this study, data from 36 student surveys, 8 teacher surveys, and two focus group interviews were analyzed and triangulated. The results of the formative evaluation component are presented in relation to the evaluation question that it addresses. To answer evaluation questions one through three, data from the qualitative survey and focus group interviews were analyzed. To answer evaluation question four, data from the quantitative survey responses were analyzed. Graphic representations of the quantitative survey data are presented and supported by the qualitative survey and focus group interview data.

Evaluation questions one and four. Evaluation questions one and four asked, *what are the strengths and weaknesses of the program from the teacher and student perspectives* and *what is the relationship between the student and teacher perceptions of the strengths and weaknesses of SIEP*, respectively. These evaluation questions were answered by analyzing data from two focus group interviews, open-ended survey questions, and transformed quantitative survey data. Data were first analyzed, then triangulated to generate themes related to the strengths and weaknesses of the program.

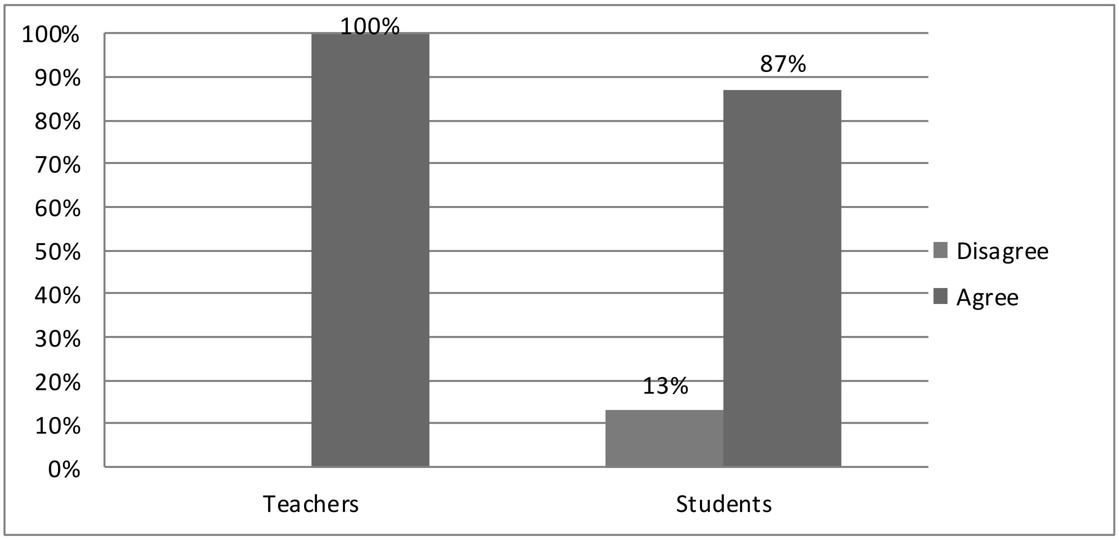

Figure 1. This figure illustrates the response frequencies to the prompt, "The small group setting helps students learn math."

Data analysis uncovered numerous strengths and weaknesses of the program. The most prominent strength of SIEP as mutually agreed upon by teachers (100%) and students (87%) in the surveys and focus group interviews was the program's small group setting. There were similarities in how the respondents felt about the program's class size. SIEP is designed such that the number of students per class does not exceed 18. Teachers and students believe that the small group nature of SIEP contributes to the success of other components of the program. A diagram of the hierarchical coding procedure used to derive at this conclusion is shown in Figure 2.

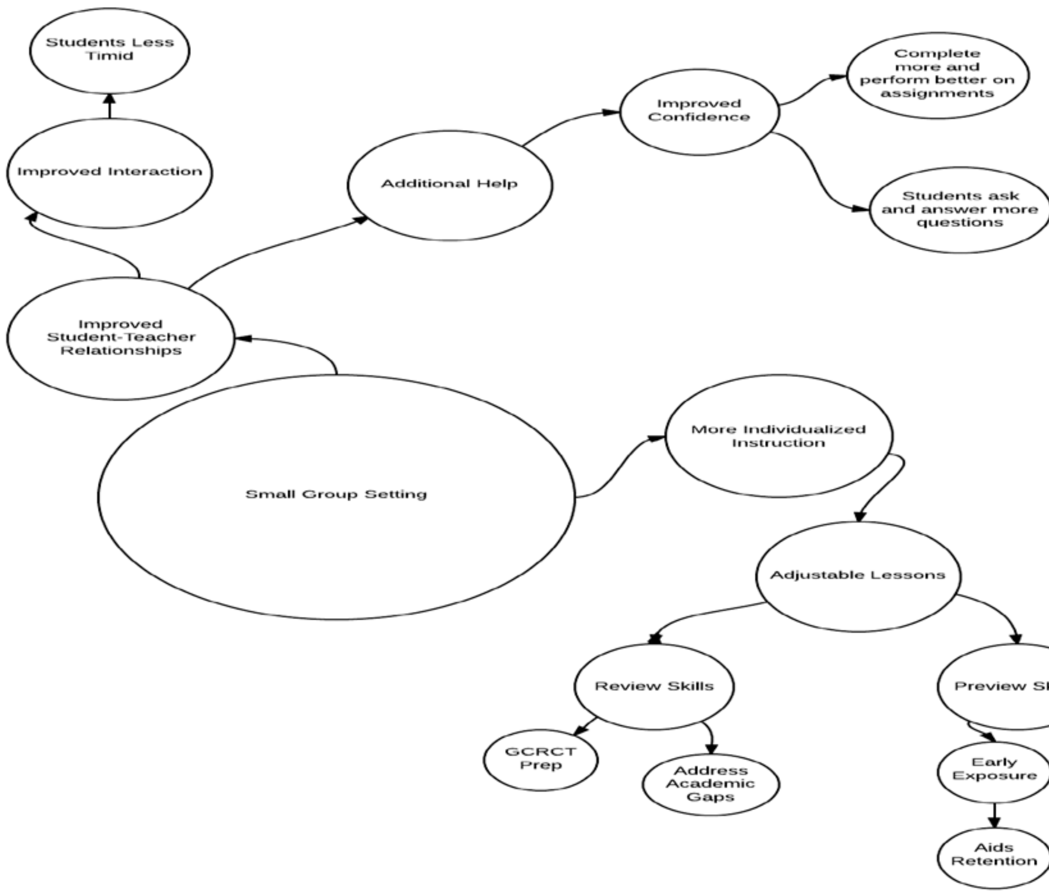

Figure 2. This figure illustrates the hierarchical coding process used to analyze data related to the impact of the small group setting of SIEP.

First, students and teachers suggested that the small group setting allows for more individualized instruction or, as one teacher called, “more one-on-one attention.” When asked the question “what components of SIEP are successful?” during the first focus group interview, Teacher 3 replied,

> I think because they’re small groups and so we’re able to focus on a few students instead of a whole classroom full of 30. I think it’s easier to say Jack needs this

> and I can help him with this while Sarah needs this when it's just a few of them; it's not a whole group.

Following this statement, Teacher 1 and Teacher 2 also suggested that due to the small group setting, instructional lessons can be designed to review previously learned skills, and, in some cases; the lessons are designed to preview upcoming skills that will be addressed in the math class. Further investigation into the review and preview component of SIEP revealed that additional instructional time allows teachers to more efficiently address the problem of academic gaps which, unfortunately, can be challenging to do in the larger class setting. In reference to the review component of SIEP, Teacher 1 stated:

> We get a chance to actually do that [review skills] with them because of the small group setting… and have time to do it because we get together and discuss as teachers what we need to work on or what we may need to go back over.

While teachers that use SIEP for remediation purposes also use this time to deliver GCRCT preparation strategies, those that take advantage of the opportunity to preview upcoming skills found that students were able to grasp math skills taught in the math class a little easier as a result of early exposure. Teacher 2 shared,

> And you can tell a difference. For instance, when I was teaching students about a certain concept, I can't remember what it was, they had already had it in the other teacher who was the instructor during SIEP. They was like 'oh we did this in her class' so they had input. And then it's like, 'oh I already know this, can I explain it?' So you can see they were a little more receptive; they were enthused, in some cases about the concepts.

Similarly, students shared that previewing skills helps them better understand the concepts addressed in math class and that they like the opportunity to get extra help and work with teachers one-on-one. Survey data revealed that some students agreed the small group setting helped them learn math because, as one student said, “I get more one-on-one time with the teacher” and another that said, “because it is lesser people in the class.” Furthermore, an open-ended survey item prompted students to explain how SIEP differs from the math class, to which some replied, “SIEP helps me understand more than my math class,” “it’s easier and helps me catch up,” “it helps me with what I had trouble with,” “SIEP goes into more depth than regular math classes,” it’s a smaller class and I think that I learn better in smaller classes,” and “they teach you stuff before it is taught in class.” Overall, data showed that the small group setting component of SIEP is valued by both teacher and student stakeholders.

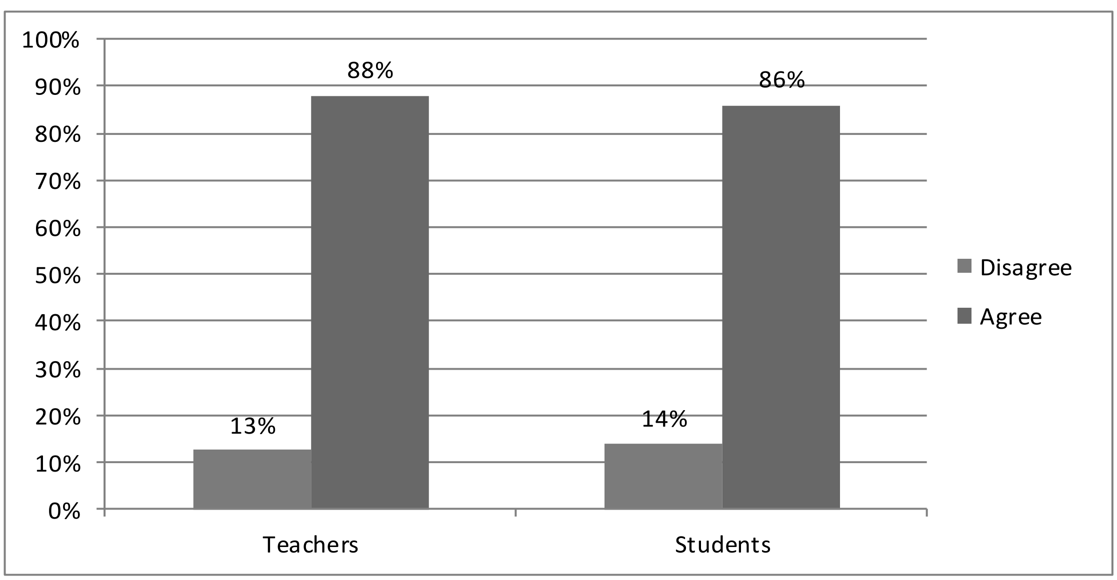

Figure 3. This figure illustrates the response frequencies to the prompt, “Student-teacher relationships have improved due to participation in SIEP.”

Teachers and students also both suggest that the small group setting has an impact on student-teacher relationships. Quantitative data showed that teachers (88%) and students (86%) had similar feelings about the relationship-building component of the program. According to qualitative survey data, one eighth-grade teacher felt that her relationships with students have improved because “students are less likely to be timid in asking questions” in SIEP. When asked to describe a successful component of SIEP, another eighth-grade teacher commented, “I like that students participating do seem to develop a non-threating relationship with the math teacher. It is successful particularly if students are given opportunities to ask questions about current instruction.” During the focus group interviews, teachers expressed similar feelings about the impact of SIEP on student-teacher relationships.

In the second focus interview, Teacher 1 shared that she believes “relationships play a big role” and that during her time as the SIEP teacher, “a relationship was built. They would come ask more questions even during class time.” Although some students (14%) indicated that their relationship with teachers had not changed, the quantitative data supported the claim that majority of the student respondents (86%) had observed some degree of improvement in their relationship with their teacher.

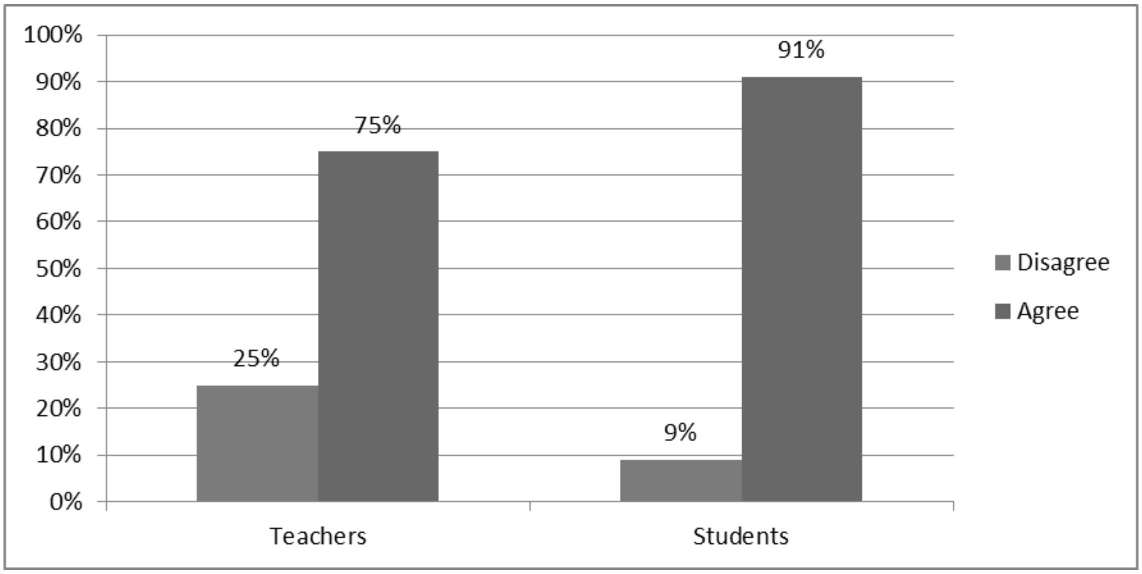

Figure 4. This figure illustrates the response frequencies to the prompt, "SIEP has improved students' motivation."

Additionally, respondents agree that SIEP has impacted the students' motivation and their confidence in mathematical ability. Quantitative inquiry addressed the issue of motivation and discovered that 91% of students and 75% of teachers feel that SIEP had improved student's motivation. Qualitative survey data showed that students believed their improved motivation was a result of performing better in the math class. To the inquiry about improved motivation, student comments included, "I have gotten better at math" or "I have become better at math." One eighth-grade student observed improved grades in the math class, but was not sure if it was a direct impact of SIEP. Her comment was, "I don't know if it was SIEP or not but I have an 'A' in math now." These statements support the quantitative data indicating that majority of student respondents agree that SIEP improved student motivation.

During the focus group interview, one teacher stated, "Because they already know it…it can be motivating" suggesting that increased motivation could be a result of the previewing skills component of SIEP. Survey data did indicate that some teachers (25%) do not feel that SIEP impacted student motivation, but specifically because, as one teacher suggested, "Some students come in feeling they are fulfilling the time designated by their teacher. Some are unmotivated even in SIEP." SIEP, in some cases, did not appear to motivate students who lack intrinsic motivation. However, focus group interview data revealed one teacher believed that when intrinsic motivation was coupled with the opportunity SIEP provided for students to receive additional help; students could indeed experience success in math. She recalled of one student's experience:

> I have one that I can think for sure that SIEP did really help her. She did turn around. But then again, there was a lot of self-motivation there. So when you have opportunity to do extra math practice, and that meets with a person who is motivated, then that's success.

Ultimately, however, the teacher believed that "without SIEP, she [the student] would have never gotten engaged. So I think that it did help." On these same lines, improved motivation appeared to lead to improved confidence in students. Teachers found that the small group setting presented a less threatening environment in which students felt more comfortable asking *and* answering questions, as well as exploring new ways of learning. There were several comments provided on this topic during the focus group interviews. In focus group interview 1, Teacher 1 suggested, "When they're in a class with students that are 'smarter' than them, they tend to kinda clam up. But in SIEP they can feel more confident to ask questions and understand things without us even giving them incentives." During the second focus group interview, an eighth-grade teacher stated, "I know that when I did it [SIEP], there was a relationship that was built. They would come and ask more questions even during class time." The other teacher stated that SIEP, "gave them more confidence in the sense that all of them were on the same level." She went on to say, "they felt more comfortable asking questions, giving answers, trying things out because they knew they were all on the same level." The teacher also shared a conversation that she had with a student related to her experience in the small group setting in which the teacher ended her story with, "she [the student] just expressed that she felt more comfortable in the environment. She felt like they were all on the same page."

Moreover, in regards to improved confidence from the student perspective, qualitative data confirmed that students felt more empowered to ask and answer questions in both SIEP and in their math class. One indicator of improved confidence is found in the response from a female, seventh-grade student who indicated in the open-ended section of the survey that, "it [SIEP] really helped me to ask questions." Another female student's comment related to student confidence and motivation was, "You can ask him/her personal questions to benefit your learning experience." Despite the high percentage of students that agreed that SIEP improved their motivation, the aforementioned statements were the only two comments provided to support the quantitative data.

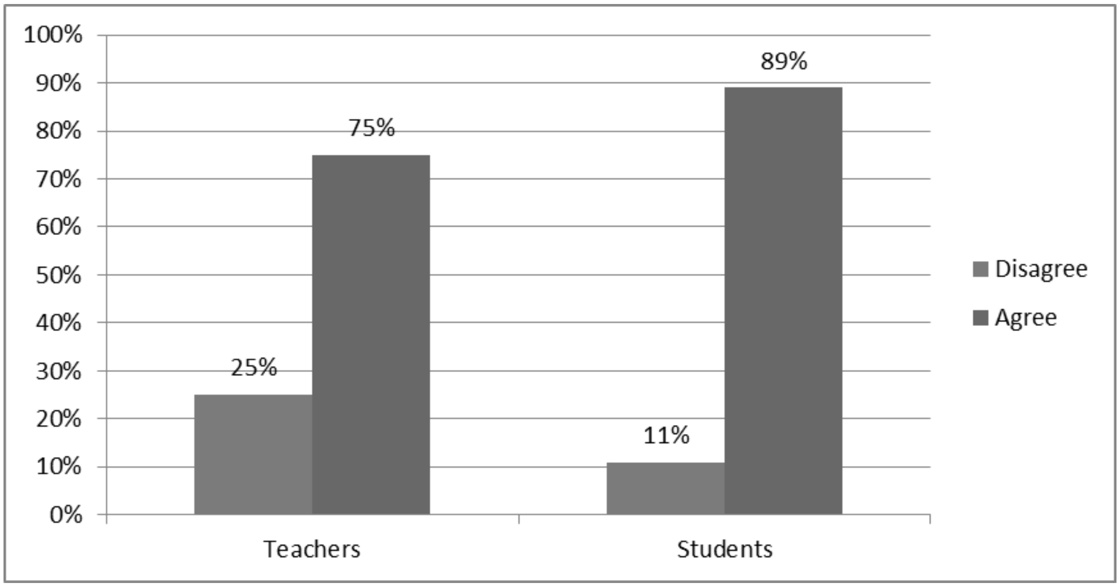

Figure 5. This figure illustrates the response frequencies to the prompt, "Students complete more and perform better on assignments in math."

In addition to observing improvements in student motivation and confidence in mathematical ability, teachers (75%) and students (89%) also noted that students completed more and performed better on assignments in math. Of the six teachers that agreed with the statement, one provided the comment, "students perform better, but do not necessarily complete more assignments." Qualitative data, on the other hand, presented a slightly different perception of student performance. One teacher shared in the focus group interview, "because they're a little more motivated, because they understand what's going on; that has a direct impact on their academic performance at least for those concepts that they really understand, that they really feel confident about." In that same interview, another teacher commented about the previewing skills component of SIEP and improved student performance, "I think it [SIEP] built more confidence in those students because they knew it already so you could see for instance their increased level of participation. And then they would even want to do homework more, and classwork more." Additionally, when asked, *have you seen any improvement in your student's academic performance as a result of SIEP*, in the focus group interview, one teacher replied, "I would say yes for those that have the motivation and that were consistent in attention." To that end, students have responsibilities in their learning and improved performance.

Qualitative data from the student survey showed that students have noticed improvements in their grades and performance since the previous school year. One sixth-grade student indicated that he disagreed that SIEP has caused him to complete more and perform better on assignments in math and commented, "I get a B, A, or C." This response suggested that he believes the fluctuation in grades is due to factors outside of SIEP. The second comment to this statement was provided by a seventh-grade male and was, "I am coming up, better than last year." Therefore, both students and teachers have observed some degree of improvement in student performance and work ethic.

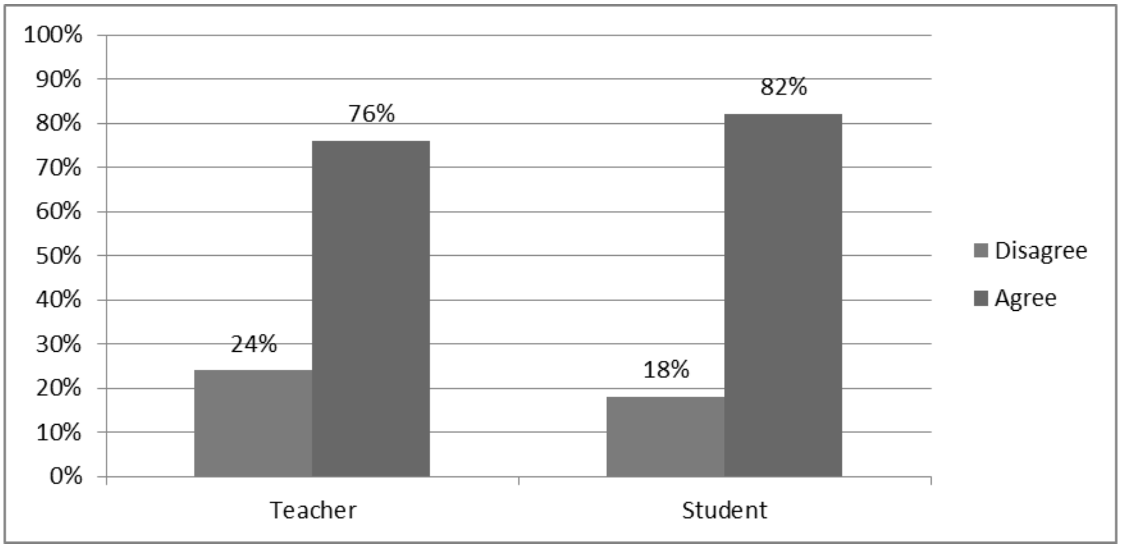

Figure 6. This figure illustrates the response frequencies to the prompt, "Rotating teachers is an effective way to learn math."

Furthermore, another potential strength of SIEP as indicated by teacher survey data (76%) was the teacher rotation component of SIEP. Qualitative data supported the quantitative data in that teachers felt the rotating component not only provided the opportunity for students to be exposed to different teaching styles, but it also fostered more communication and collaboration amongst the teachers. One teacher expressed in the focus group interview as a result of the teacher-rotation component, "We get a chance to collaborate and see, 'well what did you do last, or what do we need to review'." Similarly, teachers provided comments on the survey that included, "The students get an opportunity to learn from various teaching styles" and "Different teaching styles may help students." Consistent with these data, student responses on the survey (82%) indicated that they felt rotating teachers helped them learn math. Student survey responses from students that are in favor of the teacher rotation component include, "All teachers teach different from one another," "Because some teachers I don't get," "Because some teachers get irritated when you ask them a lot of questions," and "My teacher is great and all, it's just that it's kind of cooler with a different teacher." One student who disagreed that learning from different teachers in SIEP helps him learn math provided the comment, "Different teachers, different strategies" which suggests that not all students learn best from multiple representations of the same information.

What is more, qualitative data also revealed that teachers who do not view the teacher rotation component as a strength (24%) had strong opinions of this component suggesting that students need consistency and stability and that being taught by various instructional styles can be confusing for students. One eighth-grade teacher commented on the survey, "Students need more stability. The only benefit is that some students may perform better with a style that varies from their current teacher." Another eighth-grade teacher stated, "I believe some consistency would be good for the students." She went on to say, however, "students learning from other math teachers may prove to be effective too." Findings suggest that while rotating teachers may impact student learning to some degree, stability and consistency may prove to be a more effective approach for the low-performing students served in SIEP.

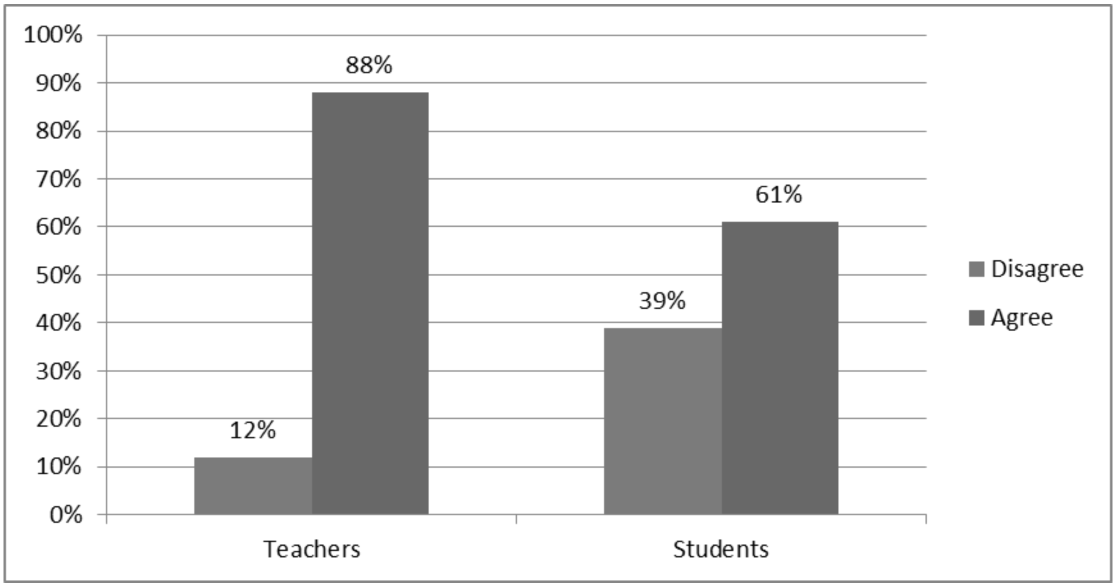

Figure 7. This figure illustrates the response frequencies to the prompt, “The computer-aided instruction helps students learn math.”

Survey data indicated a difference between how the students and teachers viewed the computer-aided instruction (CAI) component of the program. The teacher responses to this quantitative survey item were further explored using the open-ended survey questions and focus group interviews of the qualitative evaluation.

Teacher survey data (88%) and teacher focus group interview data suggested that the computer-aided instruction component (CAI) is one of the program’s strengths. Each grade level is allowed to use the CAI of their choosing. One seventh-grade teacher talked about the CAI in the focus group interview. She admitted:

> I like that part because of the student’s different learning modalities. You know, some may be more successful when they’re using the computer versus when they’re listening to the teacher or working with a group. Or some students may

> prefer to work by themselves and at their own pace. So that part's been pretty good.

When I asked the eighth-grade teachers how students reacted to the CAI used with their students, one teacher replied, "The kids liked it." I then asked if the CAI component was successful to which the same teacher replied, "It could be."

Although teachers agreed that the CAI component of SIEP is one of the program's successful components, the accessibility of technology is perceived as an unsuccessful component. Survey responses to the inquiry about unsuccessful components of SIEP include, "we need more computers" and "more technology." In the focus group interviews, teachers specifically expressed that technology is an issue due to: (a) the lack of functional laptops, and (b) the limited access to computer labs and laptop carts. One teacher stated:

> if we wanted students to use laptops they're not always available since there are only three carts that the whole school has to share and of the three carts, all of the computers, they're some that are missing, and some that don't work. Or, if we wanted to take them to a computer lab, its booked for the whole school year and so its unequal access to that computer lab.

The school also has three computer labs that teachers use for instructional and SIEP purposes. Due to the insufficient amount of and unequal access to computer labs and laptop carts, teachers find it difficult to implement the CAI component of SIEP on a consistent basis.

These teacher views, however, vary slightly from how students responded to this statement. Student survey data indicated that only 61% of the respondents agreed that CAI helped them learn math. The eighth-grade students (52%) represented the bulk of the student respondents that agreed the CAI helped them learn math. Although some students commented on the survey that they would like to use CAI more often, those that disagreed with the use of CAI provided various comments. One eighth-grade student said "I have to have someone help me with it" while a sixth-grade student said, "It doesn't show what we're learning." In addition, one seventh-grade student commented, "I like being teached on paper." These data indicated a clear distinction between how students and teachers view the CAI component which, according to quantitative data alone, is an unsuccessful component of the program for students.

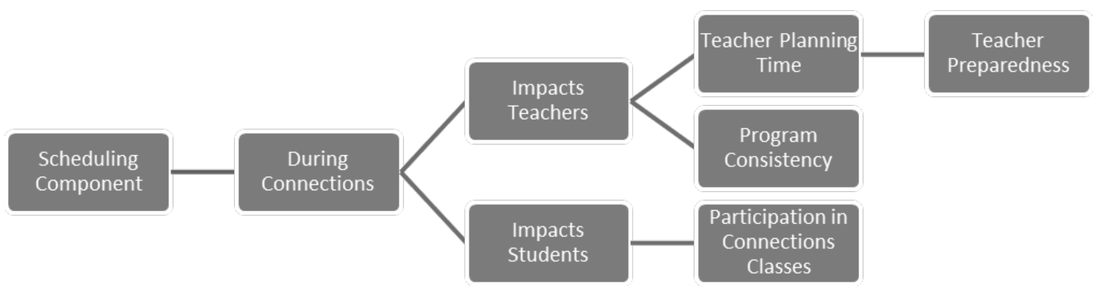

Figure 8. This figure illustrates the hierarchical coding process used to analyze data related to the impact of scheduling component of SIEP.

Data from the qualitative data sources revealed only one mutually perceived weakness of the program, the scheduling component. SIEP sessions are currently held on Tuesday and Thursday during the Connections time of the school day in which students participate in non-academic classes while teachers use this time for instructional planning or to attend regular meetings. Having SIEP during Connections time was found to be unfavorable by both teachers and students for various reasons (see Figure 8).

Qualitative student data showed that some students preferred not to miss their Connections class in order to attend SIEP. In reference to the scheduling component of SIEP, one sixth-grade student admitted, “I miss engineering class.” This is an indication that some students actually do look forward to participating in Connections classes. On the other hand, some students admitted to using SIEP as a way to escape a Connections class that they did not enjoy. For example, one eighth-grade student replied, “I’ll be honest, I don’t like gym, and SIEP takes up gym time.” Qualitative teacher data supports this statement as one teacher stated in the focus group interview, “I think I also had a few that did it [SIEP] strictly because they did not want to go to Connections. So they were coming just to get out of Connections.” Teachers have observed other factors that are impacted by the scheduling component of SIEP.

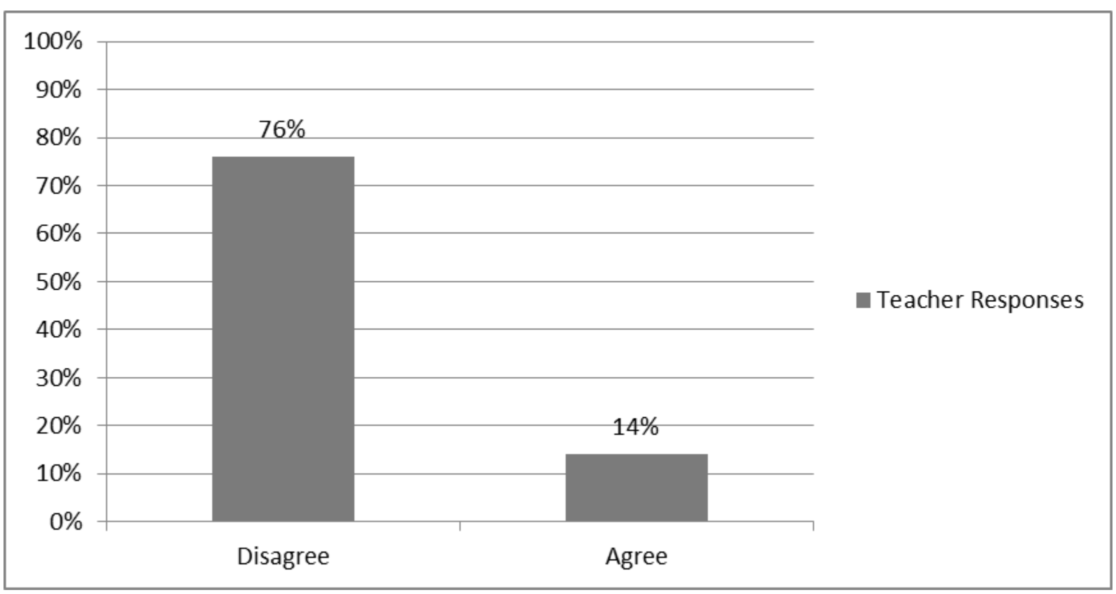

Figure 9. This figure illustrates the response frequencies to the prompt, “There is sufficient time to plan effective, standards-based lessons for SIEP.”

With SIEP held during Connections, 76% of teachers believe that they lose instructional time to plan lessons for the program. In the focus group interview with the eighth-grade teachers, Teacher 2 had this to say about planning time, “It [SIEP] was just an additional something we had to plan for individually. It would have been nice to have been able to do it collaboratively like normal, weekly lesson plans could be done. But there were definitely time constraints.” As a result of limited planning time, Teacher 1 admitted that she would simply ask the SIEP students, “ok, hey, what are you guys struggling with” or say to the students, “this is what we’ve been working on in terms of grade-level. What are you still struggling with? What do you need help with?” Teacher 1 said she would then, “try to focus on that amongst the kids.” In another focus group interview, when asked about instructional planning time, a seventh-grade stated, “Well, because we have to teach SIEP during our planning time, you know time, we don’t have enough of it.”

Teachers also shared thoughts about SIEP being held during Connections on the teacher survey. One seventh-grade teacher commented, “Teachers need their planning time to plan lessons for their students.” When teachers were asked to describe unsuccessful components of SIEP, three of the eight responses were directly related to teacher planning time and included, “Planning - it seems like most teachers sort of "wing it" and need more collaboration,” “Limited Space and time to plan,” and “Having SIEP during our planning.” Additionally, when teachers were asked about the quality of the instructional activities in SIEP, one teacher did not agree that the activities were engaging and gave the comment, “I believe this is because we don’t have to put together lessons since it takes place during planning." Therefore, not having sufficient planning time impacts the teacher's ability to develop instructional activities that are fun and engaging.

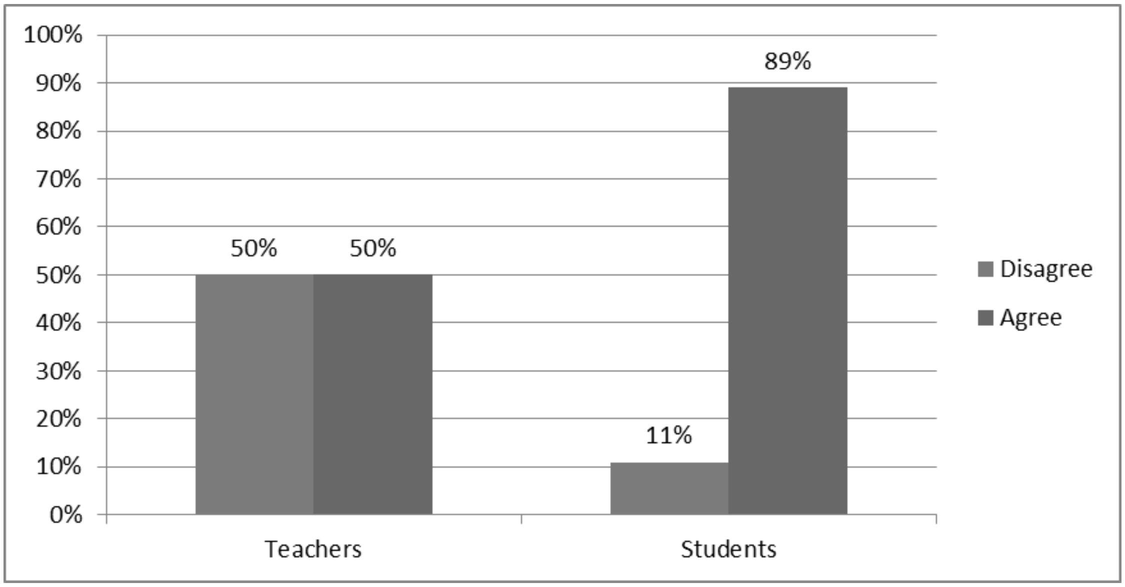

Figure 10. This figure illustrates the response frequencies to the prompt, "Teachers are prepared for SIEP sessions."

Data also revealed that losing instructional planning impacts how teachers feel about being prepared for SIEP sessions. Although 89% of student respondents believed that teachers were prepared for each SIEP, 50% of the teachers did not feel that they were prepared for effective instruction. Qualitative data found that SIEP during Connections not only interferes with instructional planning time, but also the teachers' ability to accomplish other mandatory tasks, which ultimately leads to their feeling unprepared for the program. One seventh-grade teacher describes her experience:

> And often times, we have so many more items on our plate to get done. We have meetings during planning, we have professional learning during planning, we've

> had student-led conferences during our planning, and the list goes on. So it's [SIEP] just not always convenient, you know. It's like, well we don't have time. If we get them, if we have SIEP class, then we won't be able to do this. And then, not to mention MTSS, and phone calls, and etc.

Another seventh-grade teacher in the same interview added, "You know it can be mentally exhausting to have to do all that, especially the SIEP when it's our time to do it." In the second focus group interview, an eighth-grade teacher shared similar feelings when asked about SIEP and other teacher obligations, "yea, I'm automatically expected to do all this extra stuff. And it's rough. Sometimes, because you have all these other teachers [non-SIEP teachers], especially after CRCT, kicking back and relaxing and we're [SIEP teachers] still pushing and grinding." For eighth-grade teachers, the program continues until May in order to remediate students that have to retake the GCRCT. Although sixth- and seventh-grade teachers conclude SIEP in April just before the GCRCT was administered, they often will continue to remediate and enrich students in preparation for the next school year.

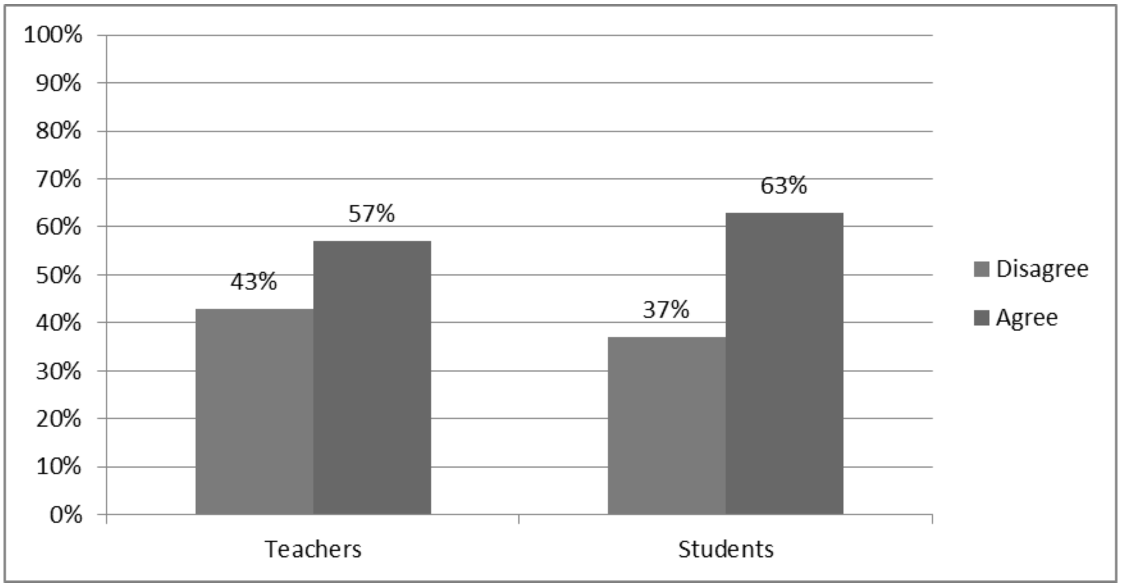

Figure 11. This figure illustrates the response frequencies to the prompt, "I looked forward to participating in SIEP."

Survey data indicated that 57% of teacher respondents and 63% of student respondents looked forward to participating in the program this school year. Surprisingly, these are not high percentages for a school-wide remediation designed to improve student performance. Two of the three teachers that did not look forward to participating in SIEP disagreed because SIEP "occurs during planning/meeting times" and because "teachers were forced to do this during planning." These statements clearly indicated that teachers are not satisfied with having SIEP during Connections. According to the qualitative data, teachers believed that SIEP being held during Connections ultimately led to: (1) inconsistency in the program, and (2) a decline in student participation. Teachers felt that SIEP was inconsistent due to various meetings that were scheduled during Connections time, the time that program took place. On the teacher survey, an eighth-grade teacher explained inconsistency as one of the least successful components of SIEP. She said, "The least successful component of SIEP is the inconsistency of meeting days. Many times SIEP has to be canceled due to meetings which attendance must take priority." Having SIEP during Connections interfered with meetings which, in turn, forced teachers to cancel SIEP altogether in order to attend the meetings. A seventh-grade teacher pointed out in the first group interview, "So then, as a result, we're not able to meet with the students consistently, so the good things that we see, it's not consistent. It would be beneficial if we could do it when we're supposed to." The teacher went on to explain one benefit that was observed when the program was consistent:

> A couple of the students when we were having it consistently for the short time that it was consistent, were like, 'are we gonna have SIEP?' Then you have student led conferences I think, something that came up. And again, it's beneficial, if it's effective consistently.

In the second focus group interview, an eighth-grade teacher shared similar thoughts, "during planning time is not conducive to be consistent with having it because there are meetings that we have to go to that would have to be cancelled or something of that nature. So I think it brought up some inconsistency." She also found that when the program was consistent, "the consistent ones [students] would always come up and say, 'hey, we got SIEP?' They were always at your door ready to go. I think they just kinda knew." Qualitative data suggested that students would look forward to participating in SIEP if the program were consistent.

Inconsistency was also noted in communication amongst the teachers as result of the rotating teachers component. In reference to communication, one eighth-grade teacher explained that teachers would sometimes fail at “reminding students to go and then communicating on where it would be that particular week amongst one another.” Miscommunication and inconsistently eventually led to a decline in student participation. Qualitative teacher survey showed that one eighth-grade teacher felt “I believe the least successful component is student participation.” Another eighth-grade teacher expressed in the focus group interview the following about student participation:

> Because it was hard to track. It trickled off the more you got towards the end of the year. I mean kids would fall out and they just would not show. And with the time restraints, we could have gotten on the phone and said so and so needs to be in here, but if it’s kids we don’t know, like from the other two teams, I couldn’t track them. But if it was my kids, I was like ‘don’t forget you gone be here.’ Consistency.”

When teachers did not communicate to their students where the next session of SIEP would be held or did not hold their students accountable for attending, teachers felt that it made it difficult for the SIEP teacher at the time to track missing students. The inconsistency in SIEP also led teachers to believe that SIEP did not cause students to complete more assignments and perform better in math. To the survey statement, *As a result of participating in SIEP, students are completing more assignments and performing better on assignments in the mathematics class*, one eighth-grade teacher disagreed and provided the comment, “just too inconsistent in meeting.” Inconsistency in SIEP has shown to negatively impact some student’s participation in the program and their performance in the math class.

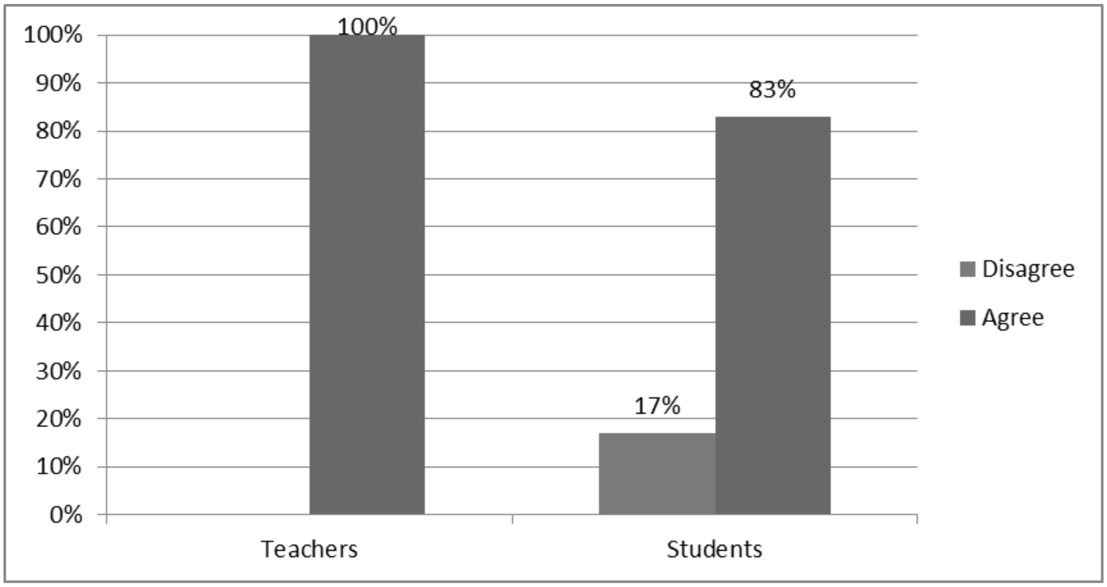

Figure 12. This figure illustrates the response frequencies to the prompt, “I would recommend SIEP to other students.”

Despite the weaknesses of the program as indicated in this study’s data, both teachers (100%) and students (83%) would recommend the program to the other students. Teachers indicated in the qualitative portion of the survey and in the focus group interviews, that they would recommend SIEP, but primarily if suggested improvements were made. As the program stands, teachers commented that they are not pleased with certain components. On the survey, one eighth-grade teacher indicated that she would recommend SIEP to other students, “if it was more structured with its curriculum” while another eighth-grade teacher said, “I would only recommend SIEP to other students if teachers were able to do it at their own pace.” Students that indicated on the survey that they would recommend SIEP to other students gave the following comments, “If they need help in SIEP” and “It would help them.” Similarly, in focus group interview one, I asked if SIEP had the potential to be effective on student achievement and one seventh-grade teacher replied, “It’s a necessity, it’s just some improvements that need to be made. It is a necessity. It’s something that some students cannot, especially our low-performing students, cannot do without. It’s just some improvements that need to be made with it.” Suggested improvements are discussed in the next portion of this paper.

Evaluation question two. Evaluation question two asked, *what are their recommendations for improving the program?* Data collected to address this question were analyzed strictly from the teacher focus group interviews and open-ended survey data.

Teacher recommendations. Consistent with both focus group and open-ended survey data, teachers made recommendations to adjust the schedule component of SIEP. In terms of when SIEP is offered, 2 teachers recommended that the program be held before- or after-school, 2 teachers recommended that the program be held during REAL time, and 1 teacher suggested both before- or after-school and during REAL time. Collectively, the teachers felt that having SIEP during one of these time periods as opposed to during Connections would ultimately promote consistency in the program. Generally, there are no meetings held during these times which will reduce or eliminate interruptions in the instructional time and the number of times SIEP has to be cancelled. REAL time was explained by one teacher as an instructional focus time embedded in the regular school schedule in which teachers, regardless of content area, will enrich or remediate students in various skills. REAL time occurred each day of the week but only three days are devoted to remediation and enrichment; the other two days have a school-wide focus. Currently, SIEP is expected to take place two days each week, Tuesday and

Thursday. One teacher pointed out that there is a long time period from Thursday's session to Tuesday's session; five days to be exact. The three teachers in favor of REAL time felt that the daily schedule aspect of REAL time is what SIEP needs in order to build consistency and to eliminate instructional gaps from session to session. It was suggested by one teacher that as students demonstrate progress, they could be moved out of the REAL time course so that they could participate in the enrichment classes. One teacher even suggested that having SIEP before- or after-school would promote teacher buy-in because teachers would then have the option and flexibility to participate in the program rather than it being an expectation from administration. Without SIEP during Connections, teachers would regain their instructional planning time which makes them believe they would have more time to collaborate with other teachers and to plan meaningful lessons for the math class and for SIEP. It would give teachers more instructional time with the students in SIEP. This would also allow students to participate in all of their Connections classes.

Additionally, all eight of the teachers made recommendations about the structure of SIEP. Their recommendations for restructuring the program are as follows: (a) select students based on first semester grades as opposed to GCRCT scores, (b) include other subject areas, (c) include students with disabilities, (d) make SIEP a Math Support Class, (e) establish a single SIEP teacher, (f) utilize the graduation coach at the school, (g) identify SIEP students prior to start of school year, and (h) provide incentives for students. Of these eight suggestions, the most elaboration from any teacher was related to how to make SIEP a Math Support Class similar to the one that the neighboring high school offers for ninth grade students. The Math Support class is specifically designed to provide additional support to students in their effort to meet the ninth-grade math standards. Students register for this class at the end of their eighth-grade year. Therefore, one teacher suggested that SIEP follow this same design and should be a part of the registration process at the school. With early registration for the class, teachers will know in advance which students will be participating in the program. The teacher suggested that this would foster teacher buy-in as they will have an early start in meeting the unique needs of students. In addition to fostering teacher buy-in regarding the potential impact of the program, one teacher suggested providing incentives to solicit student buy-in. The incorporation of incentives is believed to be a way to get students motivated to participate in the program; it may give them something to look forward to and add to the value of the program.

Other suggestions about restructuring SIEP are related to the instructional component of SIEP. First, one teacher suggested that the graduation coach at the school be used for more instructional or preparatory purposes as it relates to SIEP. For instance, it was suggested that the graduation coach assist with monitoring students who are engaged in CAI while the math teacher is conducting a small group session. The graduation coach could also assist by providing teachers with materials and resources for use in SIEP. Because SIEP does not currently have a program specific curriculum or materials, the teachers suggested that the school adopt a curriculum that is tailored to the needs of students that have been selected to participate in the program. Second, another teacher recommended soliciting the help of high-performing math students at the high school as a way for them to earn volunteer hours towards meeting graduation requirements. Third, it was recommended by one teacher that there be only one teacher assigned to SIEP for the entire grade-level. The rationale for this suggestion was that having one consistent SIEP teacher would promote routine and help with building or strengthening student-teacher relationships. Last, one teacher made the suggestion that teachers split the responsibility of preparing lesson plans for math and for SIEP on each grade-level. For example, some teachers could prepare lessons for the math classes while the other teachers prepare lessons for SIEP.

The last recommendation suggested by six teachers relates to the technology and CAI component of SIEP. In reference to the technology, two teachers first recommend that the school get wireless internet access. With wireless internet access, students would be encouraged to bring their own technology which they are familiar with, comfortable with, and have unlimited and immediate access to. One of the two teachers suggested that wireless access would allow for more innovative activities as well as allow teachers to get immediate assessment feedback that could not otherwise be obtained without a wireless connection. In addition, all six teachers recommended that the school secure more functional laptops and balance the availability that SIEP teachers have to computer labs. One teacher even suggested having one computer lab that is specifically used for SIEP sessions. With regard to the CAI component of SIEP, very few suggestions were made. As quantitative findings showed, teachers (88%) are pleased with the CAI component of SIEP. Currently, teachers use a CAI program to complement their instruction in SIEP. The CAI programs vary at each grade-level and may be designed to focus on mathematics remediation in prerequisite skills, test preparation skills, or current grade-level standards. In most cases when the program is consistent, teachers will utilize the CAI at least one time per week. One teacher, however, suggested that the school adopt one math CAI program that is specific to SIEP and used in each grade-level. An eighth-grade teacher expressed a desire to have a program that offered more test preparation skills. The current CAI program used in SIEP for eighth-grade does not include test preparation skills for students.

Student recommendations. Data from the qualitative portion of the student survey indicated that there were similarities in recommendations for improving SIEP. One such recommendation was to include incentives as part of the program. One student specifically recommended, “you could give us free Twix bars for being good,” as a candy incentive. Another recommendation that students and teachers had in common was to restructure SIEP. Student comments included “make it more organized” and “have longer SIEP.” These statements were coded to suggest that adjustments need to be made to how SIEP is structured. As expressed earlier in this paper, teachers often have to cancel SIEP due to numerous meetings and other interruptions which, inadvertently, diminish the consistency and organization of the program. Other recommendations that two students gave, but were not similar to teacher responses, include they would like teachers to use more instructional strategies (seven students) and they would like to have more time to engage in the CAI component of SIEP (three students). Student comments included, “To try more real-life related, visual items to use when reviewing a lesson,” “more hands on work,” and “to have more computer time.”

Evaluation question three. Evaluation question three was designed to assess what teachers needed in order to make improvements to SIEP and specifically asked, *what do teachers in the program need in order to make the improvements?* Data shows that teachers need the following fundamental resources in order to improve components of SIEP: (a) support in preparing materials and lesson plans, (b) a structured curriculum specific to SIEP, (c) a CAI program specific to the needs of students in SIEP, (d) funding for transportation if SIEP is held before- or after-school, (e) wireless internet connection, (f) a SIEP computer lab, and (g) rewards or incentives. Quantitative data reported earlier in this paper indicated that 50% of teachers do not feel prepared for SIEP and that 76% of teachers do not feel that there is sufficient time to plan effective standards-based lessons for SIEP. Qualitative data supported these findings. Five teachers expressed in the focus group interview that the support they need in preparing for the program's sessions is sufficient planning time which could include the assistance of the graduation coach at the school. Because SIEP lacked adequate resources and materials, the teachers also suggested or agreed that in order to effectively meet the needs of SIEP students, they need materials, CAI programs, and a curriculum that is specific to the needs of the target audience. Currently, teachers have to find or create materials that may address grade-level standards, but may not directly address the academic gaps that many students in SIEP are faced with.

Furthermore, one teacher also suggested that the school designate one of the three computer labs for use by SIEP teachers and students only. This teacher and another teacher that agreed with her believed that doing this will promote the normalcy that SIEP currently lacks and will also send the message that SIEP is a priority in the school. Incentives and rewards were also suggested as a needed resource for SIEP. One teacher felt that using incentives and rewards in SIEP would increase student participation and incite student buy-in because it will give the students something to look forward to and work towards.

Summative Evaluation Findings

Evaluation question 5 asked: Does participation in SIEP raise the achievement level of students who struggle with math as measured by the GCRCT? To answer this question, a series of two-way ANOVAs were conducted that examined the effect of in-SIEP/Not-in-SIEP and Year in the Program on GCRCT gains scores (see Table 10). First, to test the assumption of equality of error variances between groups, a Levene's Test of Equality of Variances was completed on the 6^{th}, 7^{th}, and 8^{th} grade GCRCT data (see Table 9).

Table 9

Results of Levene's Test of Equality of Error Variances

Variable	*F*	*p*
6^{th}	3.33	.06
7^{th}	3.32	.02
8^{th}	1.42	.24

At the 6th grade level there was a statistically significant interaction between the effects of SIEP/Not-in-SIEP and Year in the Program on GCRCT mean gains scores, F (1,41) = 6.79, p = .01, eta squared = .14 (moderate effect size). Simple main effects analysis showed that at the 6th grade level students in the control group (not-in-

SIEP) had significantly higher gains scores than students in the SIEP group. Further, 6th grade students in year 1 of the program had significantly higher mean gains scores than students in year 2 of the program.

There were no significant effects of SIEP/Not-in-SIEP and Year in the Program on CRCT mean gains scores at the 7th grade level, *F* (1,89) =8.58, *p* = .85. At the 8^{th} grade level, there was an insignificant interaction effect between SIEP/Not-in-SIEP and Year in the Program, but a significant main effect for SIEP/Not-in-SIEP on CRCT mean gains scores at the 8th grade level, *F* (1,110) = 17.51, *p* <.001, eta squared = .13. Again, 8th grade students in the control group (not-in-SIEP) had higher mean gains scores than students in the SIEP group (p <.001).

Table 10

Descriptive Statistics

Grade	Group	Program Year	Mean	*SD*	*N*
6	SIEP Group	2012-2013	.85	17.981	13
		2013-2014	-21.36	17.935	11
	Non-SIEP Group	2012-2013	3.82	13.841	11
		2013-2014	5.20	6.339	10
7	SIEP Group	2012-2013	17.59	12.34	17
		2013-2014	13.68	21.04	19
	Non-SIEP Group	2012-2013	18.82	13.02	17
		2013-2014	13.63	14.95	40
8	SIEP Group	2012-2013	-14.60	19.30	15
		2013-2014	-9.09	27.57	32
	Non-SIEP Group	2012-2013	3.07	15.99	46
		2013-2014	3.19	19.22	21

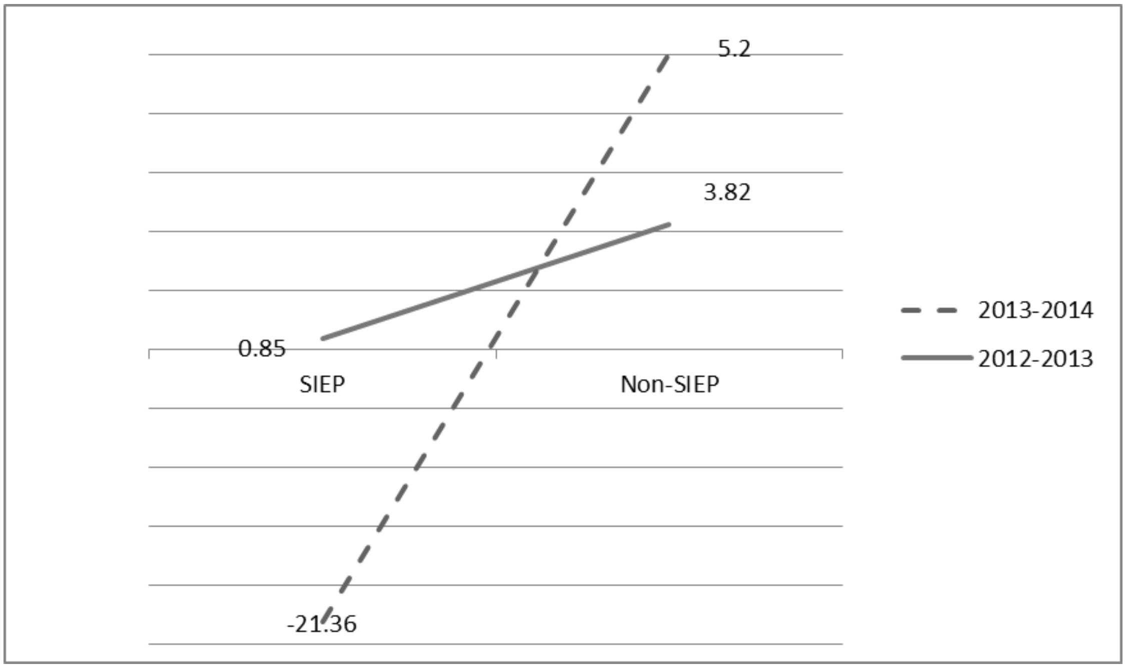

Figure 13. This figure illustrates the interaction effects for sixth-grade mean gain-scores.

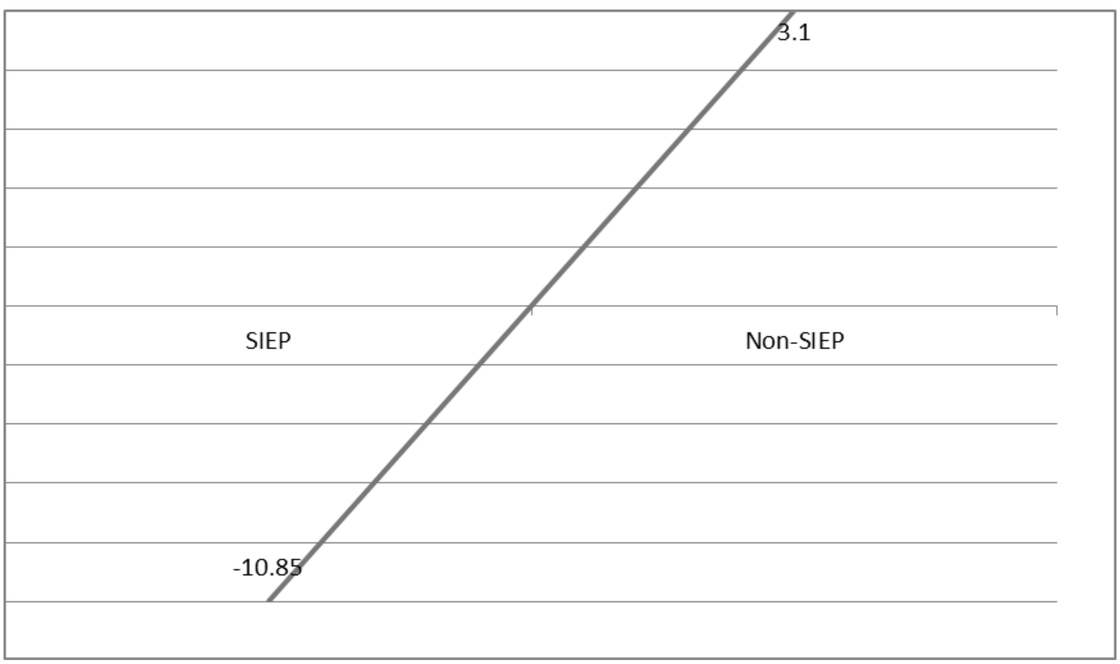

Figure 14. This figure illustrates the main effects for eighth-grade mean gain-scores.

Summary of Findings

This section summarized the data collection and data analysis required to answer the study's evaluation questions related to SIEP. This study used a mixed-methods design and conducted a formative and summative evaluation of the program. Given the evaluation questions and the purpose of this study, a mixed-methods study allowed for the exploration of student perceptions, teacher perceptions, and numerical data (GCRCT) to establish a rich description of the effectiveness of SIEP on student achievement. This study used data from student surveys, teacher surveys, and teacher focus group interviews. The quantitative data from the student and teacher surveys were transformed to qualitative data for the purpose of data analysis.

Data were collected and analyzed concurrently, then triangulated to determine a series of themes relative to the strengths and weaknesses of SIEP. The findings of the survey and focus group interview data revealed the strengths and weaknesses of SIEP from the client's perspective; specifically which components worked and which components need to be improved. The small group setting component, rotation of teachers component, and the program's potential to help students learn math were identified as key strengths of the program according to student and teacher respondents. Key weaknesses of the program were the scheduling component and the lack of teacher preparation time. Respondents also indicated that they did not look forward to participating in the program at this school. The respondents' outlook towards the program could be the result of the program's inconsistency and lack of organization. Findings of the formative data also included suggestions for improving the program and identified which resources teachers felt they need in order to make the suggested improvements. The most noted recommendation from teachers was to adjust the scheduling component of SIEP in order to create and maintain program consistency which, ultimately, should help foster student achievement in mathematics.

Moreover, the statistical statements from the summative component do not suggest that the program met its goal of improving student achievement for SIEP students. The program's insignificant impact on student achievement could also be the result of the inconsistency in program meeting dates as revealed in the formative data analysis. Due to numerous cancellations, students were not able to meet with teachers on a consistent basis and sometimes as few as once a month. Having SIEP once a month meant the students would have only received approximately 30-45 minutes of additional academic support outside of the regular classroom for that one month. Another potential cause of the regression in GCRCT mean gains scores for students participating in SIEP is the nature of the population chosen to participate in the program. The first indicator that teachers used to select students for SIEP is mathematics GCRCT scores, particularly students with a score of 810 or lower. However, teachers also recommended students based on motivation or work ethic. Inconsistency in meeting dates, poor work ethic, and low student motivation are potential barriers for achieving improvement in mathematics for students in SIEP when judged against mathematics GCRCT scores.

Despite the program's obvious lack in improving mathematics GCRCT scores and the formative findings that suggested students and teachers did not look forward to participating in SIEP, there was a large amount of formative data that suggested the program did have some degree of positive impact on students. Data showed that respondents believed SIEP contributed to improved relationships between students and teachers and that the program also contributed to improved student motivation. Teachers also believe that the program could be beneficial to student growth in mathematics if the suggested improvements are made. Overall, teachers and students agreed that they would recommend SIEP to other students. Therefore, mutual experiences shared amongst teacher and student respondents concerning the strengths and weaknesses of SIEP in addition to the quantitative GCRCT data collected indicated a need for continuous evaluation of SIEP.

Evidence of Quality (Validity/Trustworthiness)

Precautionary measures were taken to ensure quality throughout the data analysis phase. First, data from the anonymous surveys and teacher focus groups were methodologically triangulated (Guion, Diehl, & McDonald, 2011). Using multiple sources of data allowed for a more contextual and realistic portrayal of the program under study (Marschan-Piekkari & Welch, 2004). Another strategy to establish quality for this study was the use of peer-reviewers. First, data collection instruments were reviewed by teachers from other middle schools in the county that have participated in SIEP. In addition, this study was reviewed by the committee members from Walden University to provide input, suggest revisions, and question findings. The last step to establish quality was the use of member checking during the focus group interview to guard against researcher bias (Carlson, 2010).

Limitations of Program Evaluation

Purposeful sampling was used for this study to target a specific group of people to participate in the study. Consequently, the most pronounced limitation to this program evaluation study was that only 11 teachers qualified to participate in the study. Merriam (2009) explained that purposive sampling allows the researcher to purposefully discover an understanding of the phenomenon under study and to gain deeper insight into the research problem. Because purposive sampling is not an equal probability sampling method, limitations of this method include the ability to make generalizations from a sample or single research study to a population (Johnson & Christensen, 2012). This sample was drawn from a population of teachers that have participated in the program at any time between the 2009-2010 school year (first year of program) and the 2013-2014 school year (school year study was conducted).

The study targeted middle school mathematics teachers at one school that had experience with SIEP. The study rested on their availability and willingness to participate. Additionally, the researcher evaluated SIEP as a former participating teacher in the program and former co-worker with the teacher participants. This familiarity was a risk to subjectivity in the participant's responses to the interview questions (Rubin & Rubin, 2005). The researcher's personal involvement may have also increased the possibility of personal bias during the coding and generating findings phase. To overcome these risks, member checking and methodological triangulation of the data sources were used in this study. Because SIEP was implemented and structured differently at each school in the county, only one middle school was used for this study.

Section Three describes the project and focus on how it was implemented in this study. The project was a formative and summative executive summary report which contained a PowerPoint presentation designed specifically for the school leaders at Jones Middle School. Section Three also identifies the formative and summative evaluation tools developed throughout this study to carry out the program's critique. An introduction addresses the project, followed by a rationale for the type of project and a review of the literature which addresses the project and includes an analysis research explaining how the project relates to the problem.

Section 3: The Project

Introduction

This project study consisted of a program evaluation of a mathematics remediation program at a middle school in the Southeast United States. The specific program that was evaluated, School Instructional Extension Program (SIEP), is a school-wide remediation program targeting the lowest 10% of the student population as judged by mathematics GCRCT scores. The project involved the creation of a formative and summative evaluation of the program to sufficiently address the evaluation questions guiding the study. The client-centered formative evaluation used triangulated data from student surveys, teacher surveys, and teacher focus group interviews to assess the program. It was specifically used to determine which components of SIEP worked and which components need improvement from teacher and student perspectives, to identify suggestions for improvement, and to identify resources that teachers need in order to make the suggested improvements.

The summative evaluation used mathematics GCRCT scores to measure if the program was meeting its goal of improving student performance in mathematics. Both the formative and summative evaluations were key elements of the project design and were necessary in order to paint a lucid and valid picture of the program’s components and its impact on student achievement. Findings from the formative evaluation were used to create a series of suggestions to present to the school leaders to consider for the future of SIEP that may improve its effectiveness on student performance in the area of mathematics.

This section presents the description and goals of the project, a rationale for the project genre, and a review of relevant literature. I also address the necessary resources, existing resources, and the potential barriers associated with the project. A proposal for project implementation, an evaluation of the project, and implications for social change related to this evaluation are discussed.

Description and Goals

A lack of knowledge and empirical data regarding the value, condition, and effectiveness of SIEP prompted this study. The program was implemented at the local school as a school-wide initiative to improve student performance in mathematics for students in grades six through eight. However, prior to this study, there was no evidence to suggest that the program had ever been evaluated to determine its impact on student achievement and to decide if program reform was necessary. This project study created and conducted an evaluation of SIEP as an initial step in addressing a local school need for a meaningful and systematic program evaluation in order to foster a continuous commitment to improvement.

The primary goal of this evaluation was to ascertain whether the program was meeting its intended goals and if there were any modifications that need to be made to enhance the quality of the program. Evaluation of the program involved a formative evaluation component and a summative evaluation component. The formative evaluation component required input from the teachers and students associated with the program. Specifically, the evaluation sought to engage students and teachers in meaningful discussion regarding the strengths and weaknesses of the program, and suggestions for how the program can be improved. The formative evaluation used a mixed-methods design and triangulated data from student surveys, teacher surveys, and teacher focus group interviews. The summative evaluation component of this project attempted to measure if the students in SIEP were demonstrating improvement in mathematics achievement according to mathematics GCRCT scores. A mean gains score analysis was conducted to compare the SIEP students' mean gains score on the mathematics GCRCT to the mean gains score of low-performing students who did not participate in SIEP. The findings from these components of the evaluation are reported in section 2.

This project is an executive summative report designed to be presented to school leaders. It includes the study findings, study data, a discussion of literature relevant to the study's findings, and recommendations for program reform (see Appendix A). This client-centered evaluation and the subsequent executive summary report address the problem of this study by examining the data regarding the client's perceptions of SIEP and comparing GCRCT scores to measure gains in student performance by the end of the program. The primary goal of this executive report, then, is to communicate the findings of the data analysis and to make recommendations for improving components of SIEP. Results from the formative evaluation guided the series of recommendations included in the executive report.

The format of the executive summary report includes the following: an introduction, a description of the purpose of the study, a statement of the problem, the results of the study's evaluation, recommendations to address the problems and study results, a conclusion, and references. The intended audience for this executive summary report is the school leaders who make the final decisions regarding the design, implementation, and evaluation of SIEP. The school leaders chose to use SIEP as a means for improving low-performing students' performance in mathematics. This evaluation will provide the school leaders with the study's findings regarding the current state of SIEP and the performance of SIEP students at Jones Middle School found in this study.

Rationale

Since the 2009-2010 school year, the leaders of Jones Middle School have used SIEP to address the problem of achievement gaps in mathematics. This achievement gap was demonstrated in student performance school-wide and by comparing the school's students to other students across the district and state using GCRCT scores. The school leaders, however, have not implemented a systematic and meaningful evaluation to monitor student progress, determine if the program is meeting its goal, or assess if the program needs to be improved. A program evaluation is one way to gather data to guide decisions about the program including whether it should continue, if components need to be refined, and if the goals are being achieved (Cook, 2010; Zohrabi, 2012). Therefore, I conducted a formative evaluation using a mixed-methods design to assess the teacher and student perceptions of the program's components and to gather a series of recommendations to improve any components that the clients felt were not successful. I also conducted a summative evaluation to measure if SIEP had an impact on student achievement in mathematics as judged by GCRCT scores. The findings and other pertinent information about the evaluation will be presented in an executive summary report to the school's leaders.

The goal of this executive report is to provide useful information for improving components of SIEP as a means to improving student achievement in mathematics at Jones Middle School. An executive summary report was selected for this project because it is an appropriate way to present the results of the formative and summative evaluation such that it is easy for the school leaders to read and understand. Without adequate training in the areas of research or data analysis, the school leaders may not understand the language of the dissertation or research paper component of this study. Accordingly, this executive summary report will give direction for the school leaders to consider as they work to enhance the quality of SIEP. The recommendations in the executive summary report address teacher planning time, resources and materials, and future evaluation.

Review of the Literature

This literature review focuses on the type of evaluation used in this study and the content presented in the executive report. It includes a description of the impact of teacher planning time on student achievement and the impact of instructional time on student achievement. A portion of the literature review is also devoted to research on technology and student achievement. Components of this literature review were inspired by the strengths and weaknesses of SIEP as identified in the study's findings.

Types of Program Evaluation

Fitzpatrick, Sanders, and Worthen (2004) identified five classifications of program evaluation approaches that have dominated in the profession of program evaluation during the 21st century including: (a) objectives-oriented, (b) management-oriented, (c) consumer-oriented, (d) expertise-oriented, (e) adversary-oriented, and (f) participant-oriented. Cook (2010) maintained that the process-oriented, objective-oriented, and participant-oriented program evaluations are the most common approaches used to evaluate educational intervention programs and guide program reform. Collectively, the researchers suggest that the type of evaluation method that an evaluator chooses should reflect the purpose and goal of the evaluation effort.

Process-oriented evaluations. The process-oriented approach provides valuable information that is used to gauge the development process of the program from the moment of its inception until the point at which the summative evaluation is administered to assess student achievement (Dart, Petheram, & Straw, 2008; Callahan, 2004; McNamara, Erlandson, & McNamara, 1999). Process-oriented evaluation involves the use of various methods and instruments to collect data from the beginning until the end of the program (Cook, 2010). The process-oriented approach provides formative feedback for improvement during the course of the program and summative feedback at the end.

Participant-oriented evaluations. Participant-oriented evaluations are designed such that all individuals associated with the program, including students, teachers, and other staff, have input in the evaluation process (Royse, Thyer, Padgett, & Logan, 2006). The evaluator seeks input from participants to ensure that their needs are addressed and to provide an opportunity for the participants to help solve problems related to the program (Hogan, 2007; Green, 2011; McNamara, Erlandson, & McNamara, 1999). Triangulation of data is instrumental to the participant-oriented approach (Guba & Lincoln, 1981). Despite the use of numerous sources of data collection, critics of this approach argue that participant-oriented evaluations are too subjective which jeopardizes the validity of the study and that it is more complex and costly than other methods (Cook, 2010; Green, 2011).

Objective-oriented evaluations. Objective-oriented evaluations have influenced educational reform for many years (Alkin & Christie, 2004). Conceptualized by Tyler (1932), this evaluation approach focuses on identifying educational objectives at the beginning of the program and then measuring the extent to which those objectives have been met at the end of the program (Bhola, 1990; Hogan, 2007; Worthen, 1990). Objective-oriented evaluations rely on the use of performance measurements to determine if and to what degree a program made any impact on student achievement. Due to the summative nature of this approach, critics argue that objective-oriented evaluations do not provide feedback for timely program improvement (Stufflebeam, 2001) and they narrow the evaluation by focusing only on fixed educational objectives (Nyre, & Rose, 1979).

Nyre and Rose (1979) also observed:

> Another major problem with goal-based models is that in order to provide an effective base for determining program results, program objectives must be clear and specific. Rarely are evaluators afforded the luxury of explicit program goals.

> More often than not, if they exist at all, the objectives are vague, general, and too broad to provide a base for comparing results. (p. 191)

Client-centered/responsive evaluation. A client-centered program evaluation is one of the many types of participant-oriented evaluation approaches. It contrasts sharply with the process-oriented and the objective-oriented approaches due to its postmodernist, subjective nature. Unlike other evaluation approaches, the primary purpose of a client-centered evaluation is to promote intrinsic importance for the client and to ensure that the evaluation satisfies their needs and concerns (Mertens, 2002). A client-centered approach is not designed to evaluate if the clients are meetings the program's goals nor is its aim to predict and control (Amba, 2006; Bloom, 2010). Additionally, client-centered evaluations require dialogue, collaboration, in-depth discussion, and vicarious experiences with clients that other approaches may not (Amba, 2006; Stake, 1980). The client-centered type of program evaluation stems from Roger's (1951) work in client-centered therapy. Similar to the role of a client in a therapy session, the client being served in a program plays a major role in investigating potential problems and issues associated with the program. The client is not a co-evaluator, but he does provide significant insight about the program (Amba, 2006). The client will provide a "snapshot of reality" based on his personal experience with the program which Stake (1980) suggests is an effective way to help the evaluator reach understanding. The client-centered method of program evaluation, then, measures program effectiveness from the perspective of the client. Evaluators who employ this approach are more concerned with the quality of the program's components and its impact on the client, as opposed to the quantity of services provided and the number of clients that are served. In this evaluation approach, the evaluator is not just interested in measurable outcomes, but he also seeks to gather information about the program's worth that a quantitative analysis alone cannot provide. Stake (1983) adds:

> Responsive evaluation will be particularly useful during formative evaluation when the staff needs help in monitoring the program, when no one is sure what problems will arise. It will be particularly useful in summative evaluation when audiences want an understanding of a program's activities, its strengths and shortcomings and when the evaluator feels that it is his responsibility to provide a vicarious experience. (p. 15)

The evaluators do not make a final judgment of the program, rather he or she only communicates what the clients disclose about the program and its components (Stake, 1980). Therefore, the recommendations presented in this research paper are solely based upon findings from the data collected in this study.

Prior to this project study, SIEP had not been evaluated to provide school leaders with information about the components of SIEP and the effect of the program on student achievement in mathematics. Therefore, this project conducted a client-centered evaluation and an objective-centered evaluation as an initial investigation into the value of SIEP. Evidence from the projects suggests that neither evaluation alone would have given a complete picture of how the program worked in relation to how it impacted student achievement.

The objective-centered evaluation was used to measure if SIEP met its goal to improve student achievement in mathematics according to GCRCT scores. Although this type of evaluation provided statistical evidence to determine the extent to which the program's objective had been met, it did not provide feedback for how the program could be improved. The summative findings only indicated that SIEP was not meeting its objective to improve student performance in mathematics. To that end, it was necessary to conduct a second evaluation that would bring insight to the components of SIEP to gain a better understanding of why the program was not meeting its objective.

Accordingly, a client-centered evaluation was used for the formative evaluation portion of the project study as a way to gather specific information from teachers and students about which components worked and which components did not work. The primary strength of SIEP was the small group setting which helped to improve student-relationships and student work ethic as well as created the opportunity for more individualized instruction. The primary weakness of SIEP was the schedule component which the client's believed contributed to the program's inconsistency and the teacher's limited time to plan and collaborate. Some teachers also expressed that technology needed for the CAI component was often inaccessible for use in SIEP. The clients' perceptions and first-hand experiences with SIEP are critical to helping school leaders improve the current conditions of the program in order to promote student achievement in mathematics. Findings of the formative evaluations may help to explain why the program is not significantly improving the student achievement in mathematics according to GCRCT scores.

Planning Time, Collaboration, and Student Achievement

Teachers' planning time to prepare and plan for instruction is crucial to their helping students master standards and improve performance. Researchers have examined the issue of teacher planning time and its impact on student achievement (Kassissieh & Barton, 2009; Mertens, Flowers, Anfara, & Caskey, 2010). In most cases, schools will designate time within the regular school curriculum for teachers to strategically plan instructional lessons and prepare activities for their students (NMSA, 2010). However, due to numerous responsibilities that teachers face, the teacher planning time often becomes consumed with other demands associated with the profession (Cook & Faulkner, 2010). For instance, teachers are tasked with participating in meetings, engaging in professional development activities, and working to implement school improvement initiatives. Darling-Hammond, Wei, & Andree (2010) found that teachers in the United States spend far more time in the school day (80%) engaged in instruction than they do in strategically preparing lessons, reflecting on their practice, and making improvements to their instruction when compared to teachers abroad.

The teacher planning time not only offers the teachers time to prepare lessons, but it is also a time that allows teachers to collaborate with one another which is essential in fostering school improvement (Berry, Daughtery, Wieder, 2010; Cook & Faulkner, 2009). A study conducted by Primary Sources (2013) revealed that 51% of the 20, 157 teachers surveyed feel that not having enough time to collaborate with colleagues is one of the most significant challenges faced as a teacher. Accordingly, it is important that teachers are afforded adequate time in order to be effective in their profession and to effectively impact their students' and school's performance. It has been found that high levels of planning and collaboration have a positive influence on student achievement and teacher instruction (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). A comprehensive four-year study of one school district in Nebraska undergoing reform in the area of teacher planning time found that in elementary and middle schools where teachers engaged in professional collaboration, students consistently demonstrated improvement on the state standardized test in all academic areas. Student growth was observed in the high school performance in at least two of those years. Researchers Johnston, Knight, and Miller (2007) tracked the student progress using state standardized test scores. The collaborative strategies put in place required teachers to show evidence of how they were using the additional time to adjust their instruction, analyze data, and develop interventions for students.

The Teaching, Empowering, Leading, and Learning (TELL) Colorado is a state-wide survey of educators which aims to provide teachers and school leaders with data to facilitate school improvement. The 2011 administration of the survey assessed teacher perceptions of the conditions impacting learning and teaching in their schools such as community engagement, professional development, and use of time. Findings from the 2011 data analysis ($n = 30{,}000$) resulted in a statistically significant correlation (.30, $p < 0.01$) between teacher use of time and student performance, particularly in the middle school setting. In another quantitative study with middle school teachers ($n = 50$), Haverback and Mee (2013) used a Likert scale survey to assess their perceptions of the benefits and barriers of common planning time and collaboration. The researchers found that the highest rated benefits of teacher planning time included improved communication, having high expectations for students, and the ability to identify and address student problems. This evidence adds to the body of literature that supports the claim that teacher collaboration and teacher planning time have a positive impact on student achievement.

Instructional Time, Remediation, and Student Achievement

The amount of instructional time spent in the remediation class to impact student performance is a complex issue, yet little research exists on the subject. Existing research does, however, suggest that low performing students need additional time both in and out of the regular class to learn and practice new skills (Burns, 2007; Misco, 2010). Remediation classes, particularly those with a small group setting, will foster a safe and comfortable environment for students and also allow teachers to engage in one-on-one instruction with students (Burns, 2007).

Technology and Student Achievement

Meeting the demands of the teaching profession not only requires times, but resources as well (Moeller & Reitzes, 2011). Data analysis for the formative evaluation portion of this project study revealed that limited accessibility to technology was a weakness of SIEP. Teachers needed access to the computers or laptop carts in order to execute the CAI component of the program's curriculum. Technology has become an essential tool for enhancing the impact and quality of curriculum and instruction in the 21st century school. In fact, research suggests that by 2025, a large portion of the world's population will have access to technology; therefore, adding to the rationale for incorporating more technology into the academic curriculum (Schmidt & Cohen, 2013). Technology integration into the curriculum has shown to positively impact student performance (Shechtman et al., 2010). Keengwe, Mills, and Schneller, (2012) conducted a study on technology integration and student achievement using survey data from 105 students in the 10th – 12th grades at one school in the Midwest. The school implemented a laptop initiative as a means of addressing the issue of technology and improved student achievement. Findings revealed that the new laptop initiative implemented at the school had a positive impact on student learning. The study also incited a need for the continued use of technology to foster more appropriate technology in the school to continue student improvement.

Many schools are choosing to incorporate technology and computer-aided learning to help under-performing students. However, in order to sustain this non-traditional approach to instruction, teachers need the technological resources, infrastructure, and support to properly integrate technology in the classroom to facilitate academic growth for the students that they serve (Clark, 2006, Kopcha, 2008). First, teachers need adequate access to fully functioning technology. In one study, Clark (2006) found that teachers (*n* =187) indicated on a survey that having technology in the classroom to support learning and teacher is “very important.” However, the teachers also indicated in their feedback that even when technology is physically at their disposal, their access is still limited because the technology is not always functioning. This poses a threat to the full integration of technology to improve student achievement.

In addition to having access to properly working technology, teachers need professional development on how to incorporate and select the most appropriate technology for improving student performance (Murphrey, Rutherford, Doerfert, Edgar, & Edgar, 2012; Trautmann & MaKister, 2010). Professional development could potentially shape the perceptions of teachers that are hesitant about integrating technology in the classroom to support their instruction. Kopcha (2008) conducted a study to examine the impact of professional development on 18 elementary teachers' perception of specific barriers (access, vision, professional development, time, and beliefs) to technology integration in the classroom. Results of the survey data analysis indicated that teachers maintained positive perceptions of all barriers to technology integration that were addressed in the study with the exception of time. Data suggested that the consistency in negative perceptions of time and technology integration is a result of the teachers' inexperience in this area. Accordingly, even with professional development in integrating technology to enhance their curriculum, teachers will need sufficient, uninterrupted time to strategically plan and prepare for technology integration within the classroom (Kopcha, 2008; Wachira & Keengwe, 2010).

Given access to functioning technology and professional development to implement said technology, teachers have to be empowered to select the most appropriate technology programs that engage students, improve achievement, and even reduce behavior issues (Wachira & Keengwe, 2010). For example, one such program, the Aplussix, is used in combination with the math curriculum for domains such as algebra. It allows students to work the problems just as they would using pencil-and-paper

(Hadjerrouit, 2011). The advantage of a program like this, especially for remediation, is that it provides immediate feedback for students and allows them to correct mistakes and for teachers, it is serves as an informal assessment of how students are performing.

Implementation

The implementation of this project required the development of data collection tools, writing the executive summary report, and delivering the executive report to the school leaders. The school leaders await the final report with the results and recommendations for improving the program. Recommendations presented in the executive summary report may help school leaders make informed decisions about the future of SIEP.

Potential Resources and Existing Supports

The school leaders serve as the primary audience and support for this project. I will request a meeting with the school leaders to share the findings and to present the executive summary report developed as the project for this study. To carry out the formative evaluation, I needed to develop student and teacher surveys that targeted specific components of SIEP (see Appendix A). The survey was quantitative in design, but included open-ended items which elicited quantitative responses. In addition to the survey instruments, I also developed an interview guide for the two focus group interviews (see Appendix A). The data collection instruments used for the formative evaluation component allowed students and teachers to provide their perspectives of the strengths and weaknesses of SIEP and to have an opportunity to provide suggestions for improvement. The future implementation of those suggestions, however, rests in the responsibility of the school's leaders.

Potential Barriers

The key barriers that constrained implementation of this project included the ambitious nature of the study and the limited pool of teachers to solicit participation for the study. This evaluation study was very time consuming and extensive in design. Consequently, it required a great deal of data to be collected and analyzed in order to gain the greatest understanding of components of SIEP. I single-handedly developed the evaluation measures for the formative evaluation which included the student and teacher surveys and focus group interview protocol. Although the school administered the student surveys as part of the regular SIEP curriculum, I was the only person responsible for analyzing and triangulating data from the student surveys, teacher surveys, and two focus group interviews. This process required an extensive amount of time on part of the researcher.

Another barrier involved the process of soliciting teacher participants for the survey and focus group interview portion of the study. Because the study's population was limited to math teachers at the school, there were only 11 teachers that qualified to participate. Accordingly, due to the limited pool of teachers, I needed as many teachers to participate as possible in order to sustain the validity and reliability of the study's results. For the focus group interview, I was faced with the issue of establishing mutually agreed upon times and dates to meet with both groups. Because the study's data collection process fell within the GCRCT testing window, some teachers were not able to meet until after testing was completed. Thus, the data collection process and the number of teachers interviewed were impacted by the teachers' flexibility and willingness to take part in the focus group interview within the time frame I anticipated for the study. Additionally, due to the inconsistency of student participation, teachers expressed that it was difficult to get a hold of all SIEP students so that they could complete the survey which, consequently, impacted the amount of student data available for the study.

Proposal for Implementation and Timetable

Upon receiving approval from Walden University's Institutional Review Board to conduct my research, I immediately contacted the principal at Jones Middle School to inform her that I was ready to begin collecting data for the study. This project was officially implemented on March 25, 2014 and began with the formative evaluation component, followed by the summative evaluation component of the study. The formative evaluation component took place while teachers and students were actively involved with the program. I sent an email to the 11 teacher candidates requesting their participation in the study. A total of two weeks were allotted for teachers to participate in the study. Student surveys were concurrently being administered to SIEP students at the convenience of the teachers. Because the student surveys were administered through the school, the researcher could not place a deadline on the survey administration time in order to coincide with the study's deadline. However, as the program's coordinator, I could extend the time frame such that teachers had enough time to get as many students to complete the survey since the data was requested by the school's leaders. As soon as teachers began to express interest in the focus group portion of the study, I started sending emails to establish a time and date to meet that was convenient for all teachers. From this email, two groups were established. Due to the limited availability of teachers, the focus group interview component took longer than I anticipated. The first focus group was conducted on April 19, 2014 and the second on May 8, 2014.

Data for the student surveys, teacher surveys, and teacher focus group interviews were analyzed and triangulated to find patterns relative to the study's inquiry, particularly the strengths and weaknesses of the program. The data analysis process looked at quantitative data from Likert-scale survey items, and qualitative data from the open-ended survey items and focus group interview responses. A series of recommendations for improving the program were generated from the study's findings. The summative evaluation component involved obtaining mathematics GCRCT scores for students participating in SIEP and those that qualified for the program, but did not participate during the 2012-2013 and 2013-2014 school years. After obtaining this data from the district-level person responsible for handling data requests, I was able to conduct a mean gains score analysis to measure the impact of SIEP on student achievement.

After acceptance of my completed doctoral study, including the executive summary report, I will contact the school's principal to arrange a date and time for me to deliver and present the executive report. The executive report will include recommendations that might be useful in improving the quality and impact of SIEP. One recommendation presented in the executive summary report is that the school leaders commit to an ongoing evaluation process which includes using both formative and summative measures such as those conducted in this study. A formative evaluation throughout the course of the program could help the school leaders make immediate changes before state standardized testing while the summative evaluation could help them judge if the program met its goals. It is recommended to start the formative evaluation no later than six weeks after the program has started. School leaders should allot a minimum of two months to complete the evaluation process which includes collecting, analyzing, interpreting, and reporting the data.

Roles and Responsibilities of Students and Others

The school leaders at Jones Middle School serve as the primary audience for this study. The executive report presented to them will provide suggestions for improving components of SIEP according to data collected in the formative evaluation phase of the overall program evaluation. In order to completely support the school leaders in improving SIEP, it is important for them to be well informed regarding the strengths and weaknesses of the program. Given the suggested improvements for the program, the school leaders can then make informed decisions on how to best support the teachers' instruction and the students' learning.

I bear the responsibility of presenting the executive summary report to the school leaders as well as answering any questions that they may have regarding the study and its findings as addressed in the report. Should the school leaders choose to implement the recommendation to develop a formative and summative evaluation instrument for the program and invite me to be a part of future evaluation initiatives, I will accept the invitation and carry out responsibilities as delegated. Nonetheless, the school leaders will be responsible for the funding, time, and resources needed to continue the evaluation process.

Program Evaluation

This executive summary report provided findings of a formative and summative evaluation of a mathematics remediation program, SIEP. The formative evaluation sought to determine the strengths and weaknesses of the program. The purpose of the summative evaluation was to measure if the program has positively impacted student achievement for students participating in the program. To that end, the executive summary report has two objectives. The first is to provide recommendations for school leaders for future decisions about SIEP using the findings from the formative evaluation; the second objectives is to report the analysis results of the mean gains score analysis conducted using mathematics GCRCT scores.

In order to ensure that the program is contributing to student growth and improved performance outcomes, a formative and summative evaluation should be implemented on a continuous basis throughout the duration of the program's existence. The formative evaluation can be used to monitor if the project is being implemented as planned and to help school leaders be informed of areas strengths that should remain in place and areas of improvement that need to be addressed. Over time, the school leaders may find that students and teachers may shed light to other strengths and weaknesses of the program that were not indicated in this study. The summative evaluation can be used to measure if and how SIEP is impacting student achievement in mathematics.

Moreover, school leaders can use the research, resources, and recommendations presented in this study to facilitate future evaluations at the school on an annual or bi-annual basis. Once the executive summary report has been delivered to the school leaders, I may need to answer questions related to the study's findings or that may address future data gatherings and evaluations. That said, if requested to assist with the process of continuous program evaluation, I will participate to the extent that is permissible.

Implications Including Social Change

Local Community

For the past 5 years, the school leaders have used SIEP as a school-wide initiative to address the problem of low-achievement in mathematics. However, GCRCT scores have shown that for the last two academic school years, percentages for students not meeting the standards on the assessment have been higher or just below district and state averages (see Table 1). Although the state of Georgia has been exempted from meeting the demands the NCLB Act as mentioned earlier in this paper, students are still expected to demonstrate proficiency and meet grade-level expectations when judged against standardized testing. Therefore, the disparity in student performance within the local school, in addition to across the district- and state-levels, prompted the exploration into the impact of SIEP on student achievement in mathematics.

The content of this executive summary report addresses the needs of low-performing students at Jones Middle School by providing the findings of an evaluation conducted on a program designed to remediate deficient areas in their performance. The students targeted for SIEP demonstrate a need in the area of mathematics and in order to best meet that need, the school leaders should implement the most effective program of remediation. In past years, the school leaders may have had a quantitative approach to judging SIEP, but no qualitative evidence exists to support if they were well informed of the internal factors that may influence student achievement (Douglas et al., 2008). Some internal factors related to SIEP as evidenced in the formative evaluation data include teacher preparedness, student motivation, lack of resources and materials, and the time of day that the program is offered.

The findings presented in this executive summative report should help the school leaders in the effort to address internal factors of SIEP that present a threat to the program's impact on student achievement. Implementation of recommendations presented to the school leaders should help school leaders improve SIEP and equip them with resources to continue the process of evaluating the program to support the student's growth and the teacher's instruction. Continuous evaluation may lead to an overall decline in the percentage of students not meeting the standards in mathematics, but also an increase in the percentage of students meeting and exceeding the standards.

This project not only provides benefits to the students and teachers, but to the school leaders as well. First, the school leaders may have greater confidence in SIEP and its potential to meet intended goals given improvement is made. Second, the project may stimulate school leaders to consider using data to drive other decisions that impact student performance at the school. Last, by using and sharing the findings of the study and other subsequent evaluations, school leaders demonstrate to the district and surrounding community their willingness to commit to on-going improvement of programs and interventions used to help students improve their performance in mathematics. Consequently, improvement in student performance at the local school level should then meet or exceed district and state level percentages on a more consistent basis.

Far-Reaching

In the larger context, other school leaders across the district that use SIEP for the purpose of mathematics remediation could use the recommendations included in this report to consider making improvements to the program at their respective schools, thus initiating systematic change district-wide. The school leaders could also use the evaluation tools that were created for this project study because they are specific to the components and parameters of SIEP. Making improvements to components of SIEP across the district may contribute to closing academic gaps that exist between elementary and middle school performance and between middle and high school performance. To that end, assessment scores and overall student performance could increase not only at Jones Middle School, but at other schools across the district which should ultimately reflect improvement at the district- and state-levels. This district-wide effort would show the community and other stakeholders that Harris County Schools are committed to making data-driven changes where necessary that reflect the needs of the students served in the district as well as are committed to supporting teachers in providing adequate resources to supplement their instruction.

Conclusion

Section 3 of this study explained and described the development of the executive report that aims to inform the school leaders at Jones Middle School of the strengths and weaknesses of SIEP from the perspective of the teachers and students involved with the program and to make recommendations for improving areas of need. This section also provided a review of professional literature to support the evaluation design, a rationale for the evaluation and potential implications towards social change. The recommendations made in my executive report stem from results of the formative evaluation component of the study. Recommendations may help school leaders make informed decisions about the future of SIEP particularly which improvements will be made, what will be needed to make the improvements, and how will the improvements be implemented.

The gains score analysis used in this study showed that the program was not meeting its goals to improve student performance in the area of mathematics. The formative data revealed weaknesses of the program that could play a role in the program's ineffectiveness on student achievement. I intend to arrange a time and date to meet with the school leaders at Jones Middle School to present the study's findings. The school leaders can then consider using the findings to improve SIEP and its impact on student performance within the school. Ultimately, providing school leaders with data regarding which components of SIEP work, which need improvement, and suggestions for making improvements will empower them to better meet the needs of targeted students.

The last section of this paper completes the project. Section 4 provides a scholarly discussion of my reflections on the process of researching and developing this executive report. In particular, I discuss limitations and bias and how they were overcome, my roles in the research, and recommendations for future research.

Section 4: Reflections and Conclusions

Introduction

This program evaluation study was conducted to inform the school leaders at Jones Middle School of the value and impact of its School Instructional Extension Program (SIEP). Although students at this school have made improvements in mathematics over the past two years as judged by GCRCT scores, they have continued to perform below state and district meets and exceeds averages in mathematics. Consequently, the school leaders implemented SIEP as a way to provide remediation for students performing in the bottom 10% in mathematics as well as for students that teachers recommend for non-academic purposes (poor work ethic or chronic absences). School leaders, however, have not evaluated the program to determine its merit and value, particularly its effectiveness on student achievement in mathematics. Therefore, there was a need to test the efficacy of SIEP at the local site of interest from the perspectives of teachers and students involved with the program.

The rationale to implement a program evaluation for SIEP was an attempt to address a local school's need for a systematic evaluation to determine which components of the program worked, and which components need to be improved according to the perspective of SIEP students and teachers. Two types of evaluative inquiry—formative and summative—were used to answer the five evaluation questions that guided this study. The formative evaluation revealed the strengths and weaknesses of the program while the summative evaluation revealed the program's impact on student achievement in mathematics. The concluding recommendations will be used to guide program reform for the future school years.

Project Strengths

This study addressed the need to evaluate a program implemented for the purpose of mathematics remediation for students in grades six through eight. Several previous studies have articulated a general need for program evaluation to combat the issue of low achievement in mathematics and to inform decisions to improve the program (Cai, 2010; Cook, 2010). This program evaluation study sought, in accordance with this need, to test the efficacy of SIEP by identifying possible areas for improvements based on stakeholder perspectives. Data collection involved formative and summative evaluation measures. For the formative evaluation, a total of 36 students and eight teachers completed the SIEP Evaluation Survey while five of those teachers participated in the focus group interview. For the summative evaluation, GCRCT gains scores were analyzed to determine if and to what degree the program impacted student performance in mathematics. The recommendations for program reform based on this study's findings are outlined in the executive summary report prepared for the local school leaders at the site of interest.

The culminating project developed for this study provides local school leaders with findings on the strengths and weaknesses of the program, and suggestions for improving the program. Strengths of the project included the ability to create an executive summary report to provide findings of the study that describe components of the program. Another strength that added to the validity and reliability of the findings were two forms of inquiry used for data collection—formative and summative evaluation.

The formative evaluation provided a snapshot to the components of SIEP while the summative evaluation captured the overall picture of how, collectively, those components impacted student achievement in mathematics. The combined results of both evaluations will empower school leaders to make research-based decisions and conclusions about how SIEP is impacting student achievement in mathematics and how each component contributes to the students' performance.

Formative Evaluation

The formative evaluation involved SIEP students and teachers due to their experience with the program. Data collected during the formative phase using surveys and focus group interviews outlined the program stakeholder's perceptions of which components of SIEP worked and which components need improvements. The data collection tools also solicited their suggestions for improving the overall effectiveness of the program on student achievement in mathematics when judged against GCRCT scores. The use of a survey instrument was beneficial to this study because it allowed me to quickly and reliably obtain data from a large sample in a cost-efficient way. The focus group interview with the teachers proved beneficial as well because it was an effective means of collecting a multiplicity of perceptions and personal experiences with the current program, as suggested by Lodico, Spaulding, & Voegtle (2010). Therefore, using a mixed-methods approach for the formative evaluation allowed for depth and breadth in inquiry. Both methods of inquiry generated a sizeable amount of data related to the strengths and weaknesses of SIEP that was sufficient for developing a series of recommendations for program improvement.

Summative Evaluation

The summative evaluation findings provided school leaders the quantitative evidence needed to make conclusions about whether the program was meeting its goals of improving student achievement in mathematics. Although mathematics GCRCT scores have improved school-wide, no prior evidence had been collected to gauge what role SIEP played in this recent performance growth. To evaluate whether students' mathematics GCRCT increased as a result of participation in SIEP, I conducted a mean gains score analysis using GCRCT for two consecutive school years. These data did include the students' retake scores for eighth-grade students. At the sixth-grade level, students in the control group (not-in-SIEP) performed significantly higher on the mathematics GCRCT than students in the SIEP group during both school years. Data analysis did not reveal any significant differences in gain scores for seventh-grade students enrolled in SIEP for both school years. However, at the eighth-grade level, data analysis revealed that students that did not participate in SIEP had significantly higher gains scores than students that did participate in the program for both school years. This statistical data provided strong quantitative evidence that SIEP at Jones Middle School was not meeting its goal of improving student achievement in mathematics when judged against GCRCT scores.

Recommendations for Remediation of Limitations

Although the program evaluation was successful in generating evidence of the value and impact of SIEP, there are several limiting characteristics of the study. The first limitation was that the study only examined the implementation of SIEP at one school within the district. SIEP is a district-wide mathematics program used by elementary, middle, and high school administrators for the purpose of remediating students in academic areas. However, school administrators are given the autonomy to implement the program to best meet the needs of students within their individual schools. School leaders at the local site of interest decided to use SIEP for mathematics remediation during the course of the school day. The design of SIEP at Jones Middle School, then, is different from how some school leaders have chosen to implement SIEP at their respective schools.

Data should be collected from schools that use SIEP in a similar fashion as Jones Middle School in order to potentially resolve the limitation presented by focusing on one school and/or data should be collected from schools with different designs and student profiles. Data amongst the different schools should be compared by time of day that SIEP is offered, by age range of students (elementary, middle, or high), and by subject. Data from different schools offers the opportunity for more student and teacher stakeholders to be involved in the formative evaluation component thus adding to the understanding and depth of knowledge concerning SIEP. Including more schools would also enhance the summative evaluation component because the additional data would provide a greater sense of how the program impacts student achievement in mathematics at different levels. Consequently, this information would be very useful to district-level stakeholders involved with making instructional decisions that impact students, teachers, and school leaders district-wide.

A second limitation is that I, the researcher, conducted the evaluation of SIEP as a stakeholder within the school district of the research site. To foster objectivity in future research, the school leaders at Jones Middle School could invest in an external evaluator to conduct both the formative and summative evaluation of SIEP. This evaluator's recommendations and suggestions for improving SIEP would be free of potential bias since they will have no personal interest in the program. If school leaders are unable to hire an external evaluator, then they could seek out professional development opportunities to train teacher leaders to be able to conduct the formative evaluation component of SIEP. Investing time and training on how to appropriately use various data collection tools and to effectively analyze the data will empower the teacher leaders to continue the formative evaluation process initiated in this study. School leaders must, however, consider the workload that generally consumes a lot of teachers' time throughout the work day. That said, school leaders may have to generate funding to compensate teachers if the evaluation would have to be done outside of contractual hours. For the summative evaluation component, the school leaders could solicit the support of district-level data analysis personnel who could easily retrieve, organize, and analyze the summative assessment data for the school.

Last, during the summative evaluation phase, I did not consider the impact of factors such as attendance and behavior when analyzing the GCRCT gains scores. I also did not disaggregate the GCRCT scores to analyze the students' performance within the four mathematics domains assessed by the GCRCT. Analyzing the student data from these perspectives would have added to the strength of the study by providing school leaders with more specific evidence of how SIEP students are performing in mathematics according to GCRCT scores.

Scholarship

Through my experience and challenges with conducting the program evaluation of SIEP, I have gained a better understanding of scholarly research, data analysis, and data reporting. Not only did I have to read scholarly writing, but I also had to learn how to dig deeper into the literature in order to accurately interpret, analyze, and report on what I read. My committee members encouraged me to think beyond my initial levels of inquiry for my literature review which forced me to asked more questions and seek more answers. As a result of my extensive saturation of the literature, I was able to acquire a thorough knowledge of the research related to program evaluation and student achievement in mathematics. Due to my ability to navigate through scholarly writing, I have become an asset to personal and professional organizations to which I have association.

As a novice program evaluator, research and recommendations of Amba (2006); Bloom (2010); Grayson (2012); and Kealey (2012) were instrumental in my completing the evaluation of SIEP in an efficient manner. These scholars made suggestions for data collection, data analysis, and the overall design of the evaluation. For example, their work on formative and summative evaluation helped me understand the potential impact that using both methods could make on the implementation of my project. Using both evaluations added to the depth of the overall study and its findings. Additionally, information learned from the work of researchers like Byers (2009) and Wintz (2009) shed light to how computer-aided instruction (CAI) and direct instruction are proven methods to improving student achievement in mathematics. Essentially, their research empowered me to make research-based recommendations concerning the instructional component of SIEP which are included in the executive summary report of the program evaluation study.

I have also acquired knowledge in multiple data collection tools to retrieve information. I credit this to the guidance and leadership of my chair who worked very closely with me throughout the entire process. Initially, I planned to rely strictly on quantitative data through surveys with teachers. However, after reviewing literature on best practices for program evaluation and again, consulting with my chair, I decided that a mixed-methods approach for the formative evaluation would be more appropriate for addressing the problem of this study. Therefore, I extended the survey to SIEP students and I added the focus group interview with teachers. Using the survey exposed me to components of Survey Monkey that I was not familiar with. The sample size also provided me the opportunity to learn how to work with large quantities of data. My experience with the focus group interview was essential to my growth as a researcher because I was able to work on my interviewing and speaking skills. The information gathered from these two collection sources assured me that I had precise data regarding which components worked and which components need to be improved according to the students and teachers involved with the program.

The counsel of my other committee members was essential in my choosing to analyze GCRCT gains scores for students participating in SIEP as the summative evaluation component of my study. This information solidified my project study as it showed a potential correlation between the weak components of SIEP and the program's overall impact on student achievement. My chair spent time explaining the various ways to use IBM SPSS Statistics to achieve the best representation of the GCRCT data. We ran various analyses and talked about the components of each report. I particularly learned the most about the two-way ANOVAs which was unfamiliar to me. It was through this experience that I was able to expand my knowledge of statistical analysis and reporting. Nonetheless, I recognize that there is much more that I could afford to learn moving forward in future research projects.

Project Development and Evaluation

The most significant aspect of the project development and evaluation was selecting the most appropriate evaluation design and method for sharing the study's findings with the school leaders at Jones Middle School. For the evaluation design, I chose to implement a mixed-methods, formative evaluation and a quantitative summative evaluation. The purpose of the formative evaluation was to get immediate feedback about the program's components (Merrell, Ervin, & Gimpel, 2006) while the summative evaluation served to determine if the program worked to improve student achievement in mathematics according to GCRCT scores (Kealey, 2012). To share the study's findings with the school leaders, I chose to develop an executive summary report because the format allowed me to easily convey the results of the data analysis and offer recommendations for improving SIEP to the school leaders.

The development of my executive summary report forced me to be cognizant of the specific needs of my audience; the school leaders. I had to consider which information would be of most significance to their understanding of the value and merit of SIEP at the school. Selecting the most salient information for this nine page executive summary report was not the easiest task as I had over 100 pages related to the investigation of the problem, data collection, data analysis, and data reporting for the study.

Overall, this project study was developed with the specific intent to answer the evaluation questions related to the strengths and weaknesses of SIEP and whether or not the program significantly impacted mathematics GCRCT scores for student participants. Using the formative evaluation and summative evaluation helped me to achieve this goal. Therefore, both methods of inquiry used in this study were essential to the success of the project.

Although a successful project, the study was not free of challenges. The greatest challenge experienced during the course of the study occurred during the data analysis phase. There was an abundance of data that initially seemed too ambitious for one researcher to organize and analyze alone. In particular, using both qualitative and quantitative measures to analyze the data proved to be a cumbersome task. Initially, it was very difficult for me to organize the data, but then I also struggled with triangulating the quantitative survey data, qualitative survey data, and qualitative focus group data. My frustration and feeling overwhelmed could have been the result of my lack of experience with handling data from multiple sources. Nonetheless, I now have a better understanding of how to effectively organize, analyze, and interpret data using a mixed-methods approach. The surveys were indeed a quick way to retrieve data for the study. I did appreciate the use of the focus group interviews in the long run because I was able to observe the teacher's appreciation of having the opportunity to provide feedback about SIEP and its components. Not only were they able to talk about which components worked and which components did not work, but they were also allowed to give suggestions for improvements.

My inexperience with various statistical analyses also came to light during the summative evaluation component. I struggled with deciding which approach would be most appropriate for helping me analyze the GCRCT scores to determine the impact of participation in SIEP. This experience, however, caused me to have a greater appreciation for data analysis software, especially IBM SPSS Statistics. This software was used to generate the two ANOVA statistical analyses of the GCRCT data for the purpose of determining differences amongst student scores for the experimental group and control group.

Leadership and Change

Improving student achievement in mathematics has long been a topic of interest to me. As a teacher, I was always willing to learn and explore new practices that would empower me to best meet the needs of my students. My passion for improving student learning became evident to school leaders and they eventually invited me to take on leadership roles within the school. One of those roles was serving as the coordinator of

SIEP during the 2012-2013 and 2013-2014 school years. Therefore, my personal experience with SIEP compelled me conduct this study.

One goal for this study was to provide school leaders with recommendations for improving components of SIEP that were not successful. However, as the coordinator of SIEP and a leader within the school, I also wanted to provide an opportunity for the students' and teachers' voices to be heard. Wise and Wright (2012) suggested that leadership plays a significant role in student achievement in an educational setting. Including the stakeholders in the evaluation process was a means to showing them that school leaders and I, the program's coordinator, have a genuine interest in their needs. Stakeholders can now feel that their opinions are valued and, most importantly, their input will lead to changes in SIEP that could have a greater impact on student achievement. I have learned that effective leaders are those that can motivate and inspire others to follow and to lead as well. That said, I believe that my efforts also stimulated the school leaders to lead a process of change in the school that may not have been considered in past years.

Although I have recently transitioned from the role of a teacher and the program's coordinator, my passion for improving the way that students learn and the way teachers teach has only magnified. Now as district-level leader, I have a greater platform for change within my school district. The development of this program contributed to my development as a leader. Not only did I work closely with the school leader at the site of interest, but I was also afforded the opportunity to work with district-level leaders for the summative evaluation component of the study. Although the executive summary report for this project was intended for the local school leaders, district-level leaders with knowledge of my study may be led to initiate evaluation of SIEP at other schools, especially because SIEP is a district-wide initiative. My study, then, could potentially create a sense of urgency within in the school district to drive needed reforms. Due to my experience with program evaluation, I could potentially be charged to lead this effort.

Leadership development and change will continue to be areas of growth for me. Despite my experience as a school and now district leader, I will not become stagnant in leadership development. There is always room for improvement. Through my experience with this study, I have learned that leadership involves more listening than talking. I have to continue to use inquiry to help discover what teachers need and then how to meet those needs. Therefore, I better understand that in order for me to effectively strengthen teachers and be a change agent in the district, I have to be a continuous learner that is knowledgeable of current research and best practices.

Analysis of Self as Scholar, Project Developer, and Practitioner

My time as a student at Walden University has opened the door for many learning opportunities which have shaped and sharpened me as a scholar, project developer, and practitioner for social change. I began this doctoral journey as an inexperienced researcher and scholarly writer. Despite my desire to acquire a doctorate in teacher leadership, I knew that I was not the most skilled in conducting research. Therefore, I sought after an institution that would challenge me, yet strengthen me in this area. Walden University provided the very training and preparation that I needed in order to grow in the area of research and scholarly writing.

My growth as a scholarly writer can be attributed to improvement in my research skills, especially while writing the literature review for this study. Initially, I had very little knowledge of how to search for appropriate sources, so I indirectly limited my choice of key words to search. My committee challenged me to think more analytically about all possible topics that could bring more meaning to my study. Now, I know the difference between primary sources, scholarly articles, secondary sources, and peer-reviewed sources as well as the impact that each has on the quality of your dissertation. Because of this acquired knowledge, writing my second literature review was not as cumbersome a task as my first. I now have a heightened appreciation for professional scholarship and scholarly writing.

My skills as a researcher have improved through my increased awareness of program development and research design. There were various approaches that I could have used to investigate the impact of SIEP; however, I think that this project study was the most efficient way for me to best address the need to determine the strengths and weaknesses of the program from the stakeholder's perspective. As the program's coordinator, I was certainly concerned about the program's impact on student achievement in mathematics. Because the program had never been evaluated, the opportunity to conduct this project study was definitely at my disposal. Although the statistical evidence shed insight to the ineffectiveness of the program on GCRCT scores, it was the qualitative data that helped me gain the best understanding of how the program worked, which components worked, and which components need improvement. Nonetheless, I would not have been able to determine which approach would be most appropriate for this study without taking the time to study articles, journals, and books related to program evaluation, mixed-methods designs, formative evaluation, and summative evaluation. For example, I learned that using a mixed-methods design would add to the depth and breadth of my study. Using mixed-methods also helped to sharpen my skills in interviewing, analyzing data, and creating data collection instruments. Through my experience, I feel confident to say that I am no longer a novice researcher and that I believe I have gained skills that will be beneficial to the local school and school district in addressing future program evaluation efforts.

Furthermore, I have learned much about myself as a research practitioner. A scholar practitioner is one who is engaged in intellectual work and who also practices skills necessary to enlighten future generations (Nganga, 2011). My sole purpose in conducting this project was to educate school leaders of the merit of SIEP in order to stimulate improvement for advancing student achievement in mathematics. Regardless of the strengths revealed in the study's findings, it was important for me to inform school leaders that SIEP needs attention. Therefore, as I learn about best practices for improving SIEP, I wish to share them with individuals that have interest in the program and authority to make decisions concerning the quality of the program. Although the findings from this research will directly impact students at one local school, my new role as a district leader enables me to persuade program evaluation of SIEP on a larger scale. My expanded knowledge of program evaluation and best practices for improving student achievement in mathematics have equipped me for being a change agent in my school district.

The Project's Potential Impact on Social Change

The results of this project study are important because they provide evidence that certain components of SIEP need to be improved in order to maximize student achievement in mathematics. While the study specifically addressed the worth of SIEP at one local school, the study's findings have the potential to impact social change beyond the school level. The intent of this program evaluation was not only to create social change for those who implement and make decisions about the program, but also for those who are directly impacted by the program's activities. Accordingly, this study is unique because it involves the beliefs and opinions of those most closely associated with the program—students and teachers. Including these stakeholders added to the reliability and significance of this study. The stakeholders' perceptions of SIEP were considered when making recommendations for improving the program. Therefore, program reform can be partly contributed to their valuable input.

Social change should follow the reformation of SIEP. Improving components of SIEP should in turn improve instructional conditions for teachers and learning conditions for students. Such improvements should also positively impact student self-efficacy in mathematics as students would have more and better opportunities to demonstrate mastery of mathematical skills (Alkharusi, 2009; Seifert, 2007; Seigle & McCoach, 2007). The goal of SIEP at Jones of Middle School is to improve student performance in mathematics, ultimately leading to improvement in standardized test scores. When standardized test scores increase at individual, local schools, test performance data will improve for the district as well. Consequently, there are implications of my study for positive social change at the local school level and at the district level. The findings and recommendations from this program evaluation can empower school and district leaders to: (a) improve student achievement in mathematics through remediation programs, (b) make informed decisions regarding policies and procedures that impact both students and teachers, (c) use data to develop and sustain academic programs, and (d) initiate the process for continuous evaluation of school-wide and district-wide programs that involve program stakeholders. This program evaluation study could also be helpful to policy and decision makers outside of the school district that use programming as a conduit for targeting low-performing students in mathematics. Therefore, this study has potential to impact social change at a larger perspective than initially considered at the start of the study's development.

Implications, Applications, and Directions for Future Research

This project study was designed to meet the need for a systematic program evaluation at one local school. Although the intent of the study was to inform school leaders of the impact of SIEP at this particular site, my findings could inspire future research to be conducted by developing an on-going evaluation process for similar programs being implemented within the district, state, or throughout the United States. Future research could involve duplicating the current study of SIEP on a broader scale to include different stakeholders, subjects, demographic areas, or a combination of the factors. This study was limited to one middle school; therefore, future research could be done at the elementary or high school levels.

I strongly believe that improvements to SIEP and like programs will ultimately lead to increased student achievement in mathematics when judged against assessments such as the GCRCT. If future research is conducted on SIEP or like programs, I would recommend the researcher use a two-fold inquiry approach, combining formative and summative measures. The formative evaluation will help program decision makers stay involved in the teaching and learning process so that important decisions can be made to ensure that students are moving forward in their learning before the programs' activities end. It would also be a good idea to use a mixed-methods, client-centered design for the formative evaluation. Including the clients, or stakeholders, is meaningful to program enhancement (Amba, 2006) and fosters intrinsic importance (Mertens, 2002) that would be beneficial to getting a clearer picture of how the program works and the quality of its components. Using a mixed-methods approach will also help the researcher better understand the stakeholder's personal experiences with the program (Johnson, Onwuegbuzie, & Turner, 2007). The stakeholders will gain a sense of appreciation in knowing that school leaders are interested in meeting their instructional needs. Every teacher deserves the right to maximize his teaching while every student deserves sufficient opportunities to maximize his academic growth. The summative evaluation will serve as the final evidence of whether the program met its intended goals (Kealey, 2010). Combining both measures will prevent the researcher from relying too much on one method, thus limiting the effectiveness of the study. Consequently, what the researcher may find is that data from the formative evaluation may help him better understand the results of the summative evaluation, and vice versa.

The findings of this study add to the literature on formative and summative evaluation of programs designed to remediate students in the area of mathematics. Because the statistical analysis yielded SIEP had no significant effect on student achievement in mathematics for sixth- and eighth-grade students, the results of this study will also add to the body of knowledge of mathematics programs that do not positively impact student learning. The formative evaluation revealed strengths and weaknesses of SIEP from the perspective of teachers and students, which add to the literature on the significance of client-centered evaluation on program design and reform according to interests of stakeholders. Collectively, these findings could help school leaders make decisions about developing a mathematics remediation program at schools in which these types of program do not currently exist.

Conclusion

This project study was driven by my professional and personal desire to evaluate SIEP. I challenged myself as a researcher to evaluate the program in order to provide schools leaders with a better understanding of SIEP according to stakeholders perspectives. Statistical analyses revealed that the program was not meeting its goal to improve student achievement in mathematics. Data analysis for the formative evaluation revealed the primary strength of SIEP was the small group setting which stakeholders believe resulted in: (1) improved student-teacher relationships, (2) improved student motivation, and (3) students completed more and performed better on math assignments. On the other hand, stakeholders identified the schedule component as the most noted weakness of the program. According to stakeholders, with SIEP held during the

Connections time of the day: (a) SIEP sessions were often cancelled, (b) the program became inconsistent, (c) teachers had limited time to plan lessons for SIEP, and (d) students missed their Connections classes. Teachers, however, felt that with improvements to the program, SIEP would make a significant impact on how students perform in mathematics when judged against standardized testing.

Based on the results from the study, I made recommendations to school leaders on ways to improve components of SIEP. The executive summary report and PowerPoint presentation will be presented to school leaders to demonstrate how the study's findings can benefit teachers and students at the school. The results from this study may compel school leaders to investigate the value of other school-wide programs and interventions.

Although Section 4 concludes this project study, I hope that the results will prompt future research in program evaluation and mathematics achievement. This project study was limited to one school; yet, the study's results have potential to impact the educational community on a greater spectrum. Schools across the district, state, and nation that currently have programs like SIEP are encouraged to develop systematic evaluations of their programs and even continue the research efforts initiated by this project study. Schools that desire to implement such programs could benefit from this study as well. Such school leaders should consider the factors and barriers identified in this study that could impede learning before developing and implementing the program at their school. Personal reflection of my experience and growth as a researcher was a much appreciated component of this study. I gained an abundance of knowledge about research, program evaluation, data analysis, and scholarly writing. In many ways I have grown from a novice researcher to an adept scholar and it is certainly attributed to my experience as a doctoral student at Walden University. I am hopeful that my research skills and experience with program evaluation will be utilized by district leaders and school leaders at other schools within the district.

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Appendix A: Executive Summary

Evaluation of the State of Georgia's School Instructional Extension Program (SIEP) at One Middle School

Introduction

The following report will summarize the findings and recommendations from *Evaluation of the State of Georgia's School Instructional Extension Program (SIEP) at One Middle School*, a research project conducted by Taiesha M. Adams as a doctoral student at Walden University. The purpose of this study was to conduct a comprehensive program evaluation of a school-wide, mathematics program from the perspective of teacher and student stakeholders. SIEP is designed to provide additional instruction to students who demonstrate deficiencies in mathematics according to GCRCT scores or those that teachers recommend due to poor work ethic or low motivation. The program is usually held during the Connections time of the school day which is normally reserved as time for teachers to collaborate, plan lessons, or attend professional learning sessions. The Connections time is also when students will take part in non-academic classes such as art, band, or Physical Education. Before this project study was conducted, the school lacked a systematic and meaningful evaluation tool for monitoring progress in mathematics for SIEP students. Additionally, there was no program curriculum nor were there program specific resources to help facilitate teaching and learning. Consequently, teachers are currently responsible for developing lesson plans and soliciting resources for the program on their own.

The evaluation of SIEP sought to identify the strengths and weaknesses of the program's components and to solicit recommendations for improving the program according to the stakeholder's perspective. The evaluation questions that guided this study were: (1) What are the strengths and weaknesses of the program from the teacher and student perspective, (2) What are their recommendations for improving the program, and (3) Does participation in SIEP help improve the mathematics skills of students who struggle with math as measured by the GCRCT? The study's findings can be used to make decisions regarding the reformation of the program to attain the greatest level of impact on student achievement in mathematics.

Evaluation

A two-part evaluation was used to evaluate SIEP. Phase one was a formative evaluation to determine which components of SIEP worked and which need improvement from the teacher and student perspectives. Phase two was a summative evaluation to test the efficacy of the program based on GCRCT mathematics test scores. For the formative evaluation, data were gathered from focus group interviews with teachers and data from surveys completed by students and teachers that participated in the program for the 2013-2014 school year. Data were integrated and triangulated during analysis to develop the study's findings. The summative evaluation component used mathematics GCRCT scores for two different school years to conduct a gains score analysis for students that participated in SIEP and students that qualified for SIEP but did not participate. Using the findings of this study, a series of recommendations were developed. A PowerPoint presentation has been created to present the results and recommendations of the study to the school leaders (see Appendix B).

The purpose of the summative component was to determine if SIEP was accomplishing its goals of improving student performance in mathematics. The study involved an experimental (SIEP) group and control (Non-SIEP) group of students enrolled in at the school. The SIEP group was students with GCRCT scores 810 or less or students that were recommended by a teacher based on motivation or work ethic, and participated in the program. The control group consisted of students that met the criteria for SIEP, but did not participate in the program.

A series of two-way ANOVAs (statistical analyses) were conducted that determined the difference in the mean GCRCT scores for both groups, over the two-year period. Key findings from the summative evaluation include:

- At the 6th grade level, students in the control group (not-in-SIEP) during the 2012-2013 school had significantly higher gains scores than students in the SIEP group during the 2013-2014 school year.
- At the 7th grade level, the statistical analyses did not reveal any significant differences in gain scores for students participating in the program for both years.
- At the 8th grade level, students in the control group had higher gains scores than students in the SIEP group for both school years.

Based on these results, it was concluded that the program was not accomplishing its goal of improving student achievement for all students at each grade level. Findings from the formative data that can be used to identify potential factors that contributed to insignificant growth for students participating in SIEP include:

- **Inconsistency**. Teachers reported that SIEP sessions were often cancelled due to meetings, programs, professional learning, etc. Thus, the program was very inconsistent. As a result, teachers observed a decline in student attendance which they believed was a direct result of the program’s inconsistent meeting dates.
- **Insufficient support**. With the decline in student attendance, students may not have received enough supplemental instruction to make a significant impact on academic performance. Some teachers were only able to have SIEP as often as once a month.
- **Poor work ethic**. Teachers observed that some students demonstrated poor work ethic even while in SIEP. Consequently, the students’ lack in motivation or effort to take advantage of the additional instructional support may have impacted their academic performance.

Although overall student achievement did not improve as a result of participation in SIEP, teachers and students agree that there were positive outcomes that may lead to improved achievement in mathematics.

Overview of Formative Evaluation Findings

Data were collected to determine the strengths and weaknesses of SIEP from the teacher and student perspectives. Overall, teachers and students agreed to majority (88%) of the survey items. Several patterns and themes between survey data and focus group interview data emerged following data analysis.

Key Strengths

- The most noted strength of the program from student (87%) and teacher (100%) perspectives is the small group setting.

Analysis of the qualitative survey data suggested that the small group setting was a success of the program because it created the opportunity for: (1) more individualized instruction, (2) reviewing and previewing skills, (3) addressing learning gaps, and (4) GRCT preparation.

"The ability to have one-on-one instruction/assistance, which is not readily available in the large regular classrooms." [Teacher]

"You have less students in that class so you can get more one-on-one time with the teacher." [Student]

- Other strengths that emerged related to the small group setting following data analysis include: (1) improved student-teacher relationships, (2) improved student motivation, (3) students complete more and perform better on teacher-written math assignments, and (4) students are exposed to different teaching styles as a result of the teacher rotation component.

- While 88% of the teachers agreed that the CAI helped students learn math, there were only 61% of students to agree to the same statement.

Could SIEP be effective?

"It's just some improvements that need to be made. It is a necessity. It's something that some students cannot, especially our low performing students, cannot do without." [Teacher]

"Yes, because of improvements…if it wasn't during planning, if it was consistent, then I would say yes." [Teacher]

- 100% of the teachers who participated in the focus group interview believed that SIEP could be an effective program for improving student achievement if improvements are made.

Key Weaknesses

- Despite teacher approval of the CAI component of SIEP, survey and focus group interview data revealed their struggle with securing the technology needed to implement CAI.

"If we wanted students to use laptops they are not always available since there are only three carts that the whole school has to share and of the three carts, all of the computers, they're some that are missing, and some that don't work. Or, if we wanted to take them to a computer lab, its booked for the whole school year and so its unequal access to that computer lab." [Teacher]

- According to focus group interview data, teachers (100%) overwhelmingly report that they are not in favor of the scheduling component of SIEP primarily because it interfered with their time to plan instructional lessons, collaborate with teachers, attend meetings or professional learning, and complete other teacher-related duties.

- According to teachers and students, as a result of having SIEP during the Connections time of the day: (1) sessions were often cancelled, (2) the program became inconsistent, and (3) students missed their Connections classes.

- 57% of teachers and 63% of students did not look forward to participating in SIEP during the 2013-2014 school year.

- Teachers (50%) did not feel prepared for instruction in SIEP. Teachers expressed in the focus group interview that SIEP during Connections time interfered with their planning time for SIEP.

The problem of teacher preparedness was further investigated in the focus group interview and it was discovered that the greatest factor impeding teacher preparedness was SIEP being held during Connections time or the scheduling component of the program. Having SIEP during Connections time interfered with the teacher's planning time to prepare lessons for the program causing them to, as one teacher described, "wing it" for SIEP sessions. Furthermore, teachers shared that because SIEP was held during Connections many of the sessions were often cancelled due to mandatory meetings and other teacher obligations. Ultimately, SIEP sessions became inconsistent and student participation declined.

Overview of Recommendations

Several recommendations were generated according to the various strengths and weaknesses revealed in this study's findings. These recommendations include:

1. Cease and desist SIEP sessions during Connections. SIEP is currently held during a time of the day which is reserved for students to attend Connections classes and teachers to use as planning time. However, when SIEP is held during this time of the day, it impacts both the students and teachers in unfavorable ways. Students miss out on Connections classes that they enjoy attending or may need to attend for other academic reasons such as reading or writing. However, by not holding SIEP during Connections, students will be able to attend all Connections classes and also maximize their remediation opportunities if the need exists. Additionally, students will no longer be able to use SIEP as a means for escaping an undesired Connections class. Moreover, holding SIEP sessions during Connections impedes on the teacher's planning time which is often used to prepare instructional lessons, attend professional learning opportunities, and fulfill other job-related tasks. Teacher planning time, then, is a very busy period of the day for teachers. By eliminating SIEP from the teachers' planning period, time is restored to them to plan with colleagues to create lessons for math and SIEP and do things that have a direct impact on instruction and student learning. Teachers need adequate time to prepare for SIEP sessions if the program is to have an impact on student achievement. This restored planning time would also then give each teacher the same amount of planning time.

2. Implement SIEP as part of the academic daily schedule. Instead of holding SIEP during the Connections period, consider building SIEP into the regular daily schedule. This will foster: (1) consistency and (2) student and teacher buy-in. Data from this study indicated that teachers contributed inconsistency in the program's meeting dates to the scheduling of component of SIEP. With SIEP being held during Connections time, sessions were often canceled due to meetings and other obligations. With SIEP as part of the academic schedule, however, the opportunity to hold more sessions throughout the week will increase. Therefore, holding SIEP during a different part of the school day may create the consistency that the program needs in order to have a significant impact on student achievement. Furthermore, a consistent, SIEP class will help stakeholders view the program as a priority in the school, thus raising student and teacher buy-in. Consistency will also help students form patterns in regularly attending the program and will eliminate confusion with *if* and *when* sessions will be held. Last, program consistency will build repetition that helps stakeholders value the program as they come to learn what to expect from the program and from school leaders.

3. Implement a continuous formative and summative evaluation system that includes program stakeholders. Just as any other school-wide initiative requires modification, SIEP needs to be monitored and continuously improved to ensure that the program is meeting the needs of the teachers and students. Combining the formative evaluation with the summative evaluation will help school leaders understand if the program is working and which factors contribute to its success or failure. Specifically, a formative evaluation will inform school leaders of how teachers and students view the program's activities and help them determine (1) if the activities needs to be improved and (2) if the program's activities are being executed efficiently and effectively. Including the stakeholders in the formative evaluation process sends the message that school leaders are interested in their input and, at the same time, are vested in attending to their needs. This evaluation should take place before the program's activities have concluded and can be conducted by an internal or an external evaluator, or a combination of both. The summative evaluation, on the other hand, will help school leaders measure student growth for the purpose of determining if SIEP is meeting its goal of improving student performance. The summative component can use multiple measures of assessment such as pre- and post-tests, benchmark tests, and standardized tests to measure student performance.

4. Adopt a mathematics remediation curriculum. The purpose of SIEP is to target students who demonstrate academic need in the area of mathematics according to GCRCT scores and teacher recommendations. However, to meet the challenge of improving student achievement, SIEP teachers need support and resources from the school leaders at all levels. One primary resource to consider is a structured curriculum for SIEP. A successful mathematics remediation program should be supported by a research-based curriculum that focuses on what the students need in order to demonstrate progress. Therefore, it is critically important for school leaders to prioritize a curriculum for SIEP students. Specifically, a comprehensive curriculum complete with hands-on manipulatives, assessments tools, textbooks or workbooks, instructional games, and instructional materials for lower-level math lessons would be ideal for SIEP.

5. Incorporate a personalized, computer-aided instruction (CAI) math program. Incorporating technology in the math classroom is shown to have a positive impact on student achievement. Therefore, it is recommended to continue the CAI component of SIEP, yet to adopt a CAI program that (1) is proven to address and standardize the quality of instruction in line with Common Core Standards and (2) caters to the unique academic need of students. This CAI program can be used to complement the direct instruction strategies that teachers use in SIEP for at least one hour a week. To that end, a CAI program will enable teachers to personalize learning for each student. It is appropriate for students to need teacher assistance periodically, but the bulk of the CAI experience for students should be self-paced and supported by instantaneous feedback for learning and improvement. While it is important that the CAI program provide progress monitoring for teachers, it should also allow students to analyze and chart their own progress and allow them to develop personal goals for their work.

6. **Designate a SIEP Computer Lab.** Students and teachers need adequate opportunities to effectively integrate technology into the SIEP curriculum. A computer lab designated for SIEP use will not only eliminate the problem of limited technology availability but will also show teachers that the school leaders support the program and see it as a priority in the school. Although the school's laptops were used during the 2013-2014 school year to support the CAI component of SIEP, students and teachers often found that they were not suitable for proper use. Assigning a SIEP lab for students to engage in self-paced instruction also prepares them for the technology integrated curriculum that high schools and colleges are adopting in the 21st century.

7. Allow students to register for SIEP. Allowing students to register for SIEP gives them *voice* and *choice* in their own learning. Students can register for SIEP based on a personal conviction that they need supplemental assistance in mathematics. Specific procedures would need to be established to govern this process, but the idea is simply to provide students the opportunity to practice making choices and investing in their own school work.

Summary

This executive summary report was developed and presented for the benefit of school leaders using SIEP for the purpose of improving student achievement in mathematics. The evidence-based recommendations offered in this report for the improvement of SIEP are based on findings from the formative and summative evaluation conducted on the program during the 2013-2014 school year. Local school leaders are encouraged to review and consider these recommendations for program reform in order to enhance student achievement in mathematics, improve the quality of the program, and to support teachers in delivering effective instruction to students in SIEP. Other school leaders within the district that use SIEP are encouraged to consider evaluating the program at their schools. The school leaders could use the evaluation tools used in this project study would to conduct a formative evaluation of SIEP at their respective schools.

SIEP EVALUATION TOOLS

SIEP Teacher Survey

The primary benefit of this study is to inform and improve SIEP at your school based on your specific needs and interests. The resulting information will be compiled for use in developing an evaluation tool for the program. This survey is anonymous and completely voluntary. You will not be asked your identity in this survey in order to ensure the anonymity of your responses. You may refrain from answering any questions that you are not comfortable responding to or which you may not know the answer to.

You are being asked to participate in this study because your experience with SIEP could yield valuable information on this topic. The survey should take approximately 20-25 minutes to complete. There are no foreseeable risks involved in your participation in this study. You will not receive any compensation for your participation in this study.

At the end of the survey, you will be asked to email the program coordinator if you would like to participate in a focus group interview. After all surveys are completed, the program coordinator will contact those individuals who have expressed an interest in taking part in the focus group interview to arrange a time and place for the interview.

Statement of Consent:
Implied consent will be used for this portion of the study. Signatures will not be collected and your participation in the survey will indicate your consent, if you choose to participate. Please feel free to print a copy of this consent form for your records.

Part I: Demographic Information

1.) What is your gender?

_____Male _____Female

2.) Which grade level do you currently teach?

_____6th _____ 7th _____ 8th

3.) Which best describes your teaching assignment at this school?

____ Regular Education Teacher ______ Special Education Teacher

4.) How many years of experience do you have teaching middle school mathematics.

_____0-5 _____6-10 _____11-15 _____16-20 _____21-25 _____ 25+

5.) Place a check for the highest degree you currently hold.

_____Bachelors _____ Masters _____ Education Specialist _____ Doctorate

6.) How many years of experience do you have in teaching mathematics to students in SIEP at this school? _____________

7.) What time of the school day do you teach SIEP? _______

Part II: Perception of SIEP

8). Describe how SIEP differs from the regular mathematics class.

Please rate the extent to which you agree with the statements below:

9.) The time of day that SIEP is offered is appropriate for mathematics intervention.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

10.) Rotating teachers in SIEP is an effective way to help students learn grade-level mathematics standards.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

11.) Instructional lesson plans are prepared for each SIEP session.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

12.) The lessons in SIEP are interesting and are adequately designed to meet the unique needs of students in SIEP.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

13.) The small classroom setting is an effective way to help students learn grade-level mathematics standards.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

14.) The computer aided instruction used in SIEP is an essential component of the program because it helps students understand the grade-level standards.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

15.) Being in SIEP has improved the motivation level of students that are also in my regular mathematics class.

Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

16.) Students in my regular mathematics class have improved their grades as a result of participation in SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

17.) Instruction in SIEP is presented in a way that is clear and understandable to students.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

18.) I help each student that participates in SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

19.) The instructional materials used in SIEP contribute to students achieving success in the regular mathematics class.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

20.) The instructional activities used in SIEP are fun and engaging.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

21.) The assignments in SIEP are easy for students to understand.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

22.) My relationship with students that are also in my regular mathematics class has improved because of participation in SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

23.) As a result of participating in SIEP, students are completing more assignments and performing better on assignments in the regular math class.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

24.) There are adequate resources available to support effective instruction in SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

25.) SIEP has a positive impact on student performance in the regular mathematic class.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

26.) There is sufficient time to plan effective, standards-based lessons for SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

27.) The process for selecting students to participate in SIEP is fair and appropriate.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

28.) I look(ed) forward to participating in SIEP this school year.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

29.) I would recommend SIEP to other students.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

30.) Is there anything that you would like to share about your experience with SIEP?

31.) What components of SIEP do you feel are most successful? Why?

32.) What components of SIEP do you feel are least successful? Why?

33.) What recommendations do you have for improving SIEP?

34.) What resources would you suggest teachers need in order to support effective instruction in SIEP?

The second portion of this study involves a focus group interview with all SIEP teachers. This portion is completely ***voluntary***. The focus group interview portion of this study will take place at your school on a convenient date and time for the group. Your responses will be confidential.

If you voluntarily agree to participate in the focus group interview portion of this study, please email ________________________ with your contact information so that I may contact you, send you an informed consent form for you to sign, and arrange a date and time for the interview.

Thank you for participating in this survey.

SIEP Student Survey

The purpose of this survey is to improve SIEP. This survey is **anonymous**; therefore, the school will not know how you responded to this survey. There are two (2) parts to this survey, please be sure to complete each part.

Part I: Demographic Information

1.) What is your gender?
__ Male __ Female

2.) What grade are you currently in?
__ 6th grade __ 7th grade __ 8th grade

3.) Which school year(s) did you participate in SIEP at this school?
__ 2011-2012
__ 2012- 2013
__ 2013-2014

4.) What time of the day do you attend SIEP?

Part II: Perception of SIEP

5.) Why do you think you were assigned to SIEP?

6.) How does SIEP differ from your regular mathematics class?

Please rate the extent to which you agree with the statements below:

8). The time of day that SIEP is offered makes sense with my schedule.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

9.) Learning from different teachers in SIEP helps me better understand math.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

10.) The teachers are prepared every time we meet for SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

11.) The lessons in SIEP are interesting and help me understand math.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

12.) The small classroom setting helps me learn math.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

13.) The computer time in SIEP helps me understand math.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

14.) Being in SIEP has improved my motivation in my regular mathematics class.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

15.) Being in SIEP has improved my grades in my regular mathematics class.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

16.) The teachers in SIEP explain the math in a way that is clear and understandable.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

17.) The teachers in SIEP are helpful.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

18.) The materials that we use in SIEP contribute to my success in my regular math class.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

19.) The activities that we do in SIEP are fun and engaging.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

20.) The assignments in SIEP are easy to understand.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

21.) My relationship with my teacher has improved because of my participation in SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):______________________________________

22.) As a result of my participation in SIEP, I complete more and perform better on my assignments in the regular math class.
Strongly Agree Agree Disagree Strongly Disagree

Comments (why or why not?):____

23.) I looked forward to attending SIEP this school year.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

24.) I would recommend SIEP to other students.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

25.) For 6th and 7th grade students only: I would like to participate in SIEP next school year.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

26.) Overall, I am satisfied with SIEP.
Strongly Agree Agree Disagree Strongly Disagree
Comments (why or why not?):____

27.) Is there anything that you would like to share about your experience in SIEP?

28.) What parts of SIEP do you like the most? Why?

29.) What parts of SIEP do you like the least? Why?

30.) What recommendations do you have for improving SIEP?

Informed Consent Form
Focus Group Interview

As a teacher in the School Instructional Extension Program (SIEP), you are invited to take part in an evaluation study of the program's components. The purpose of this form is to help you better understand the details of this study prior to you deciding to participate. You must carefully read and review this entire Informed Consent Form if you choose to participate in the focus group interview portion of the study.

Researcher Background:

This study is being conducted by a researcher named Taiesha M. Adams. She is a doctoral student in the Teacher Leadership program at Walden University. The researcher serves as the program coordinator for SIEP at your school. However, the researcher is conducting this study outside of her role as the program coordinator.

Nature of Study:
The research for this study focuses on middle schools that use the SIEP to address the problem of low mathematics achievement in the middle school classrooms. Your participation in this study is requested because your experience in the middle school and with SIEP could yield valuable information on this topic. Data from this research will include middle school teachers' and students' perceptions about which components of the program work and which components need improvement.

Procedure:
- The focus group interview will take approximately 30 – 45 minutes and will be audio recorded so that it can be properly transcribed.
- All interviews will be audio-recorded to accurately capture responses.
- The researcher may need to take notes during the course of the interview to summarize responses and to ask-follow questions.
- At the end of the interview, the researcher will summarize or restate comments to ensure accuracy of information and to increase the validity of the findings. This will give you an opportunity to correct or adjust any responses.
- You will not receive any compensation/gifts for your participation in this focus group interview.

Voluntary Participation
Participation in this study is your decision. Your choosing to participate or not to participate in this study will be respected. You may relinquish your participation at any time without prejudice or decide not to answer questions that are you not comfortable answering.

Statement of Confidentiality:
Your participation in the focus group interview is confidential, meaning any information that you provide will not be used for any purpose outside of this study. Fictitious names will be used for the interviews to ensure confidentiality. The evaluation study narrative will at no time identify individual teachers, students, schools, or the school district.

All interview data will be stored under lock and key in a secure file cabinet in the researcher's private home for a length of five years after the dissertation is completed. At the end of the five year period, all data will be shredded and destroyed.

Risks and Benefits:
There are no serious foreseeable risks involved in participating in this study other than possible discomfort in talking about your personal experience with the program. The primary benefit of this study is to inform and improve SIEP at your school based on your specific needs and interests. The resulting information will be compiled for use in developing an evaluation tool for the program.

Contact Information:
Please feel free to contact me via email at taiesha.adams@waldenu.edu or by phone at 770-715-9430 if you have any questions or concerns. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 1-800-925-3368, extension 3121210. I will provide a copy of this consent form for your records. Walden University's approval number for this study is 03-11-14-0137878 and it expires on March 10, 2015.

Consent:
I have read this informed consent form and agree to participate in the research under the conditions outlined in the form.

____________________________________ ______________

Participant's Signature Date

SIEP Focus Group Interview Protocol

The interview should last between 30 – 45 minutes. I will be audio-taping the interview because I do not want to miss any your responses the questions. I will be writing some notes during the course of the interview, however, I may not be able to write quickly enough to record every word. Therefore, I ask that you please be sure to speak clearly so that your voice is heard and successfully recorded on the tape. I may summarize or restate your comments to ensure accuracy or information and to increase the validity of the findings. This will give you an opportunity to correct or adjust any responses.

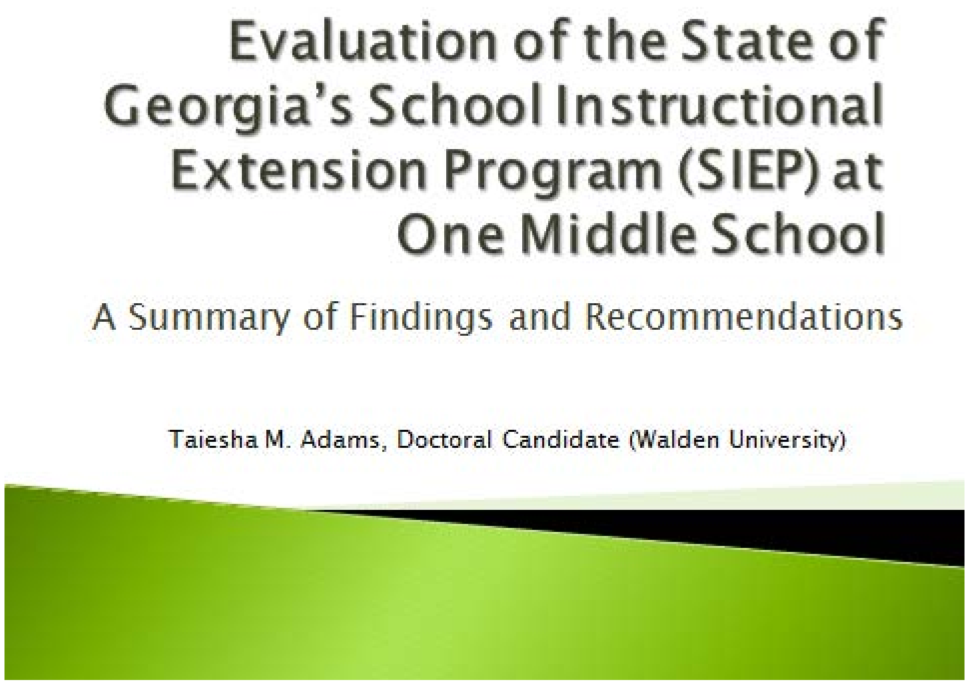
Remember that all responses will be kept confidentially and safely secured under lock-and-key. Are there any questions about anything that I have just explained? Are you still willing to participate in this study?

1. What do you think is the overall **purpose** of SIEP?
2. Describe the components of SIEP as though to someone unfamiliar with the program. Please describe the scheduling (during Connections) component, the computer-aided learning component, and the teacher-preparation time component.
3. What components of SIEP are successful?
    a. What factors make this successful?
4. What components of SIEP are unsuccessful?
    a. What factors make this unsuccessful?
5. How might this be improved?
6. What do support/resources do you need in order to make the suggested improvements?
7. What types of support/resources do you currently receive from the school?
8. How do you feel that the implementation of SIEP has impacted students at this school in the following areas:
    a. Student Motivation?

   b. Academic Performance?

9. Is there anything more you would like to add?

Appendix B: Slide Presentation of Findings for Local School Use



Introduction

- Overview of SIEP:
  - The SIEP was put in place by the school's administrative team to provide academic support for students who perform below grade-level expectations in mathematics as judged by the GCRCT (bottom 10% of academic performers).
- Continuous School Improvement & School Keys:
  - The implementation of SIEP is also used to satisfy the requirements of School Keys in the area of Instruction to help students achieve proficiency in mathematics.

"Designing and implementing teaching-learning- assessment tasks and activities to ensure that all students achieve proficiency relative to the Georgia Performance Standards (GPS)" –GaDOE, 2008

Purpose of Study

- No prior study had been developed to assess whether SIEP was meeting its goal of improving student performance in mathematics.
  - Mathematics GCRCT scores have improved, but there was no evidence to suggest if and to what degree SIEP impacted this recent growth.
- I conducted a program evaluation of SIEP to determine strengths and weaknesses of the program, as well as it's impact on student achievement in mathematics.
- Without a systematic evaluation of SIEP, the school risks losing:
  - Buy-in from stakeholders
  - Valuable instructional time for students
  - Potential for significant performance growth in math.

Introduction, cont'd.

- This study is unique because it involves the beliefs and opinions of those most closely associated with the program—students and teachers.
- The results of this project study are important because they provide evidence as to whether or not certain components of SIEP need to be improved in order to maximize student achievement in mathematics.

Research Design

Two types of evaluative inquiry—formative and summative- were used to answer the study's evaluation questions:

Formative Evaluation

1. What are the strengths and weaknesses of the program from the teacher and student perspective?
2. What are their recommendations for improving the program?
3. What do teachers in the program need in order to make the improvements?
4. What is the relationship between the student and teacher perceptions of the strengths and weaknesses of SIEP?

Summative Evaluation

5. Does participation in SIEP raise the achievement level of students who struggle with math as measured by the GCRCT?

Research Design

Formative Evaluation

- Revealed the strengths and weaknesses of SIEP as well as suggestions for improvement
  - According to feedback from students and teachers
- Used a mixed-methods design; data were triangulated from:
  - 36 student surveys
  - 8 teacher surveys
  - 2 focus group interviews with 5 teachers

Summative Evaluation

- Revealed SIEP's impact on student achievement in mathematics according to GCRCT scores.
- Two student groups:
  - SIEP (Current participants SY 14)
  - Non-SIEP (Met criteria, but do not participate SY 14)
- Used GCRCT scores from 2012, 2013, and 2014 school years to conduct a gains score analysis

Formative Findings: Strengths

The most noted strength of the program from student and teacher perspectives was the program's **small group setting**. Data analysis revealed this instructional setting created the opportunity for:

- More individualized instruction
- Reviewing and previewing skills
- Addressing learning gaps
- GCRCT preparation

"The ability to have one-on-one instruction/ assistance, which is not readily available in the large regular classrooms."

[Teacher]

"You have less students in that class so you can get more one-on-one time with the teacher." [Student]

Formative Findings: Strengths

Other strengths that emerged from the data analysis process include:

- Improved student-teacher relationships
- Improved student motivation
- Students completed more and performed better on math assignments
- The teacher rotation component
- Teachers believe that SIEP can have a greater impact on student achievement in mathematics if improvements are made.

Formative Findings: Weaknesses

According to students and teachers, the most noted weakness of SIEP was the **schedule component (during Connections time).**

With SIEP held during the Connections time of the day:

- SIEP sessions were often cancelled
- The program became inconsistent
- Teachers had limited time to plan lessons for SIEP
- Students missed their Connections classes

Formative Findings: Weaknesses

Other weaknesses of SIEP identified by teachers and students were:

- Limited availability of technology
- Teachers (57%) and students (63%) did not look forward to participating in SIEP during 2013-2014 school year.

"If we wanted students to use laptops they're not always available since there are only three carts that the whole school has to share and of the three carts, all of the computers, they're some that are missing, and some that don't work. Or, if we wanted to take them to a computer lab, its booked for the whole school year and so its unequal access to that computer lab." [Teacher]

Summative Findings

Data analysis revealed that SIEP was not meeting its goal of improving student achievement in mathematics according to GCRCT scores.

- At the 6th grade level, students in the control group (not-in-SIEP) during the 2012-2013 school had significantly higher gains scores than students in the SIEP group during the 2013-2014 school year.
- At the 7th grade level, the statistical analyses did not reveal any significant differences in gain scores for students participating in the program for both years.
- At the 8th grade level, students in the control group had higher gains scores than students in the SIEP group for both school years.

Interpretation and Reflection

- This project study was driven by my professional and personal desire to evaluate SIEP.
- My sole purpose in conducting this project was to educate school leaders of the merit of SIEP in order to stimulate improvement for advancing student achievement in mathematics.
- Based on the results of this study coupled with research in program evaluation and student achievement, I made recommendations to school leaders on ways to improve components of SIEP.
- Improving components of SIEP should in turn improve instructional conditions for teachers and learning conditions for students.
- I strongly believe if that improvements are made to SIEP, the program will have positive effects on student achievement in mathematics when judged against standardized tests such as the GCRCT.

Recommendations Based on Findings

- Cease and desist SIEP sessions during Connections.
  - *Allows students to participate in all Connections classes*
  - *Gives math teachers adequate planning time*
  - *Allows teachers to participate in all meetings and professional learning opportunities*
- Implement SIEP as part of the academic daily schedule.
  - *Promotes consistency*
  - *Helps students and teachers "buy-in" to the program*

Recommendations Based on Findings

- Implement a continuous formative and summative evaluation system that includes program stakeholders.
  - Formative Evaluation
    - Include students and teachers to answer the questions:
      - *Do activities need to be improved?*
      - *Are the program's activities being executed efficiently and effectively?*
  - Summative Evaluation
    - Use multiple measures to answer the questions:
      - *Did the program meet its goals?*
      - *How do we know?*
      - *What do we need to do next?*
  - Hire an external evaluator or train teachers in effective program evaluation measures

Recommendations Based on Findings

- Adopt a mathematics remediation curriculum
  - *Comprehensive and research-based curriculum*
  - *Focuses on what the students need in order to demonstrate progress.*
- Incorporate a personalized, computer assisted instruction (CAI) math program
  - *Proven to address and standardize the quality of instruction in line with Common Core Standards*
  - *Caters to the unique academic need of students*
  - *Use at least once a week*
  - *Same program for all grades levels*

Recommendations Based on Findings

- Designate a SIEP Computer Lab
  - *Eliminates the problem of limited technology availability*
  - *Fosters consistency*
  - *Teachers see SIEP as a priority*
  - *Prepares students for the technology integrated curriculum that high schools/colleges are adopting in the 21st century*
- Allow students to register for SIEP
  - *Gives students **voice** and **choice** in their own learning*
  - *Student initiated*
  - *Registration process based on school's capacity*

Appendix C: Audit Trail

This audit trail describes the specific steps taken by the researcher to analyze the focus group interview and survey data of this program evaluation study and to maintain trustworthiness throughout the data analysis process of the raw data collected.

March 13, 2014	Received permission from principal to begin collecting survey data.
March 24, 2014	Asked teachers to administer SIEP survey to students (completed as part of regular SIEP curriculum).
March 25, 2014	Emailed letter of invitation to potential teacher participants via Walden University email system. (Letter included link to survey; Informed Consent was used for the survey portion).
April 8, 2014	Sent reminder email to potential teacher participants to complete survey.
April 9, 2014	Sent initial email to teachers that indicated their willingness to participate in the focus group interview portion of the study (Email included Letter of Invitation and Informed Consent Form). Emailed teachers to arrange a date and time to meet.
April 15, 2014	Closed on-line teacher survey.
April 17, 2014	Began organizing data from teacher survey in a Microsoft Excel document
April 18, 2014	Sent an email to teacher participants of focus group interview #1 to confirm and remind them of date and time (Email included Informed Consent Form).
April 19, 2014	Obtained informed consent from all participants in focus group interview #1.
April 19, 2014	Conducted focus group interview #1 at 12:25 p.m. Member-checking completed during course of interview.
April 23, 2014	Began analysis of teacher survey data (Likert-scale items)
April 24, 2014	Transcribed focus group interview #1
April 24, 2014	Sent follow-up email to teacher participants that indicated their willingness to participate in the focus group interview portion of the study, but had not confirmed a date and time. From this email, a second focus group interview was established.
April 26, 2014	Coded focus group interview #1
	Example: I don't mind doing SIEP (SC: Successful Components), but I don't like doing it during my planning. Because again, we don't have enough time without SIEP to get done what we need to get done. (UNC: Unsuccessful Components) So if I were a willing participant in SIEP, I would rather do it like after school, or before school because then you can kinda breathe and (SI: Suggested Improvements) you know you're rushing through because you know after, for instance, you walk them to Connections,

	then you come back, and you have to hurry up and get the stuff done, get the instruction done for SIEP and then send them on, then you have no time left. So, um, it's not like, I dont think we're being defiant, we'll I dont wanna do it, I dont think we're being defiant, it's just sometimes, it's just absolutely impossible with all that we have to do during our planning. (UNC: Unsuccessful Components) It's absolutely impossible to do it so. The forced part, I dont think we (pause) we'd rather have a list of students but then again I think it would be more successful if we could have a say (SI: Suggested Improvements). But um, we know it helps the students (IMP: Impact on Student Motivation/Performance) but again I think it would be more successful if we could have a say so. I think it would be better if we have it after school or before school. (SI: Suggested Improvements)
April 27, 2014	Coded open-responses items from teacher survey data
	Example: Is there anything else that you would like to share about your experience with SIEP? Participant 2: SIEP is being held at many school from what I hear. However, there isn't any consistency in the curriculum and times students attend. Also, I don't think it is much of a priority in our building or buildings. (UNC: Unsuccessful Components) Participant 5: I don't like teaching during planning. It feels forced. (UNC: Unsuccessful Components) Participant 8: I think it is a great opportunity for students to build and create a better understanding of different skills. (SC: Successful Components)
May 6, 2014	Sent an email to teacher participants of focus group interview #2 to confirm and remind them of date and time (Email included Informed Consent Form).
May 8, 2014	Obtained student survey data from principal.
May 8, 2014	Obtained informed consent from all participants in focus group interview #1.
May 8, 2014	Conducted focus group interview #2 at 4:40 p.m. Member-checking completed during course of interview.
May 9, 2014	Began organizing data from student survey in a Microsoft Excel document.
May 10, 2014	Transcribed and coded focus group interview #2
	Example:

	I'm talking about time that's available. But, it was just an additional something that we had to plan for individually. (UNC: Unsuccessful Components—Red) It would have been nice to have been able to do it collaboratively like normal, weekly lesson plans could be done. (SI: Suggested Improvements) But there were definitely time constraints. (UNC: Unsuccessful Components)
May 21, 2014	Began analysis of student survey data (Likert-scale).
May 22, 2014	Coded open-responses items from student survey data
	Example: Is there anything else that you would like to share about your experience with SIEP? Student 1: It was fun. I really like it, reviewing over things that I need help with. (SC: Successful Components) Student 24: It really helped me to ask questions. (IMP: Impact on Student Motivation/Performance)
May 26, 2014	Began analysis of focus group interview data
May 27, 2014	Began concurrent analysis of teacher/student survey data
June 13, 2014	Compared survey data and focus group interview data to find patterns and themes
June 20, 2014	Completed final analysis according to themes identified in the data and based upon the study's evaluation questions.
June 25, 2014	Revised analysis of themes between survey data (open- and closed-ended) and focus group interview.

Appendix D: Code Tree

FOCUS GROUP CODE TREE

PUR Purpose—Turquoise
Improve Student Achievement (SA)
Remediation (R)
Progress Monitoring Purposes (PM)

SC Successful Components—Green
Small Group (SG)
Previewing Skills (PS)
Teacher-Rotation (TR)
Computer-Aided Instruction (CA)
CRCT Prep (P)

UNC Unsuccessful Components—Red
Schedule (S)
Additional Teacher Duty (AD)
Technology (T)
Missing Connections (MC)
Communication (C)

SI Suggested Improvements—Teal
Adjust Schedule (AS)
Increase Technology (IT)
SIEP Computer Lab (CL)
Incentives
Consistent CAI (CC)

NSR Needed Support/Resources—Purple
Incentives (I)
CAI Program (CP)

IMP Impact on Student Motivation/Performance—Pink
Students ask more questions (AQ)
Complete more work (MW)

Appendix E: Open-ended Survey Questions (Comparison Notes)

Open-Ended Survey Questions (Comparison Notes)		
Item #	**Teacher**	**Students**
How does SIEP differ from the regular math class?		
8, 6 **How SIEP differs**	• More Individualized Attention • Remediate Areas of Academic Concern (Remediation) • Class Size	• Teacher's Instruction • Class Size • Individualized Attention • Scope of Instruction (Preview/Review)
Similarities: More individualized attention, class size		
Is there anything else that you would like to share about your experience with SIEP?		
30, 27 **Anything else to add?**	• Inconsistent • Not a priority • Teachers have no say • Student benefits	• Was fun • Student benefits • **Strength** • It was fun. • I really like it, reviewing over things that I need help with. • It's fun easy and learn different ways to do something. • It was a fun experience doing this work and help me a lot. • **Motivation** • It really helped me to ask question
Similarities: Student benefits Different language, same concept—Not a priority/teachers have no say		
What components of SIEP do you feel are most successful? Why?		
31, 28 **Successful Component**	• Individualized Attention • Relationship Building • Class Size • Increases Confidence • Additional Instructional Time	• Increases Confidence • Reviewing/Previewing Skills **(In line with interview)** • Supplemental Math Support (and working one-on-one) • Individualized Attention • Instructional Resources

		(books, computers) • Lessons/Activities • Class Size
Similarities: Individualized attention, class size, increases confidence, additional instructional time Different language, same concept—Additional instructional time/additional math support		

Open-Ended Survey Questions (Comparison Notes), cont'd		
Item #	**Teacher**	**Students**
What components of SIEP do you feel are least successful? Why?		
32, 29 Unsuccessful Components	• Schedule • Insufficient Planning Time • Insufficient Technology • Additional Teacher Duty • Limited Space	• Class Assignments (Impact of Planning Time) • Schedule • Instructional Lessons (Impact of Planning Time) • Computer-Aided Learning **(In line with interview)**
Similarities: Schedule, planning time		
What recommendations do you have for improving SIEP?		
33, 30	• Adjust Program Schedule • Student Specific Curriculum • Adjust Student Participation Population • Increase Program Resources • Increase Teacher Planning Time	• Improve Instructional Lessons/Activities • Adjust Schedule • Adjust CAI • Use Incentives**(In line with interview)**
Similarities: Adjust Program Schedule		
What resources would you suggest teachers need in order to support effective instruction in SIEP?		
34	• Sufficient Technology • Supplemental Curriculum • Supplemental Instructional Materials • Engaging Activities **(In line with student recommendations)**	• N/A

Appendix F: Likert Scale Survey Questions (Comparison Notes)

Frequency Table for Likert-Scale Questions (SIEP Survey)							
Teacher Survey #	**Student Survey #**	**Comparison Item #**	**Item Content**	**Statement**	**Teacher Response**	**Student Response**	**Code**
10	8	2	Rotating teachers is an effective way to learn math	Disagree	25%	18%	SC
				Agree	75%	82%	
11	9	3	Teachers are prepared	Disagree	50%	11%	Teachers--UNS
				Agree	50%	89%	Students-- SC
12	10	4	Lessons are fun and interesting	Disagree	13%		SC
				Agree	87%	100%	
13	11	5	Small class settings helps to learn math	Disagree		14%	SC
				Agree	100%	86%	
14	12	6	Computer-aided instructions helps students understand	Disagree	13%	39%	Teachers--SC
				Agree	87%	61%	Students-- UNS
15	13	7	SIEP has improved student's motivation	Disagree	25%	9%	SC
				Agree	75%	91%	
16	14	8	SIEP has improved student's grades in math	Disagree	25%	9%	SC
				Agree	75%	91%	
17	15	9	Instruction in SIEP is clear and understandable	Disagree	0%	9%	SC
				Agree	100%	91%	
18	16	10	Teachers are helpful in SIEP	Disagree	0%	6%	SC
				Agree	100%	94%	
19	17	11	Instructional materials contribute to student	Disagree	25%	12%	SC
				Agree	75%	88%	
20	18	12	Instructional activities are fun and engaging	Disagree	25%	20%	SC
				Agree	75%	80%	
21	19	13	Assignments in SIEP are easy to understand	Disagree	0%	3%	SC
				Agree	100%	97%	
22	20	14	Student-teacher relationships have improved due to SIEP	Disagree	13%	14%	SC
				Agree	87%	86%	
23	21	15	Students complete more and perform better	Disagree	25%	11%	SC
				Agree	75%	89%	
28	22	16	I look forward to participating in SIEP this year	Disagree	43%	37%	UNSC
				Agree	57%	63%	
29	23	17	I would recommend SIEP to other students	Disagree	0%	18%	SC
				Agree	100%	82%	

Appendix G: Focus Group Interview (Comparison Notes)

Focus Group Interview (Comparison Notes)		
	FG #1	**FG #2**
Purpose—Turquoise	**I. Improve student achievement**	**I. Remediation** **II. Progress Monitoring Purposes**
Notes		
Successful Components —Green	**I. Small Group** **II. Previewing of Skills** **III. Teacher-Rotation** **IV. Computer-Aided Learning Component** **V. Convenient for Parents**	**I. CRCT Prep** **II. Small Group Setting** **III. Computer Aided Learning** **IV. Length of Sessions (30-45)**
Notes	The 8th grade teachers saw rotation as a weakness	
Unsuccessful Components —Red	**I. Schedule (Tuesdays and Thursdays)** **II. Additional Teacher Duty** **III. Limited Technology** **IV. Students Miss Connections Class**	**I. Schedule** **II. Access to Technology/Computer Labs** **III. Computer-Aided Program** **IV. Teacher/Student Buy-In** **V. Additional Teacher Duty** **VI. Rotating Teachers** **VII. Communication**
Notes	8th saw computer-aided learning as a strength and weakness	
Suggested Improvements —Teal	**I. Adjust Schedule** **II. Make SIEP a REAL Time Class** **III. Working Lunch** **IV. Know SIEP Students Early** **V. SIEP Only Day** **VI. Increase Technology** **VII. Include other Subject Areas**	**I. Have SIEP during REAL Time** **II. Grad Coach** **III. Adjust Schedule** **IV. SIEP Computer Lab** **V. Incentives for students** **VI. Revise Teacher Responsibilities**
Notes		
Current Support/Resources (Yellow)	**I. For School** a. Two new white boards for each grade level	• First In Math licensing (8th grade only)

	II. For SIEP a. None	
Notes		
Needed Support/Resources (Purple)	**I. Money for Transportation** **II. Rewards/Incentives**	• **Support of someone preparing materials and/or lesson plans—funding?** • **Wireless---supposed to get** • **SIEP Specific Math Program**
Notes		
Impact on Motivation/Student Performance (Pink)	**I. Motivation Impacts Performance** a. This trickles over to other subject areas • Increases intrinsic motivation • they feel as though they can do better	**No/Low-Impact** • Some students' motivation were not impacted b/c they were only attending to get out of Connections **Motivation** • Makes them ask more questions (approach teacher of ask during independent work) • Opportunity + Self-Motivation = Observable Motivation—helped a particular student to become more engaged. **Performance** For those that were consistent and were motivation

Curriculum Vitae

Taiesha M. Adams

[redacted]

EDUCATION

2011-2013 **AIM Bible Training Institute** **McDonough, GA**
A.A. Biblical Studies

2007-2008 **American Intercontinental University** **Hofffman Estates, IL**
M.A. Instructional Technology

2002-2006 **Albany State University** **Albany, GA**
B.S. Middle Grades Education- Mathematics and Language Arts Concentrations

PROFESSIONAL EXPERIENCE

2014-Present [redacted]
Assessment and Data Response Facilitator, Personalized Learning Coach

2012-2014 [redacted] [redacted]
8th Grade Interrelated Mathematics Teacher

2011-2012 [redacted] [redacted]
8th Grade Mathematics Teacher and Georgia Studies Teacher

2006-2011 [redacted] [redacted]
6th – 8th Grade Mathematics Teacher

ACHIEVEMENTS, RECOGNITION

- POINT Promotional Video
- Upward trend of students passing and exceeding standardized tests during the 2009-2010 academic school year at [redacted] (School won the Bronze Award for "Greatest Gain" on the CRCT)
- Assisted in writing and developing the standards-based reporting rubric for 7th grade mathematics in
- Teacher of the Month (2007)
- Teacher of the Year-Connections Department (2008)