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Elementary English for Speakers of Other Language Teachers' Perceptions of the Push-In Program to Support Mathematics Skills

Joye Henry
Walden University

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Walden University

College of Education

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Joye Elfreda Henry

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

Review Committee

Dr. Gloria Jacobs, Committee Chairperson, Education Faculty

Dr. Jerita Whaley, Committee Member, Education Faculty

Dr. Mark Earley, University Reviewer, Education Faculty

Chief Academic Officer

Eric Riedel, Ph.D.

Walden University

2018

Abstract

Elementary English for Speakers of Other Languages Teachers' Perceptions of the Push-

In Program to Support Mathematics Skills

by

Joye E. Henry

MA, University of Phoenix, 2008

BA, University of the West Indies, 1990

Project Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Education

Walden University

June, 2018

Abstract

Educators in a local southeastern U.S. elementary school are concerned that English language learners are not meeting mandated mathematics achievement requirements on state tests. This case study explored how 12 Grades 3 through 5 English for speakers of other language (ESOL) teachers who were purposely selected, described the *push-in* program model for mathematics instruction. The study examined how the teachers delivered the push-in ESOL program and the instructional strategies they used. The conceptual framework was guided by Bandura's social learning theory and language acquisition theories and informed by Krashen's second language acquisition theory, Cummins's language proficiency theory, and Collier's second language acquisition theory. Observations, interviews, and documents were analyzed using inductive coding to identify themes: teachers build success through knowledge of second language acquisition, teachers build success by using knowledge of students' cultures and background, teachers build success by being highly qualified and participating in professional development, teachers build success through collaboration, and teachers struggle to meet the needs of all students. Additional themes emerged that informed the subquestions of how teachers delivered instruction to ESOL students in the push-in program: teachers create a positive and supportive learning environment, teachers use research-based instructional strategies and teachers use a variety of data to promote student learning. The project developed from the findings is a 3-day professional development seminar for ESOL teachers and classroom teachers designed to build coteaching skills. The expected implication for social change is the development of a collaborative environment within the school that will promote student achievement.

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Dedication

I would like to dedicate this study to my family, especially to my supportive son, Jermaine Henry, my sisters Thelma, Minetta, Ruby, and Ena, and my brothers Albert, James, and Kenneth. Without their constant support, this study would not have been possible. Thank you all for your encouragement in making this milestone a success. Your inspiring words, your love, and your understanding have helped me realize my dreams.

There were many difficulties and trials along the way. Nevertheless, I thank God for giving me the strength, perseverance, and guidance to continue the journey. To God be the glory!

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Section 1: The Problem

The Local Problem

A significant number of fourth grade students who qualify for the English for speakers of other languages (ESOL) program in a suburban elementary school in Georgia are failing to attain the required skills in mathematics as measured by standardized statewide tests. In fact, the mathematics scores of the ESOL population at the research site consistently fall below the proficiency levels of native English speakers on standardized tests such as the Criterion-Referenced Competency Test (CRCT) and the Georgia Milestones Assessment.

Unfortunately, despite efforts to support ESOL student achievement at the school, fourth grade ESOL student test scores have declined. In fact, for 4 consecutive years the scores on the CRCT and for 2 years on the Georgia Milestones Assessment the number of students identified as proficient in mathematics has declined, resulting in a critical academic achievement gap in this core subject area (U.S. Department of Education, 2012). The federal government has mandated that achievement gaps be closed and schools be held accountable for doing so (Coburn, Hill, & Spillane, 2016; Darling-Hammond, 2015).

Student achievement is measured by the percentage of the different subgroups in a school who meet adequate yearly progress (AYP) in the state-adopted content standards as measured by the Georgia Milestones Assessment (Georgia Department of Education, 2012). The Department of Education Longitudinal Data System (LDS) is utilized to provide data and interpretation of students' mathematics outcomes. Data for the different

subgroups of students, such as English language learners (ELLs), are made publicly available. These data display the percentages of the groups categorized as *developing learners*, *proficient learners*, or *distinguished learners* in the subject of mathematics on the Georgia Milestones.

A *proficiency* designation means that students have demonstrated a strong understanding of the standards. Likewise, *distinguished learners* have developed advanced proficiency in the standards at the required grade level. In contrast, *developing learner* identifies students who can proceed to the next grade level but will need additional support to be successful.

Table 1 depicts the breakdown of ESOL scores for the past 5 years in the school. As mandated by the 2013-2014 District Strategic Improvement Plan at the research site, all subgroups were required to meet the requirement of 80% on the CRCT in core content areas by 2013-2014. This test was retired after the summer of 2014. As a result, CRCT data were only available up to 2014. However, ESOL students have not met this requirement for 5 consecutive years as reflected in Table 1 and Table 2.

Table 1

Yearly Breakdown of ESOL Scores Who Did Not Meet on CRCT

Academic Year	Percentage
2009-2010	45%
2010-2011	42%
2011-2012	38%
2012-2013	36%
2013-2014	34%

School data also indicated that for the 2014-2015 and 2015-2016 school years, few ESOL students achieved at the proficient level. These scores are depicted here in Table 2.

Table 2

ESOL Students at Each Level of the Milestones Assessment System

Level	2014-2015	2015-2016
Beginning	35%	34%
Developing	55%	58%
Proficient	10%	8%
Distinguished	0%	0%

Miller and Warren (2014) indicated that students living in disadvantaged environments like ESOL students are at risk of not succeeding in mathematics in

school. Indeed, it is apparent that fourth grade ESOL students in the school are having difficulty learning mathematical concepts and skills for several reasons such as language barriers including inadequate knowledge of mathematical vocabulary and insufficient inquiry and problem-solving skills (Courtright, 2016; Cueto, Guerrero, Leon, Zapata, & Freire, 2014; Miller & Warren, 2014; Orosco, Swanson, O'Connor, & Lussier, 2013). This phenomenon is not necessarily unique to this school; in fact, fourth grade ESOL students have typically scored lower than non-ESOL students in reading and mathematics in the United States (Gilbert, 2015).

Researchers such as Cueto et al. (2014), Firmender, Gavin, and McCoach (2014), and Orosco et al. (2013) indicated that there is a need for teachers to consistently develop ESOL students' mathematics skills and conceptual understanding using research-based instructional strategies to facilitate students' acquisition of key mathematics knowledge and skill. These researchers have argued that the development of ESOL students' communication and language skills is necessary to improve learning of mathematical concepts and skills. For example, providing appropriate supports to enhance students' problem-solving strategies boosts ESOL students' ability to work through challenging mathematical problems (Cueto et al., 2014, Firmender, et al., 2014, and Orosco et al., 2013).

Elfers, Lucero, Stritikus, and Knapp (2013) stated that a system-wide approach is needed to address the linguistic needs of the growing numbers of ESOL students in classrooms throughout the United States. In response to increased accountability, one comprehensive restructuring or movement in education has been inclusion models of

education that are similar to the push-in model used in special education (Platt, Harper, & Mendoza, 2003). According to Alston, Johnson, and Lacher (2014), during the push-in model, ESOL students remain in their core academic classes where they receive instruction from their general education teacher but also receive targeted language instruction from the ESOL teacher for a minimum segment of time during their reading, language arts, mathematics, science, or social studies content area blocks. Despite this support, an achievement gap has remained between ESOL students' performance in mathematics on state standardized tests and those of native English speakers. The ongoing low performance of ESOL students on standardized tests has indicated a need for innovative intervention modalities to close the achievement gap in mathematics.

As indicated above, the differences in test scores are a problem because ESOL students are expected to achieve at the same levels of academic proficiency as native English speakers. Because the ESOL population has increased dramatically at the research site from approximately 300 ESOL students in 2005 to 730 students in 2016, followed by the subsequent decline in ESOL testing results, it is apparent that adjustment to the instructional strategies for ESOL students in mathematics are required to equitably support all students at the research site to achieve high levels of academic proficiency.

To gain a better understanding of the improvements needed to increase students' mathematics achievement, I examined teachers' perceptions towards the push-in ESOL delivery program. Because ESOL teachers have been trained to identify the abilities, talents, strengths and weaknesses of ESOL students, understanding teachers' perceptions

can provide beneficial baseline knowledge to assessing both the causes of the problem and inform steps needed to work towards solutions.

The Teaching English for Speakers of Other Languages (TESOL) endorsement program is designed to develop teacher candidates' intercultural competencies and prepare teachers to support students' language acquisition, diagnose ESOL students' readiness to learn, and provide remediation supports adapted to individual and group entry points into learning (Huang & Laskowski, 2014). Despite this preparation, ESOL and classroom teachers have been challenged to implement strategies for students to be successful on standardized tests. In particular, Murphy (2014) noted that meeting the state's requirement in mathematics has been a challenge for ESOL students. Although mathematics is numerically based, learning mathematical reasoning and procedures is language and literacy dependent; therefore, this doctoral study contributes to the knowledge necessary to address the gap in practice by examining teachers' perceptions, knowledge, and instructional practices relating to supporting ESOL students.

Rationale

The purpose of this study was to examine elementary ESOL teachers' perceptions of the current push-in ESOL program in terms of the development of students' mathematics skills and conceptual understanding. Solving word problems in mathematics often poses a challenge for ESOL students as this problem type requires learners to read the text of the problem, identify the question that needs to be answered, and ultimately find the solution for the equation. However, many ESOL students have difficulty

comprehending the written content in a word problem (Henry, Baltes & Nistor, 2014; Wu & An, 2016).

The central purpose of this study was to examine ESOL teacher's perceptions of the current push-in ESOL program in terms of the development of students' mathematics skills. This research also sought to investigate teachers' perceptions of the best practices and instructional strategies to meet the needs of ESOL students as they learn mathematics.

I drew on the findings from this study to provide data to teachers, administrators, and school district personnel on teachers' perceptions to inform recommendations of strategies implement instructional changes. Specifically, data from this study addresses a local problem and provides recommendations for research-based support of instructional strategies to improve supports for ESOL learners in elementary mathematics.

Definitions

This subsection provides definitions of terminology used in this project study.

Academic language: Communication skills used by learners to express difficult ideas, especially advanced and creative thoughts (Echevarria, Vogt, & Short, 2013).

Achievement gap: When disaggregated data show that students from one group (such as a racial or ethnic minority) perform differently than another set of children and the difference in average scores is statistically significantly beyond the margin of error (National Center of Education Statistics, 2014).

Adequate yearly progress (AYP): AYP is used to measure whether schools are meeting the requirements of the state-level content standards. Every year elementary

students take state-wide examinations to measure their yearly progress as a group (Wolff, McClelland & Stewart, 2010).

Basic interpersonal communicative skills (BICs): The term refers to the conversational skills needed for language fluency, as demonstrated through conversational language in everyday activities (Stewart, 2010).

Best practice: Research-based instructional strategies and activities that have been accepted in the educational community as being effective for increased academic achievement (Dean, 2012).

Cognitive academic language proficiency (CALP): CALP refers to the dimension of language proficiency strongly related to overall cognitive academic skills (Cummins, 1997, p. 198).

Criterion-Referenced Competency Test (CRCT). The state-mandated high stakes test for the state of Georgia. The CRCT was designed to measure how well students acquire the skills and knowledge described in the state-mandated content standards in reading, English/language arts, mathematics, science and social studies. These data were used to diagnose individual student strengths and weaknesses as related to the instruction of the state standards throughout Georgia. This test was retired after the summer of 2014 retest cycle and replaced by the Georgia Milestones Assessment.

Differentiated instruction: A philosophy of adaptive instruction and assessment for effective teaching that involves adjusting teaching approaches to address individual learning styles and provide different ways to learn academic content (Tomlinson, 2001).

Depth of knowledge: Depth of knowledge categorizes and analyzes activities in

four levels according to the complexity of thinking required to successfully complete the tasks. Level 1 is recall, Level 2 has to do with developing a skill or learning content, Level 3 involves strategic thinking, and Level 4 involves strategic thinking such as analyzing, synthesizing, and applying concepts (N. L. Webb, 1997).

English language learners (ELLs, ESOL): A person who is acquiring English language proficiency along with proficiency in his or her native language. This definition addresses both linguistic and academic achievement (August & Hakuta, 2009).

Every Student Succeeds Act (ESSA): In 2015, the federal Every Student Succeed Act replaced the No Child Left Behind (NCLB) Act of 2002. This education bill gave state governments more autonomy over education policies such as the design and implementation of state-wide academic assessments (Fránquiz & Ortiz, 2016).

Georgia Milestones Assessment System: This test replaced the CRCT in 2014. Students in Grade 3 through Grade 8 are required to take the tests in the core content areas annually (Gesaman-Sharif, 2016).

Mainstream classroom: A general education classroom that includes a mixture of typical and special needs learners such as ESOL students, special education, or gifted education (Adera, 2016).

No Child Left Behind (NCLB): The NCLB Act was passed into law in 2002 and stipulated that all students in public institutions be given a standardized assessment annually. Schools were held accountable for students' performance (Vinovskis, 2015).

Pull-out instruction program: The pull-out delivery program requires students to be removed daily from their regular classes for 45 minutes of instruction that focuses on

English as a second language (ESL) language development in different subject areas (Honigsfeld, 2010).

Push-in instruction program: In a push-in delivery model, students are placed in mainstream classes and the specialist teacher works within that class to support students' learning. The program supports ESOL students' interactions with English speaking students, the topic, curricula, and the classroom instructor (Honigsfeld, 2010).

Second language: Refers to a language that is not the first language an individual learns but rather a novel language acquired in addition to his or her native language (Krashen, 1981).

Second language acquisition: Refers to the process of how people learn a second language (Cook, 2016).

World-class Instructional Design and Assessment (WIDA): An organization that offers a program designed to support the provision of equal educational opportunities for linguistically and culturally diverse ELLs. WIDA provides research-based English language development standards, learning assessment tools, educator professional development, and technical support for planning and implementation of ESOL student support strategies (WIDA, 2009).

Significance of the Study

Reports from the National Center of Education Statistics (2014) indicated that the percentage of public school students in the United States classified as ESOL dramatically increased over a 10-year period. The percentage of ELOL students nationwide during the 2011-2012 academic year was estimated to be 9.1% of all students (an estimated 4.4

million students), up from 8.7% (an estimated 4.1 million students) during the 2002-2003 academic year. This situation presents a challenge to schools throughout the country to provide the necessary service to increase the performance of ESOL students. With the continuous increase in the size and diversity of the ESOL population, the need to foster research-based instruction of ESOL students is essential to ensure academic achievement.

Studies conducted by researchers such as Abedi (2002) and Chan and Schlein (2015) have indicated that there is a correlation between ESOL students' language background and standardized tests outcomes across the country. According to Abedi, ESOL students' performances are lower than non-ELL students in reading, science, and mathematics. Given this achievement gap, there is a need for educators to implement effective strategies to bridge the achievement gap for all students (Georgia Department of Education, 2014).

Recent studies (e.g. Basturkmen, 2012; Chun & Frodesen, 2014; Ellis, 2015) championed the cause for second language acquisition in schools. According to Basturkmen (2012), the alignment between second language acquisition and application is the foundation of planning comprehensive instruction, paying particular attention to language development and content for learners. The ultimate objective of second language acquisition is to plan instruction effectively to meet the needs of ESOL students.

Furthermore, Bryk, Hardind and Greenberg (2012), Cohen (2014), and Horwitz (2014) provided information on what ESOL teachers should know about language development. School district administrators should provide professional development for

teachers designed to equip them with ideas and strategies for improving and supporting ESOL students' language development because teacher preparation is essential to increasing the academic achievement of ESOL students (Bayar, 2014; Shea, Sandholtz, & Shanahan, 2018). Recent studies have also reflected on the importance for teachers to be cognizant about second language acquisition development because this sensitivity allows them to create meaningful ESOL programs (Calderón, Slavin, & Sanchez, 2011; Fillmore & Snow, 2000).

Jones, Sloss, and Wallace (2014) argued that educators have the obligation to effectively plan instructional strategies to help ESOL students improve performance. These researchers found that the most effective strategies to engage ESOL students in active learning are well organized classrooms, understanding of students' background experiences, vocabulary development, flexible grouping strategies to encourage students' interaction, and accommodating learning needs (Jones et al., 2014).

Teachers recognize the importance of high quality instructional strategies as essential components in increasing ESOL students' achievement. Teachers understand that they play a critical role in addressing the achievement gap by providing appropriate services to support ESOL students' learning. One adaptive response to the challenge of meeting the needs of ESOL students without compromising the education of native English speakers is to provide a push-in instructional delivery model in the context of third through fifth grade mathematics instruction. This instructional model will be described below.

The significance of this study is that the project involved eliciting and capturing teachers' reflections related to the push-in model. The study examined teachers' perceptions of how, if at all, the push-in model instructional strategies support the development of ESOL students' mathematics skills and what affordances and challenges they are experiencing related to the model.

The study was conducted with third through fifth grade ESOL teachers at one school in the southeastern United States. Approximately 65% of the school population are ESOL students. The findings from this study identified a gap in how ESOL and classroom teachers involved in this study were teaching mathematics by comparing the findings to research-based best practices. Based on these findings, this study offers recommendations for approaches to better serve ESOL students. Specifically, the descriptions of teachers' perceptions related to their rationale for their selection of particular mathematics instructional strategies provided herein along with their perceptions of challenges and potential solutions to those barriers may help unravel the underlying thinking teachers employ when planning teaching techniques for ESOL students. Understanding these rationales provides entry points into discussions for how make informed decisions about how to improve delivery of the ESOL push-in program model currently in use at the school research site.

Based on the findings from this study, administrators and the school board can work with teachers and community partners to establish, communicate, and adopt a coordinated approach to meet ESOL student needs. This collaboration will enable school personnel to examine the current ESOL program at the research site and plan by taking a

variety of teacher perspectives into consideration, then employ innovative solutions when making instructional decisions.

Finally, this study has the potential to effect social change by motivating educators to be knowledgeable of specific needs of the culturally and linguistically diverse students at the research site. This project study provides teachers with an opportunity to think deeply about the current ESOL program and communicate their perceptions in a manner that has made value contributions towards informed decision-making in the school research site.

Research Questions

The central purpose of this study was to examine a small group of ESOL teachers' perceptions of the current push-in ESOL program in terms of the development of students' mathematics skills. My purpose was also to investigate teachers' perceptions of the best practices and instructional strategies used to meet the needs of ESOL students as they learn mathematics. This project study was guided by the following research question: How do elementary ESOL teachers describe the push-in program for mathematics instruction?

The project study also involved the following subquestions:

Research Subquestion 1: What are ESOL teachers' perceptions of how they deliver the push-in ESOL program in respect to the development of mathematics skills?

Research Subquestion 2: How do teachers describe the instructional strategies they use to meet the instructional needs of struggling ESOL students in mathematics?

Research Subquestion 3: Based on observations, how do ESOL teachers deliver mathematics instruction using the push-in model?

Research Subquestion 4: Based on lesson plan review, how do ESOL plan mathematics instruction using the push-in model?

Review of the Literature

Educators must promote, challenge, and support all students' learning by using research-based instructional strategies to engage students in active learning and to facilitate the students' acquisition of key knowledge and skills, regardless of race, national origin, or home language. However, as mentioned above, based on state standardized test scores in Georgia, many ESOL students are not achieving academic success in mathematics compared to non-limited English proficient (LEP) students (Georgia Department of Education, 2012).

In 2012, mathematics achievement test scores in Georgia showed that 42% of ESOL students were not meeting the requirement in mathematics. The achievement gap between ESOL and native English speakers' assessment scores seen statewide is also found in the elementary school research site. This significant achievement gap is a problem because ESOL students are expected to acquire English proficiency and meet the same academic achievement levels as their native English-speaking counterparts (NCLB, 2002).

According to researchers Echevarria (2016), James, Garrett, and Candlin (2014), and Jones (2015), ESOL students typically experience disadvantages due to language barriers that hinder communication in the learning environment. Therefore, as the ESOL

population continues to grow in the school, so does the need to adapt classroom instructional strategies to meet their educational and language development needs (Lantolf, Thorne, & Poehner, 2015).

This review of relevant literature introduces the conceptual framework of the study, ESOL teachers' experiences of push-in programs, and teachers' perceptions of how they deliver the program in respect to the development of mathematical skills and conceptual understanding. This subsection presents literature that addressed ways to improve ESOL students' academic performance. In this review I also examine research that addressed instructional strategies for teaching ESOL students and highlight how these techniques affect academic performance of ESOL students.

The information used in the literature review was obtained from various databases such as Education Research Complete, Thoreau, SAGE, ERIC, and ProQuest databases. In addition, I searched the most recent 5 years of publications in the following academic journals: *American Educational Research Journal*, *American Journal of Education*, *Educational Researcher*, *Harvard Educational Review*, *Journal of Educational Psychology*, *Journal of Teacher Education*, and *Review of Educational Research*.

Keywords used for searching included *ESL/ESOL instruction*, *second language acquisition*, *second language proficiency*, *ESOL programs*, *push-in*, *teacher perceptions*, and *instructional strategies and materials*. The literature review is organized into the following sections: (a) legislation, policy, and reform in the education of ESOLs; (b) second language acquisition; (c) strategies and practices for ESOL instruction; (d) teachers' perceptions; (e) ESOL programs.

Conceptual Framework

The conceptual base for the research study is the social learning theory of Bandura (1963) and language acquisition theories (Collier, 1995; Cummins, 1979; Krashen, 1981). The social learning theory Bandura proposed has become one of the most dominant theories of learning and development. Knowles, Holton, and Swanson (2014) asserted that according to social learning theory, the teacher behaves in the manner he or she would like the learner to act. Ormond (2013) set forth three general principles of social learning theory: (a) symbolic rehearsal and overt enactment; (b) valued outcomes; and (c) learner similarity to the teacher.

Symbolic rehearsal involves the teacher planning and organizing a variety of resources such as technology and manipulatives through consistent interactions to enhance student learning. *Overt enactment* occurs when lessons are planned to promote students' interaction in shared activities like flexible groupings. *Valued outcomes* mean that the student is involved in meaningful and systematic activities. For example, a teacher promotes student learning by engaging them in challenging and creative activities in small groups that are of interest to them.

Entwistle and Ramsden, (2015) pointed out that teachers should develop individual learning profiles as well as students' learning modality preference to tailor activities to maximize student performance. Thus, analyzing the teachers' perceptions of the ESOL delivery program through the lens of social learning theory may reveal how teachers are modeling desired language behaviors in relation to mathematics learning.

Social learning theory has application to classroom practice and ESOL learners in particular. For example, ESOL students usually learn better by observing and through the modeling of activities in an environment where they feel free to express themselves and when teachers are aware of their learning styles, interest, and readiness when planning instruction (Tomlinson & Imbeau, 2012). Modeling has been shown to work best when the learner has a good relationship with the teacher. Thus, each day the challenge is for educators to bring enthusiasm and creativity to the classroom to support and increase students' achievement (Ormond, 2013).

Researchers (e.g. Betts et al., 2008; Garcia & Jensen, 2009; Herrera & Murry, 2006; O'malley & Chamot, 1990; Tobin & McInnes, 2008) stressed the need for instruction that highlights ESOL learners' abilities, profiles, needs, and learning preferences. Moreover, Marzano (2007) asserted that it is critical that instructors focus on providing students with practice and application throughout the learning process that is sensitive to these considerations. He pointed out that, "the decisions teachers make about the focus of units of instructions, the lessons within those units and the segments within each lesson provide the infrastructure for effective or ineffective teaching" (p. 176). Considering this recommendation, educators must keep abreast of the latest academic and language instruction advancement so as to determine the components that influence the performance of ESOL students and plan effective instruction. By actively maintaining this awareness, school personnel are empowered to intelligently utilize theories such as second language acquisition theory (Krashen, 1981), language proficiency theory (Cummins, 1979), and second language acquisition theory (Collier, 1995) to inform

adaptive instructional decisions to support ESOL students. The so-called natural approach to language acquisition (Krashen, 1981) holds that learning is enhanced through significant interaction in the child's natural language. According to Krashen (1981), language development is achieved when a child communicates naturally in contrast to the standard teaching of a language. However, Krashen alluded to the idea that the inherent acquisition of the new language can take place in a formal setting.

Krashen (1981) proposed that students in the process of learning a second language have the tendency to communicate with the language they acquired naturally rather than with formal language. Learning is enhanced when concepts are embedded in authentic learning assignments that refer to familiar contexts students can relate to in everyday life (Krashen, 1981). Furthermore, Krashen asserted that both authentic and unofficial context decrease the level of stress that results from acquiring a second language by engaging students in active learning that builds upon their existing knowledge and skills.

Gee (2015), a sociolinguist who built his research on Krashen's work (1981), made a compelling distinction between the learning and acquisition constructs. He stated, Acquisition is a process of acquiring something subconsciously by exposure to models and a process of trial and error, without a formal teaching. It happens in natural settings which are meaningful and functional in the sense that the acquirer knows that he needs to acquire the things he is exposed to in order to function and the acquirer in fact wants to function. This is how most people come to control their first language. Learning is a process that involves conscious knowledge

gained through teaching. This teaching involves explanation and analysis, that is, breaking down the thing to be learned into its analytic parts. (p.3)

Cummins (1979) described two frameworks to support understanding development of language proficiency. He introduced the basic interpersonal communicative skills (BICS) framework and the cognitive academic language proficiency (CALP) framework to increase teachers' knowledge of the development of conversational fluency, typical timelines to reach levels of language proficiency, and struggles that ESOL students face as they compete with their classmates during academic language instruction. Cummins stated that "everybody acquires basic interpersonal communicative skills (BICS), regardless of IQ or academic aptitude" (p. 198). BICS are language skills needed by children to interact and communicate day-to-day with one another such as in the lunchroom, on the playing field, and at parties. Cognitive academic language means that students can synthesize and express learning objectives both verbally and in written forms.

Cognitive academic language skills are essential for ESOL students to improve their performance in the classroom. According to Cummins, it is important for ESOL students to obtain CALP proficiency if they are to be competitive with their native English language peers. Teachers must provide necessary support and remediation if ESOL students are to increase their levels of achievement in academic areas such as mathematics because mathematics involves skills such as synthesizing, evaluating, comparing, and inferring.

Cummins noted that CALP or academic language proficiency matures when individuals interact socially from birth, while BICS is developed after the initial stages of learning. Academic language proficiency is therefore, “the extent to which an individual has access to and command of the oral and written academic registers of schooling” (Cummins, 2000, p. 67).

The implications of the BICS and CALPS approaches to the instruction of ESOL students’ academic achievement was reinforced by two studies conducted by Cummins (1980, 1981) that described that school personnel are often confused between conversational and academic components of English language proficiency, which can result in academic challenges for ESOL students.

Despite attempts to reform education, there remains much to be done to improve instruction. Currently, there is a nationwide call for higher quality education for ESOL students; to make this possible, educator must be more knowledgeable of the importance of understanding the second language acquisition processes. Researchers such as Krashen (1981) and Collier (1995) proposed that students acquire second language in a predictable manner. Importantly, Krashen emphasized the influence of the environment on the natural development of language. This point highlights the concept language acquisition must be intentionally fostered in particular ways as learners receive comprehensive input.

While Krashen (1981) focused on the natural development of language, Cummins (1981) discussed language for functional communication. However, given the academic nature of dialog within the context of a math class, these models of language acquisition have significant limits in terms of their usefulness in the classroom. I argue that it is

Collier's (1995) conceptual model that focuses on learning how children use and develop academic language that provides particularly useful insights into my research problem and questions.

Collier's conceptual model for CALP. Collier (1995) embraced Krashen's approach by offering a conceptual model for use with ESOL students who are starting a new school and learning a second language. This conceptual model is informed by research conducted by several researchers in the field of social sciences, linguistics, and education. The design involves "four components: sociocultural, linguistic, academic, and cognitive processes" (Collier, 1995, p. 4). According to Sanderson (2010), the *sociocultural perspective* describes an individual's behavior and mental processes formed by his social and cultural contact (Sanderson, 2010). Sociocultural processes involve the impacts of a child's interaction in his environment such as home, school, and community. This involves how a child communicates, relates, and copes during instructional time and how these strategies may impact a child's performance and self-esteem while learning a second language.

Secondly, the *linguistic processes* consist of the subconscious or inherent ability an individual possesses for the development of oral language, as well as the metalinguistic, conscious, and formal development and acquisition of the written and oral language systems in school (Sanderson, 2010). Academic development is the next component of the model. This component emphasizes natural language acquisition through various areas of the curriculum such as mathematics, language arts, sciences, and social studies.

According to Collier (1995) as students advance through each grade level, their cognitive knowledge significantly increases as their levels of language acquisition increase. Collier indicated that this implies that teachers should provide opportunities in the learning environment in which students can explore and experience new ideas to develop their mathematical conceptual understanding and skills. These experiences should involve the use of various manipulatives and technological resources that provide multiple modalities of learning beyond oral communication and text to communicate mathematical concepts (Collier, 1995).

Finally, Collier (1995) asserted that the structure of instructional design elements combine to form a developmental process that occurs in the learning environment. He argued that taking a cognitive development focus on language development through discovery learning, solving mathematical problems, and creative reasoning creates a positive classroom setting (Collier, 1995).

Collier's conceptual model helps to clarify many intricate interacting components that ESOL students encounter when acquiring a second language daily in school, in particular when learning complex mathematics problems. According to Collier, all four components (academic, linguistic, sociocultural, and cognitive areas of development) must be viewed by instructors as being mutually dependent factors to sufficiently support ESOL students in a manner that maximizes instructional opportunities in school.

The concepts supporting second language acquisition theory (SLA) hold significant opportunity for the development of communication skills and effective research-based strategies for the advancement of ESOL students in academic program.

For example, this study drew upon Collier's (1995) four components (academic, linguistic, sociocultural, and cognitive areas of development) as a way to frame the discussions with teachers in a manner that elicited their reflections from a variety of perspectives as they described their rationale for choosing the instructional strategies they use when teaching complex mathematics academic vocabulary to ESOL students.

Second Language Acquisition

Second language acquisition is an avenue through which students are able to continue using and developing their knowledge of their native language while at the same time learning another language (Larsen-Freeman & Long, 2014). According to Cook (2008) SLA entails "all learning of language other than the native tongue, in whatever situation or for whatever purpose" (p. 12).

SLA plays a vital role in communication between school and the community (Ellis, 1994). Research in SLA (e.g. Cummins, 2000) has promoted the view that conversational language for ESOL occurs quickly for some students, whereas academic language development can take up to five or more years to materialize for others.

As mentioned above, Cummins (1981), one of the earlier SLA researchers, promoted the BICS and CALP constructs, two types of language proficiencies ESOL students must learn in order to improve their academic and social performance in school. His research emphasized the importance of promoting language development by providing students with opportunities to develop new ideas and employ creative thinking in a manner that helps learners to think in the novel language.

When teachers are aware of instructional affordances and practical challenges for ESOL students, teaching and learning can be more meaningful. ESOL students are unique and bring their diverse experiences to the classroom, characteristics that can certainly serve as affordances to creative thinking and learning. However, as Brown (2007) asserted, acquiring a second language can be challenging to ESOL students:

Learning a second language is a long and complex undertaking. Your whole person is affected as you struggle to reach beyond the first language into a new language, a new culture, a new way of thinking, feeling and acting. Total commitment, total involvement, a total physical, intellectual, and emotional, motivation, dispositions, learner beliefs etc. are necessary to successfully send and receive messages in a second language (p. 1).

Unfortunately, ESOL students' low levels of English language proficiency often place them at a disadvantage in school, especially on standardized tests (Gonzalez, 2005; Hoff & Luz Rumiche, 2012; Walker, Greenwood, Hart, & Carta, 1994). In light of this fact, it is essential that teachers implement instructional strategies that strengthen ESOL students' language acquisition, create opportunities for them to socialize, and provide effective academic support using multiple modalities of learning. Teachers should also take into consideration the students' culture as they engage students into second language acquisition. Indeed, students who are in ESOL programs that are not relevant to their needs are at a disadvantage to achieve their educational goals (Scott, Boynton, Hauerwas, & Brown, 2013; Sullivan & Bal, 2013).

Cook (2013) argued that effective means of supporting ESOL students who are struggling with learning a new language involves activities that build on what students already know by asking students to draw on their culture, first language, personal experiences, and their learning environment. Cook (2013) posited that when teachers use research-based strategies to promote learning for culturally diverse learners, high levels of academic achievement are possible.

Alston et al. (2014) stated that schools should adhere to the directives provided in the WIDA SLA Resource Guide so as to properly address communication issues in the service for ESOL students. These researchers claimed that understanding SLA concepts related to literacy development in ESOL students is necessary to close the achievement gap in schools. Alston et al. argued that this knowledge will help teachers to take the necessary actions to transform the learning environment so that learners are willing to experiment and process new concepts in a meaningful way. However, the researchers acknowledged that it takes consistent commitment and purposeful teaching to empower students to increase their performance. The next subsection will address way of measuring students' levels of language proficiency, a key element in the process of benchmarking progress and promoting motivation for learning.

Assessing Language Proficiency

To evaluate ESOL students' language proficiency level and progress, students are required to take the federal mandated Assessing Comprehension and Communication in English State to State for English Language Learners (ACCESS for ELLs) assessment. This test is given to ESOL students annually to monitor learners' language proficiency

levels in listening, speaking, reading, and writing. In addition, the test measures students' communication and language development skills in mathematics and generates assessment data on students' progress (WIDA, 2009).

WIDA has established research-based English language proficiency standards that measure both academic and social language proficiency levels (Gottlieb, Craneley, & Cammilleri, 2007). The WIDA standards are based on best practices for students who speak English as a second language. These standards focus on language acquisition levels combined with individual characteristics of the ESOL students such as age, grade, special education diagnosis, cultural and socioeconomic background, and educational background (Gottlieb, Craneley, & Cammilleri, 2007). The purpose of the assessment tool is to provide educators with each ESOL students' language proficiency data to inform a determination of each student's particular needs.

Studies (e.g. Huang & Laskowski, 2014; Larsen-Freema & Long, 2014) have indicated that when educators adapt a systematic approach to helping ESOL students develop their language proficiency, students' academic performance increases overall. Therefore, to be knowledgeable of the foundations of SLA and academic language development, teachers need to understand the factors that impact students learning.

Historical Background

Over the last decades, a considerable number of programs have been implemented to support ESOL student learning. In the beginning of the 20th century, the approach to learning English in school by ESOL students was based on the submersion or so-called *sink-or-swim* method. In this model, ESOL students were assigned to mainstream classes

lower than their age level with the idea that doing so would enable them to acquire basic English language skills (Reynolds, 2014). Subsequently, many ESOL students eventually dropped out of school and found employment that required minimal qualification.

In the latter half of the century, the Teaching English to Speakers of Other Languages (TESOL) teacher preparation program was created. Schools with large concentrations of ESOL students consistently placed these students in sheltered program ESOL classes taught by TESOL certified teachers for part or all of the day with the express goal of improving students' English language proficiency. Supporters in favor of this approach argued that in the submersion model, ESOL students were denied vital opportunities for learning language *and* content, which resulted in low achievement (Platt, Harper, & Mendoza, 2013).

Furthermore, educators and researchers Baecher and Bell, (2017) put forth arguments that the pull-out approach to teaching ESOL students provided benefits and effective learning experiences. For example, pull-out programs frequently divided students by levels of English language acquisition into ability groups, thus creating supportive peer-to-peer learning environments and targeted teacher supports that enable students to work at their own paces while acquiring new knowledge and skills in the content areas.

History of United States Legislative Policy and ELLs

The history of educational legislations for ESOL students in the United States is rooted in the American Civil Rights movement that emphasized equality of education for all student including minority students, especially those from low-income homes

(Crawford, 1997). According to Samway and McKeon (2012), court decisions and two laws in the late 1960's and 1970's impacted the education of ELLs by bringing about the right to equal access to learning opportunities for ESOL learners.

One of these pieces of legislation is the Bilingual Education Act (Goldenberg & Wagner, 2015). The Bilingual Education Acts, also known as Title V11 of 1968 and 1974 provided federal funding for school districts to establish programs to support the instructional needs of ESOL students in the United States (Samway & McKeon (2012). Later, modifications to the Bilingual Education Act in 1978 provided for students lacking in reading and writing skills to obtain special services (Benavides, Midobuche & Kostina-Ritchey, 2012).

Although the Bilingual Education Act was amended several times, the most significant amendment came in 1994 with the promotion of bilingualism for ESOL students. This amendment provided equal educational opportunities to all students regardless of their nationality. Additionally, the Equal Education Opportunity Act (EEOA) of 1974 provided guidelines for equitable treatment for minority students in educational institutions. When elements of this legislation were challenged, the United States Supreme Court reaffirmed a lower court ruling and imposed a requirement that basic English skills be taught in public schools (Samway & McKeon (2012).

There are two legal cases associated with the Bilingual Education Act. The *Lau Nicholos* (1974) case in California argued on behalf of the people from China for equal educational opportunities. The judge ruled in favor of the plaintiff and mandated that

educational institutions address the problem of inequitable access to education (Hakuta, 2011).

Similarly, the 1982 *Plyer* versus *Doe* landmark decision mandated public schools to educate immigrant students. This Supreme Court ruling said that according to the Equal Protection clause of the Fourteen Amendment of the United States Constitution, it is unconstitutional for a state to deny free educational opportunities to immigrant children who do not possess the necessary citizen documents (Samway & McKeon (2012).

The NCLB Act (2002), replaced the BEA or Title VI. This legislation resulted in the elimination of monetary assistance for ESOL programs also known as Title III programs (Menken, 2010). The main objective of Title III was to ensure that ESOL students received the support that would allow them to acquire language proficiency and be held accountable for their education as non-native English speakers. Proponents of NCLB believed that this act would close the achievement gap and increase opportunity for minority groups if they met grade level proficiency requirements on standardized tests. In addition, the NCLB Act established a set of regulations and requirements for schools to adhere to in order to measure the performance of schools and students progress through the AYP measure (Ovando & Combs, 2018).

Another federal framework driving instruction for ELLs is the implementation of the Common Core State Standards (CCSS), which were adopted to create common educational standards across states. According to Home Legal Defense Association (HSLDA, 2013) the Common Core is based on “the belief that a nationalized, uniform system is the best method of education” (HSLDA, 2013, p. 1). Georgia is one of the 52

states and territories in the U.S. that have adopted the Common Core Standards including the math standards.

The main focus of the CCSS initiative was to provide learning opportunities that enable students to obtain a college education and employment globally. Honigsfeld and Dove (2012) pointed out that if schools are to adhere to these new initiatives, teachers must equip themselves with best instructional practices to support and inform ESOL students' academic and language development.

The CCSS initiatives remain a controversial subject; seven states have opted out citing that too much emphasis is being placed on testing (Phillips, 2015). Another criticism is that teachers are concerned with their job security because employment is linked to the result of standardized tests (Honigfield & Dove, 2012).

The most recent education reform reauthorizes the Elementary and Secondary Act (ESEA) and replaced the NCLB in 2015. The Every Student Succeed Act (ESSA) gives state government more autonomy over education policies such as policies related to statewide standardized tests. Moreover, through the passing of this law, there is a departure from the AYP protocol that held schools and teachers accountable for students' achievement on standardized tests scores.

Under the auspices of ESSA schools are encouraged to use multiple measures to evaluate students' performance. Another provision of ESSA is to increase bilingual achievement throughout the country. The law also reiterates the importance of language support for ESOL students (Fránquiz & Ortiz, 2016).

Legislation, Policy, and Reform in the Education of ESOLs

As mentioned above, the size of the ESOL student population has increased across the United States. Enrollment of ESOL students in schools across the United States in 2015 climbed to approximately 10 million and it is predicted that this trend will continue (OELA,2012). In fact, the United States Census (2012) predicted that ESOL students will make up approximately 30% of U.S schools' population by 2050 (Aud, Wilkinson-Flicker, Kristapovich, Rathbun, Wang, & Zhang, 2013). In addition, the percent of fourth-grade Hispanic students has shown an increase from approximately 2% to over 21% during that period (Aud et al., 2013).

It is worth pointing out that a disparity exists between the United States Census figures and United States Department of Education Office of English Language Acquisition (OELA) figures concerning the rapid increase in ESOL population across the country.

Despite the disparity in estimations of the rise of 10 million ESOL students in 2015 by the OELA in comparison to United States Census figure of 30% increase by 2050, both sources agree the number of ESOL students is increasing. This vast increase in ESOL students' enrollment demands various modifications to educational reforms in schools. Moreover, their educational achievements have fallen behind that of native English speakers, even though most of the ELL students are born in the U.S. according to the OELA (2018). To deliver high-quality education to improve the performance of ESOL students, educators must be cognizant of state and federal laws to ensure consistent legal implementation of instructional programs to support the learning of ESOL students.

Because of the demographic changes in the United States, schools have to adjust their education policies to cater to the cultural and linguistic diversity found in the classroom.

The various education initiatives brought about by federal legislations and reforms over the past 50 years have improved ESOL learners' academic performance and moved toward closing achievement gaps across the United States overall, however the research that I read indicates that there is still much work to be done in large regions around the nation. Schools officials are legally responsible to make sure that every child receives meaningful and appropriate instruction. The approaches being taken in various programs designed to support bilingual learners in the United States are discussed in the next subsections.

ESOL Programs in Southeastern United States

As is the case throughout the nation, schools in the southeastern region of the United States have seen an increase in the population of ESOL learners in schools, primarily in rural and agricultural communities. With the increasingly numbers of ESOL students in schools across the Unites States (National Clearinghouse for English Language Acquisition, 2012), school districts are struggling to narrow the achievement gaps between the ESOL population and native English speakers through the implementation of ESOL models.

ESOL programs are instructional models that focus on the development of ESOL students' language proficiency and communication skills. The state of Georgia requires that schools offer suitable ESOL programs to serve the needs of their students.

In response to this mandate, the school where this study took place established a content-based ESOL program in adherence to the state regulation. The program focuses on utilizing adaptive instructional strategies along with cultural awareness of ESOL students in the classroom (Diaz-Rico, 2013). Two types of ESOL programs are offered by the school: Content-Based Integrated and Content-Based Self-Contained (CCSD) approaches.

The goals of these programs are to assist ESOL learners to perform at their grade level in the areas of speaking, reading, and writing in English in order to graduate on time (Pappamihel & Lynn, 2016). In response to data that indicates that inclusive programs are more successful in helping students to meet this goal, many administrators in the state are departing from pull-out ESOL program to move towards implementing more inclusive model like the ELL push-in model described above (Platt et al., 2003, p. 105).

According to the WIDA Consortium, ELLs are required to master state standards to be considered successful in school. The Georgia Department of Education, (2011) requires that schools implement the WIDA framework standards to support ESOL students to develop their language and communication skills along with the rest of the core academic disciplines required by the Common Core Curriculum Standards.

The WIDA standards are based on the conceptual framework of second language acquisition and sociocultural theory (WIDA, 2012). Schools across Georgia have permission to use any of the approved ESOL programs to support students' language proficiency (Alston, Johnson, Lacher, & Wlazlinski, 2010). The research site has utilized

both the pull-out and push-in models for instructing ESOL students. Here, a brief review of both models is discussed with special emphasis on the push-in model.

Program Model 1 (push-in/inclusion). According to Georgia State Education Rule 160-4-5-.02 Language Assistance:

[In] the push-in model (within reading, language arts, mathematics, science or social studies) – students remain in their core academic class where they receive content instruction from their content area teacher along with targeted language instruction from the ESOL teacher. (p.21)

In this model, ELLs are integrated in the classroom with the students who speak English as their native language. Here, the ESOL teachers plan instruction based on the state curricula and standards with differentiated instruction to engage students in active learning on a daily basis (Wlazlinski, 2014).

Program Model 2 (pull-out). An ESOL pull-out program is generally used in elementary schools settings. This model typically involves the use of special developed curricula. In the pull-out model, ESOL students are removed from their regular classroom and given language instruction in content subject areas like mathematics and reading in a different physical setting.

The pull-out approach is intended to provide ESOL students with the opportunity to receive instruction in small groups where they can interact with their peers who are also learning English (Alston et al., 2014). Students work on developing their language communication skills through scaffolding and research-based instructional practices that support second language acquisition.

ESOL Teachers' Experiences of the Push-in Programs

In comparison to pull-out models, the push-in model has been praised for its beneficial attributes of fostering a collaborative learning environment by merging the knowledge of classroom teachers with that of ESOL teachers into the same classroom. Thomas and Collier (1997) argued that a collaborative approach to the teaching of ESOL students is different from the previous practice of submersion, where ESOL students were placed into mainstream classrooms without the assistance of ESOL teachers. In contrast, the collaborative or co-teaching approach is an organized approach where teachers utilize engaging activities to improve the individual needs of ESOL learners (Theoharis & O'Toole, 2011).

In addition, the push-in or co-teaching model can involve flexible activity centers in the classroom, team teaching, and parallel teaching in which the two educators are held accountable for planning instructional strategies, providing remediation and acceleration to meet individual developmental needs, and choose a variety of diagnostic assessment to measure ESOL students' progress (Murphy, Torff & Sessions 2016).

Honigsfeld and Dove (2014) emphasize the importance of effective collaborative practices to inform students learning. In a study conducted in a New York City public school, they found that the school's implementation of co-teaching via a collaborative approach promoted meaningful practices that were shown to enhance ESOL students' levels of achievement. Furthermore, their analysis indicated that the collaborative approach helped to solve the problem of needing additional classroom space required for the pull-out model.

Unfortunately, not every co-teaching situation has proven to be quite so collaborative. According to DelliCarpini (2012), some ESOL teachers have expressed disappointment in regards to their experiences in the push-in model. For example, in a professional development forum in New York, one ESOL teacher shared her disappointing experiences in a school with predominant ESOL students' populations:

I wound up sitting next to the ESOL students, pointing to places where the teacher was on the page, whispering the meaning of vocabulary into the ears during the lesson. Basically, I am a very well-paid aide. Not what I wanted or expected.

When I try to talk to the teacher I am supposed to be collaborating with, she really doesn't want to hear it I'm a second-class citizen to her (DelliCarpini, 2012, p. 6).

In an earlier study on collaborative teaching, Davison (2006) described the influence of co-teaching in an ESOL push-in model and documented how negative attitudes and insufficient support on the part of teachers can impede effective collaboration in the classroom. In contrast, Honigsfeld and Dove (2010) noted that if educators are to collaboratively impact the education of ESOL learners, "a collective vision is developed, philosophical beliefs and values are shared, and a common purpose is articulated" (Honigsfeld & Dove, 2010, p. 57).

The situation identified by DelliCarpini (2012) and Honigsfeld and Dove (2010) points to the need for the development of collaborative skills and mutual professional respect between mainstream and ESOL teachers. A collaborative and organized approach to the teaching and assessment of ESOL students' mathematics skills can happen when

teachers are given the opportunity to collaborate on a regular basis (Retnowati, Ayres, & Sweller, 2016).

Expanding on Santana, Scully, and Dixon (2012) emphasis on the needs for structures to facilitate productive collaboration, Honigsfeld emphasized the importance for co-teaching personnel to support each other by providing regular feedback concerning their collaborative methods. In a study conducted by Van de Akker (2013) several characteristics were identified to assist ESOL and classroom teacher collaborations. These involved: (a) effective communication, (b) knowledge of instructional support, (c) collaborative planning, (d) knowledge of best practices and effective resources utilized in planning, (e) differentiated instruction, and (f) effective feedback.

Even with these structural goals in mind, the bottom line is that to successfully implement a push-in model, teachers must have an open mind, be flexible, and be knowledgeable of adaptive instructional strategies needed to increase ESOL learners' performance in the classroom (Dean, 2012). With so much emphasis placed on standardized testing and teachers' evaluation in schools (Steele, 2014), it is imperative for teachers to work collaboratively to provide supportive services for the benefit of all students, especially ESOL students.

Despite obstacles such as personal differences that can pose a challenge in the push-in model, research (e.g. Retnowati et al., 2016) has indicated that positive results can be achieved when teachers work collaboratively to address the different needs of students in the classroom. This group of researchers' work underscores the benefit of

collaboration and guided this study of ESOL teachers' views and practices on the push-in delivery program.

Strategies and Practices for ESOL Instruction

Teachers need to be taught the instruction strategies essential to creating an exciting, engaging, and challenging learning atmosphere to maximize the quality of teaching and learning experiences for both the teacher and the students. Eristi and Akdeniz (2012) suggested that well designed instructional strategies are fundamental to the teaching and learning process and that by utilizing adaptive instructional strategies, educators can constructively facilitate students in the right direction to achieve success. Other researchers argued that if ESOL students' academic performances are to increase, schools must do a better job at identifying successful instructional strategies that will close the achievement gap (Halladay & Moses, 2013; Kober, 2001; Moughamian, Rivera, & Francis, 2009; Peterson & Kaplan, 2013).

Recognizing the need to maximize the quality of instruction in particular ways to support ESOL students' achievement, teachers must ensure that the strategies and activities they chose are engaging, meaningful, authentic, and effective (Baecher, Farnsworth, Ediger, 2014; Echevarria et al., 2013). Furthermore, teachers must prepare a well-balanced plan for teaching ESOL learners that involves high expectations for students combined with accommodations to support students to learn at their own pace (McLeskey, James, Rosenberg & Westling, 2017).

Studies conducted by Breen (2014) and Richards & Rodgers (2014) have shown that ESOL students learn best through teacher's deliberate use of multiple teaching

strategies across curriculum. Breen (2014) pointed out that it is the responsibility of educators to use effective teaching instruments and activities to encourage peer interaction that will accommodate the needs of ESOL students. This is not a new concept by any means. Indeed, in 1994, Ellis noted,

The study of learning strategies holds considerable promise, both for language pedagogy and for explaining individual differences in second language learning.

For this reason, perhaps, discussions of learning strategies typically conclude with the problems that have surfaced and that need to be addressed before progress can be made (p. 558).

In light of the reality of ESOL students' under achievement on standardized tests, there is evidence to suggest that research-based instructional practices can improve students' performance when instituted in the learning environment (Hill & Miller, 2013). For example, Hill and Miller (2013) listed a variety of practices that may be effective in the classroom including creating a conducive learning environment, developing knowledge and understanding in students, and providing timely feedback to students.

Teaching materials. To maximize the teaching and learning processes, teachers have to plan lessons with the aid of teaching materials that will enhance students' achievement. Examples of these teaching materials are commercially produced textbooks and manipulative materials, teacher-prepared materials, print materials, internet sources, game boards, and digital multimedia resources (McGrath, 2013).

Teaching materials have been recognized as essential tools in the learning process. Richards (2001a) remarked,

Teaching materials are a key component in most language programs. Whether the teacher uses textbook, institutionally-prepared materials, or his or her own materials, instructional materials generally serve as the basis for much of the language input learners receive and the language practice that occurs in the classroom. In the case of inexperienced teachers, materials may also serve as a form of teaching training—they provide ideas on how to plan and teach lessons (p. 251).

Wu and Newman (2008) conducted a qualitative case study focusing on the effective use of teaching materials for ESOL students. Their study indicated that visual images and graphic organizers enhanced learning by providing students with alternative modes to comprehend and demonstrate their learning and make real-world connections. Their conclusion was that visual representations and graphic organizers effectively engaged students and helped in scaffolding learning for ESOL students (Wu & Newman, 2008). Indeed, identifying effective teaching practices to facilitate ESOL learner in making real world connections can encourage them to discover challenging and creative skills that can empower them to succeed in school (Herrell, & Jordan, 2015; Mastropieri & Scruggs, 2017).

In addition, building strong communication with parents and students, setting high expectations for all students, and differentiating instruction to promote learning are also practices essential for promoting successful learning (Cheatham & Barnett, 2016). To achieve these objectives, schools must encourage constructive communication and feedback with parents and share learning targets for student improvement with parents

and community organizations who can contribute resources to support programming (Epstein, 2018). By participating in school activities, providing resources and offering outreach programs, parents and community organizations consistently contribute to the success of students, teachers, and the school.

Using technology. In recent times, schools throughout the United States have made large investments to expand the integration of technology in classrooms (Peters, 2016). Technology integration offers several benefits for students such as inspiring creativity, motivation, student engagement, productivity, and class participation. In particular, the integration of technology into teaching practices enables teachers to create new pedagogies that can promote higher levels of student engagement and motivation, especially in solving mathematical problems (Chien, 2013; Steele, Dyer, & Larson, 2015).

According to Davies, Dean, and Ball (2013) the use of technology can motivate students to improve their performance while they acquire new concepts. Research has demonstrated that the use of technology to promote learning enhances ESOL students' engagement by providing alternative avenues for communication and participation in their learning (e.g. Bester & Brand, 2013; Billings, Halstead, 2015; Dell, Newton, Petroff, 2016; Jeong, & Hmelo-Silver, 2016). Instructional strategies involving the use of technology can promote a climate of meaningful engagement, active class participation, and improve self-esteem in students (Kopcha Ding, Neumann & Choi, 2016).

Indeed, technology has been shown to act as a catalyst in transforming the way instruction is being delivered in schools to improve students' performance (Hwang, Sung,

Hung & Huang, 2013). For this reason, the administration at the research site where this study took place is investing in 21st century technology-based classroom resources that can contribute to ESOL students' engagement. With the new Georgia Milestone Assessment tests, fourth grade students are now required to take the tests on computers. Consequently, all students in fourth grade are equipped with an electronic device geared toward developing cognitive skills and social awareness as well as to increase learning. The availability of technology in the classroom allows teachers to integrate creative multimedia in instruction (Ruggiero & Mong, 2013).

As a result of the shift toward using technology in the classroom, teachers must aim at constructing knowledge by providing a technology-based learning environment that can facilitate creative and critical skills in students (Buabeng-Andoh, 2012; Davies, Dean, & Ball, 2013; Kopcha, 2012). Likewise, ESOL students will be better able to use technology as an intellectual resource to integrate research skills and hands-on activities, which will eventually empower them to compete in the global economy (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Polly, 2015; Ward, 2014).

Integrating strategies. This body of research focused on integrated strategies for ESOL students indicates that teachers need to reflect on their approach in the teaching of ESOL learners as a series of iterative, cyclical steps in order to narrow the achievement gap. No single, linear instructional strategy has proven to be the most effective. Practices like scaffolding, differentiated instruction, and the integration of technology are among the strategies that have been shown to increase ESOL students' performance (Salend,

2015). Other research has suggested ways teachers can utilize technology to improve performance for all students (Chenoweth, 2015).

For example, Chenoweth outlined five strategic practices that can improve students learning: (a) knowledge of students' academic needs; (b) working closely with faculty to plan instruction and construct assessments that are appropriate for the student population; (c) gather, analyze, and use assessment to evaluate learners performance; (d) utilize relevant data to inform instructional goals; and (e) mutual communication between students, teachers, parents, and school personnel. If ESOL teachers incorporate these practices in their daily instruction of ESOL students, schools such as the research site may experience greater progress toward achieving state academic proficiency requirements.

Orlich stressed the importance of teachers supporting student learning through effective teaching strategies especially in a diverse classroom. This researcher stressed the idea that teachers should be encouraged to equip themselves with the latest strategies to empower students (Orlich, et al. 2012). For example, the practice of recognizing students' academic needs involves teachers having professional development support to help them recognize and develop first-hand knowledge of the barriers to cultural proficiency in the classroom.

Supporting these types of reflective practices requires teachers to be knowledgeable of the school program, curriculum, content, instructional strategies, student thinking, and assessments to optimize instruction to meet students' learning needs. Indeed, identifying students' needs as they shift from learning one topic to the next

and working with different types of instructional materials can provide principles and tools to help ESOL students overcome patterns of underachievement.

Collaboration. Practicing collaboration also can impact the learning experience of ESOL students and is essential for their progress. Adopting a collaborative approach to teaching ESOL students can help to maximize instruction planning, share knowledge, build relationships, and ensure timely, well-structured support for students. Building a strong relationship with coworkers is the foundation for successful collaboration (Elfers et al., 2013; Theoharis & O’Toole, 2011).

Studies have shown that collaboration amongst teachers improves student achievement. For instance, in a study conducted in New York involving 1,200 kindergarten through fifth teachers, Schwartz, Stiefel & Wiswall’s (2013) study revealed that there were greater results in mathematics performance as a result of the collaboration among teachers of mathematics.

Collaboration allows teachers to complement each other’s strengths and compensate for gaps to plan rigorous, creative, and cohesive learning experiences with combined responsibility for improving students’ learning (Chapman, Chestnutt, Friel, Hall, and Lowden, 2016). For instance, researchers have promoted the use of culturally sensitive instructional strategies and engaging materials for the development of ESOL learners’ mathematical achievement, varied and modified diagnostic learning assessments to identify students’ strengths and weaknesses, and use of multiple modalities of instructional modes to support student learning (e.g. Gunning & Oxford, 2014; Griffiths

& Oxford, 2014; Moore, 2014; Orlich, Harder, Callahan, Trevisan, & Brown, 2012; Richard & Rogers, 2014).

Mathematical Strategies

With the introduction of the Common Core Initiatives and especially Georgia Milestone Assessments, teachers are required to maximize student academic achievement by creating instruction that supports students' abilities to use evidence to support their reasoning and encourage mathematical discussions (Bier & Coulter, 2016). For example, the Georgia Mathematics Milestones Assessment requires students to use constructed responses and rigorous thinking to solve mathematical problems. Students must write explanations and show the steps they take to solve problems.

To support students' abilities to write their explanations in English and using the Arabic numbers, it is critical that teachers attend to the different learning styles of each student to inform, guide, and adjust instructional practices. Indeed, research conducted by Chappius, Stiggins Chappius, & Arter (2012), Hattie, Fisher, Frey, Gojak, Moore, and Mellman, (2016) and shown that utilizing assessment techniques and providing formative feedback to students increase ESOL students' mathematics skills by giving students insights into their own learning progress and gaps and motivating improvement.

According to Swanson, Orosco, and Lussier (2014) ESOL students are struggling with the task of solving mathematical problems for several reasons. These challenges involve: (a) barriers related to second language acquisition, (b) specifically, insufficient knowledge of the meaning of math vocabulary, (c) and insufficient knowledge or understanding of strategies to solve word problems. Taking these challenges into

consideration, educators must continually use multiple approaches and real-world resources to facilitate students' engagement in metacognitive learning, along with authentic and creative problem-solving activities to attend to varied academic needs. Examples of such strategies include: (a) *Math Talk*, an approach that allows students to explain how to solve a word problem, supports language development and provides feedback for classmates; (b) the use of various manipulatives to model and solve mathematical problems and; (c) creating peer sharing and support small group activities (Clements & Sarama, 2014; Sarama & Clements, 2007).

Math talk. In attempting to support development of ESOL students' mathematics skills, productive math talk has been proven to be a powerful way to expand student reasoning and understanding. "A *math-talk* learning environment is a classroom where meaningful mathematics discussions construct knowledge and support the mathematical learning of all students" (Lischka & Sanchez, 2015). Indeed, a number of researchers (e.g. Banse, Palacios, Merritt, & Rimm-Kaufman, 2016; Chapin & Anderson, 2013; Foran & Beverly, 2015; Foss, 2013; Newton & 2014) have addressed the advantage of implementing math talk strategies to improve students' communication and performance. For example, if ESOL students are going to become more aware of how they are acquiring a new language, the practice of sharing their thoughts, listening to other students' reasoning and responding to those thoughts will help support rigorous learning.

Consequently, an important role for teachers is to consistently require students to produce evidence for their answers in response to question prompts and other formative assessment strategies. Students learn by being involved in meaningful discussion and

activities. Therefore, it is essential for teachers to set classroom goals and norms for discussion so that there will be mutual respect for all and ideas will be appreciated (Chapin et al., 2013).

Classroom discussion in mathematics can yield productive outcomes for ESOL students, but this involves careful and purposeful planning on the part of teachers where routine conversation is encouraged daily (Reyes, Lindquist, Lindquist, Lambdin, & Smith, 2014). This strategy is particularly relevant to the research question and social learning theory conceptual framework that entails the process of modeling to enhance students' achievement.

Using manipulatives. Studies have shown that using manipulatives to promote mathematical skills is an effective teaching strategy (e.g. Bujak, Radu, Catrambone, Macintyre, Zheng, & Golubski, 2013; Carbonneau, Marley, & Selig, 2013; Root, Browder, Saunders, & Lo, 2016). Rosli, Goldsby, & Capraro, 2015). These researchers confirmed that manipulatives are powerful instruments for teaching mathematical skills. For example, manipulatives enable students to connect real-world situations to solve abstract problems, use different mathematical symbols to arrive at a solution as well as using visual representations to display mathematical problems.

The National Council of Supervisors of Mathematics (NCSM) emphasized the importance of including manipulatives for mathematics instruction to increase students learning and proficiency. In fact, NCSM strongly emphasizes that educators must consistently incorporate concrete and visual tools in the teaching of mathematics to increase students' understanding of mathematical concepts (NCSM, 2013).

Studies conducted by Bujak, Radu, Catrambone, Macintyre, Zheng and Golubski (2013), Carbonneau, Marley and Selig,(2013), Root, Browder, Saunders, and Lo (2016) have supported the claims that using manipulatives to promote students' mathematical skills is an effective teaching strategy. Similarly, Post (1981) argued that learning mathematics skills by working with manipulatives can help ESOL students to be more involved in meaningful activities where they are able to create concrete models to solve abstract mathematical concepts..

In view of the significance of manipulates to engage ESOL students, NCSM (2013) has argued that teachers should make a collaborative effort to implement this instructional strategy that will make mathematics more engaging to students. Above all, teachers play a crucial role in assisting ESOL students in transferring their manipulatives experiences from concrete to abstract mathematics by utilizing various representations. To learn how to do this, it is imperative that teachers be provided with professional development that explicitly provides a variety of interactive experiences working with manipulatives so as to develop a sense of what mathematical concepts can be taught using models and other representational tools and explicitly taught how to help translate concrete experimentation into understanding abstract mathematical concepts.

Teachers can provide explorations of shapes in at least three different modalities that go beyond the use of words to explore the math. For example, drawings, 3D models they can touch and play with and mathematical representations shown in a video or on a computer screen (Weir, 2017). The next instructional strategy to be discussed that often involves the use of

Schema-based instruction. Recent research conducted by Jitendra, Dupus, Ridriguez, Zaslofsky, Slater, Cozine-Corroy, & Church (2013) champions the cause of using schema-based instruction (SBI) to enhance learning and improve mathematics skills and outcomes for struggling students. Schema-based instruction emphasizes the teaching of word-problem solving through visual representations such as diagrams and graphic organizers to solve mathematics problems (Flores, Hinton, & Burton, 2016). Teachers can provide explorations of shapes in at least three different modalities that go beyond the use of words to explore the math such as drawings, build 3D models they can touch and play with mathematical representations shown in a video or on a computer screen to improve students' performance. Flores et al., (2016) pointed out how schema helps ESOL students' to conceptualize abstract concepts and increase mathematics understanding. Utilizing SBI, ESOL teachers can teach the procedures and apply techniques to improve students' achievement and close the achievement gap on state-wide mathematics standardized tests.

The findings from the study indicated that schema-based instruction can widen ESOL students' capability to solve mathematical word problem by making math activities fun and engaging through real-world experiences and visual presentations. The use of schema provides opportunities to scaffolding instruction by structuring tasks in chunks that explicitly build on existing knowledge to cater to individual readiness and ability. SBI involves providing immediate feedback to both learners and instructors about conceptual gaps and strengths that can be drawn up to teach concepts in a cyclical manner to improve learners' overall understanding and academic performance (Jitendra

el et al. 2013). Jitendra et al.'s (2013) findings also indicated that there is a correlation between SBI and student success in solving word problems, which helps to support ESOL learners who are struggling in mathematics.

Factors Impacting Second Language Acquisition

There are a number of factors that impact second language acquisition. Ortega and Cohen (2014) identified several factors that correlate with ESOL student SLAs and engagement in school. These include (a) vocabulary, (b) socioeconomic status, (c) motivation, and (d) learning environment. This subsection provides a discussion of research related to these three areas.

Vocabulary development. Educators have recognized the significant role that the acquisition of vocabulary plays in learning a second language for ESOL students. Indeed nearly five decades ago (Wilkins, 1972) commented that “without grammar very little can be conveyed, but without vocabulary nothing can be conveyed” (p. 111). This statement underscores the necessity of acquiring academic vocabulary for ESOL learners to be successful in school.

Research on second language vocabulary acquisition conducted by Horst (2014) and by Macalister (2013) indicated that ESOL students often experience problems with understanding vocabulary while learning a new language. It has been shown that most ESOL students experience difficulties in word form and spelling of English vowels in particular. Since vocabulary is fundamental for the total learning experience in a language classroom, ESOL students with a rich vocabulary tend to demonstrate improvements to their listening, reading, speaking, and writing skills (Nation, 2015;

Yang & Wen-Chi, 2015). In comparison, students with a limited vocabulary are more likely to lag behind in their language acquisition..

In light of ESOL students' achievement, teachers have to be knowledgeable and well prepared with research-based strategies and activities such as word walls, choice boards, to help all children build their math vocabulary literacy. Researchers Riccomini, Smith, Hughes and Fries (2015) pointed to the importance of ESOL students using words to explain, justify, and clarify mathematics problems to vocabulary development.

These approaches may result in improved test scores, which will close the achievement gap at the research site. Understanding and practicing academic vocabulary, reasoning, and problem solving are important skills that demand language proficiency on the part of ESOL students. It is imperative that teachers plan instruction to involve these elements to ensure that ESOL students are given the opportunities to grow these proficiencies.

Socioeconomic status. Socioeconomic status (SES), which includes household income, family educational achievement, family occupations, and social status play an important part in the education of students (Singh, & Choudhary, 2015). Studies have shown that poverty has a negative impact on students' academic developmental contrast to those from higher SES background (Morgan, Farkas, Hillemeier, & Maczuga, 2016).

Morgan et al. (2014) analyzed results from two schools in the United States where students were performing below standards and experiencing persistent mathematics difficulties. The longitudinal findings pointed to the correlation between students from low SES families and persistent mathematics difficulties from an early age compared to

schools from higher SES background. In addition, these students were more prone to cognitive setbacks, vocabulary deficiency, and developmental delays. Moreover, the study indicated that students in upper elementary levels are at risk for mathematics difficulties if they grow up in low SES homes from the kindergarten level.

In a study conducted by Atroszko (2013), the results showed those students from families with more economic resources and more supportive home environments tend to be more successful in school. Consequently, a solid connection between SES and home environment and the achievement of learners has been identified that must be taken into consideration.

There are a number of reasons for the correlation between SES and persistent mathematics difficulties. Families living in poverty typically lack the financial capacity that can enable them to be more supportive in their children educational needs (Chiu & Chow, 2015). For example, parents who experience economic difficulties may find it difficult to afford essential materials such as books, technology, and other school supplies (Krapohl & Plomin, 2016).

Research also has indicated that there is a connection between students' mathematics motivation and outcomes and their SES background (Guo, Marsh, Parker, Morin, & Yeung (2015). However, a supportive school environment, community involvement, and remediation programs may help to alleviate the problems caused by a low SES background.

This information is relevant to the research questions in that identifying risk factors such as a student's low SES status and strategies for decreasing ESOL students

persistent mathematics difficulties is essential to designing appropriate instructional interventions. Therefore, classroom observations, interviews, and the assessment of lesson plans focused on eliciting data related to how teachers addressed adaptations sensitive to these considerations.

Motivation. Motivation is an essential element in the learning process (Renninger, & Hidi, 2016; Fan & Wolters, 2014). Indeed, research has suggested that consistent motivation for learning is especially important for linguistically diverse, multicultural students in the United States (e.g. Rjosk, Richter, Hochweber, Lüdtke, & Stanat, 2015).

Motivation and effort are been considered fundamental factors in educational achievement for ESOL students. According to Gardner, Lalonde, and Moorcroft (1985), when students are motivated they will aim to acquire a second language because of the benefits of the sense of gratification from gaining access to novel content knowledge, the ability to weave in existing knowledge with new knowledge, and relief from frustration due to the ability to understand and be understood instead of feeling marginalized.

Gardner et al. (1985) explained that both intrinsic and extrinsic motivations play significant role in the learning process of ESOL learners. Intrinsic motivation comes from an inner desire to be successful. Students are intrinsically motivated when they are inspired to perform activities that are personally satisfying rather than for the sake of receiving external rewards. For example, when a student takes responsibility for his or her learning by setting high expectations to succeed on challenging tasks, he or she is driven by intrinsic motivation.

On the other hand, extrinsic motivation occurs when students are driven to act to receive rewards such as getting a good grade or to avoid being punished. For instance, when a student participates in sporting activities to earn awards or scholarship, he or she is motivated by the drive to achieve an external award reward in the form of peer approval, a trophy, plaque, or a financial prize.

Both intrinsic and extrinsic motivations play important roles specific to the work of acquiring proficiency in a second language. For example, when it comes to making progress in the classroom, having the right frame of mind is an essential attitude for ESOL students' success. When students are enthusiastic for learning, academic success will be forthcoming (Rattan, Savani, Chugh, & Dweck, 2015). Furthermore, students who have a clear idea as to what they want to do and take pride in their performance will achieve greater success in school. Consequently, when ESOL students are intrinsically motivated, they are more likely to respect themselves and display a positive attitude toward learning that may result in greater levels of achievement.

Extrinsic motivation also has been correlated with students achieving high levels of proficiency in a second language (Woodrow, 2017). According to Grolnic (2016), greater achievement will result when educators believe that every child is important and deserves a good education, when students are given continuous encouragement, and parents provide support.

Grolnic (2016) pointed to evidence supporting the impacts of community involvement in improving childrens' academic achievement. Indeed Wilder (2004) argued that support from family is necessary if students are to become successful second

language learners. In contrast, students from households that place little value on education or acquiring a second language are more likely to underachieve (Kim & Hong, 2015). Consequently, teachers need to be cognizant of the significant role motivation plays in fostering positive engagement and provide coping techniques in the classroom that ensure that whether or not children experience positive support from their families, they feel supported at school (Carrió-Pastor & Mestre, 2014).

Teachers' Perceptions

Teachers are considered essential agents of change in the empowerment of ESOL students' performance in school. Therefore, the beliefs and perceptions of both ESOL and classroom teachers have significant bearing on the achievement of ESOL students. Teachers' perceptions and beliefs influence thoughts which in turn impact students' performance (Alderman, 2013; Fives & Buehl, 2012; Nespor, 1987). Teachers' beliefs, experiences, behavioral characteristics, and school climate have all been identified as elements that can affect student achievement and should be examined as key reflective elements for teachers to continuously consider (Brackett & Reyes, 2012; de Vries, S., van de Grift, & Jansen, 2014).

Teacher self-efficacy. Clark and Peterson (1984) linked teachers' thinking to their action and behavior in the classroom that can positively or negatively impact students' learning. Teachers' level of self-confidence in their ability to support students' achievement is closely associated with successful classroom practices (Klassen, Durksen & Tze (2014). Because teaching involves emotions on the part of both student and

teachers, it is possible that teachers' emotional perceptions influence their behaviors as soon as they begin interacting with students.

Students accomplish more in a positive learning environment. When there is a positive climate in school, children collaborate by contributing unique ideas, attempting new and unfamiliar tasks, and by being more receptive to new ideas. These behaviors and attitudes result in greater knowledge retention and success. Therefore, teachers should cultivate a positive social and emotional climate to help students develop awareness of his or her capabilities. Doing so has been shown to support the development of high self-esteem that may lead to high levels of motivation, positive expectations, and optimism for success (Conley, 2016). For these reasons, it is important that teachers provide a positive and supportive classroom to enable children to develop academic optimism and self-esteem that can lead to greater outcomes (Poulou, 2016).

Results from another study conducted by Rubie-Davies, Flint, and McDonald (2012). indicated that teachers' beliefs predicted their sense of self-efficacy and choices of instructional strategies used to support student engagement and a positive classroom climate.

In addition, Ajayi, (2011) expressed the view that sociocultural identities such as the race, ethnicity, and culture of ESOL educators influence their thinking, their choices of instructional practices, and decision making. The decisions that teachers undertake when planning classroom instruction for diverse population like ESOL students influence the types of learning opportunities provided to students and consequently, levels of students' outcomes. Furthermore, Hampden-Thompson, & Galindo (2016) asserted that

instructional practices are influenced by factors such as cognitive ability, mind-set, student-teacher relationship, and school climate. In order to cultivate a sense of efficacy in the learning environment, administrators and district personnel can promote a positive school climate by motivating teachers to collaborate for the benefits of all students (Cherian, & Jacob, 2013).

Building on the work of Bandura (1975), Hoy (2000) defined teacher efficacy as “the teacher’s belief in his or her capability to organize and execute courses of action required to successfully accomplishing a specific teaching task in a particular context” (p. 233). Hoy highlighted other factors such as vicarious experiences and social persuasion that can influence teachers’ efficacy. According to Hoy, a teacher can experience vicarious experiences when he or she observes another colleague using successful instructional strategies that encourage him or her to try such practices to motivate the students.

Likewise, teachers can achieve social persuasion through professional development or collaborative planning sessions where other teachers are allowed to demonstrate effective teaching strategies that work in particular ways in their classrooms. Hoy suggested that the first year of teaching is particularly significant to the overall development of teachers’ self-confidence. By describing and modeling best practices that work well with particular demographics of learners, other colleagues may want to contribute ideas through collaboration and planning in order to inform students learning. This practice is particularly helpful to new teachers who are sometimes overwhelmed with the breadth of curricula.

Finally, Goddard, Hoy, and Hoy (2000) promoted the idea of supporting teacher efficacy through a collective forum. These researchers believed that collaboration and planning among teachers of multiple grade levels can make a difference in the ways teachers communicate and implement instruction that positively impact student learning outcomes.

Several researchers agree that expectations have considerable influence on students' achievement (e.g. Lamote, Speybroeck, Van Den Noortgate, & Van Damme, 2013; and Speybroeck, 2013; Spiegel, 2012). For example, Spiegel (2012) asserted that when teachers interact with students, they form opinions about what individuals and groups of students are capable of achieving and tailor instruction based on their expectation be they high or low.

According to Speybroeck (2013) teachers develop expectations for students' academic performance that could in turn have important consequences. For instance, when a teacher has high expectations for all students, and expects them to perform to best of their ability, the teacher may work differentiate the instruction to allow each student to advance at his or her own pace with supports provided that are well adapted to the students' actual needs. This is especially important for ESOL students who are failing to meet the requirements on standardized tests or for students from lower SES households.

Data from longitudinal and cross-sectional studies revealed that teachers' expectations are linked to students' socioeconomic status and their linguistic and mathematics success (Doehler, & Lauzon, 2015; Quin, 2017). Moreover, the race or ethnicity of students has also been shown to influence the expectations of teachers

particularly in the content area of mathematics (Hernández, Robins, Widaman, & Conger, 2016). In other words, students' SES influence teachers' expectations of students' achievement over the long-term, from kindergarten through to fifth grade.

According to Hernández, Robins, Widaman, & Conger (2016), teachers' low or high expectations are also related students' characteristics such as social class, gender, and learning profile. Subsequently, the overall findings indicated that there is a close connection between teachers' expectations and subgroups population like ESOL students' achievement in mathematics and their expectations over time. These findings are relevant to the study since the investigation was centered on teachers' perceptions related to how they perceive and frame push-in instructional strategies ESOL students' mathematics achievement. Had these teachers expressed low expectations for student success based on preconceived biases, this would be important data to consider when planning the professional development seminar design that resulted from this study.

Several studies have explored characteristics and consequences of teachers' expectations (e.g. Sahin & White, 2015; Van der Heijden, Geldens, Beijaard, & Popeijus, 2015). Sahin and White (2015) asserted that teachers are to embrace continuous professional development and classroom research practices to support students learning opportunities. When teachers consistently engage in professional development programs, it can significantly increase the knowledge of teaching and learning of mathematics to culturally and linguistically diverse learners (Goe, Biggers, & Croft, 2012).

Borich (2016) and Kitsantas, Steen, & Huie (2017), recommended that teachers be mindful of their goal orientation and missions in changing and molding the lives of

their students to become productive citizens. Therefore, it is imperative for teachers to continually create a positive academic learning environment where teaching and learning occur at high levels and students are motivated to perform to the best of their abilities (Read, Aldridge, Ala'i, Fraser, & Fozdar, 2015).

Furthermore, Friedrich, Flunger, Nagengas, Jonkmann, and Trautwein (2015) have also suggested that teachers' expectations can impact students' mathematics achievement. In a longitudinal study of teacher expectancies in math classes, the researchers examined outcomes of students' grades and achievement tests and individual and classroom levels. Their findings demonstrated that forming low expectations of ESOL students' academic achievement can result in low self-esteem, lack of enthusiasm, decreased learning opportunities, and in some instances, disruptive behaviors. Importantly, they also found that teachers with high expectations for their students provided more opportunities for students to advance and become creative thinkers.

Ultimately, teachers' beliefs and perceptions significantly affect the learning outcomes of students (Skaalvik & Skaalvik, 2014; Tomlinson, 2014) because of their ideas directly and indirectly impact their style of instructional delivery and the way they leverage resources to support their own development and that of their students. For example, in his study, M. B. Webb (2015) mentioned how one teacher's negative beliefs during a collaborative meeting adversely affected the team meetings. What had been an optimistic planning session was interrupted by one teacher who believed that her Title One students were incapable of learning the kind of mathematics that they were discussing in the meeting. The educator's negative perception of her students'

mathematic abilities based on the students' low SES negatively changed the tenor of enthusiasm of the team's collaborative meeting. This example highlights the impact that teacher expectations and teacher perceptions of their students have on how high the bar may be set for levels of achievement not only at the classroom level but amongst entire teams of teachers and indeed, the entire school.

As educators, it is critical to recognize the lasting impact stereotypes, prejudice, and racism can have in the development of ESOL students' education (Noel, 2012). The ways teachers view and perceive their students shape cultural awareness in the classroom. Teachers must be willing to take the necessary steps to enrich ESOL students' achievement and close the achievement gap since teachers' beliefs, perceptions, characteristics, are important variables in the achievement of ESOL students.

Based on their research, Rubie-Davies, Peterson, Sibley, and Rosenthal (2015), argued that student learning is improved when teachers systematically and consistently plan instructional strategies and intervention to address the various learning abilities of students. Rubie-Davies et al. (2015) conducted research involving an intervention group that focused on implementing instructional methods used to encourage children to set high expectations for their own achievement. Their results demonstrated significant improvement in the students' mathematics scores during the one-year period in comparison to the control group teachers' students. Additionally, Rubie-Davies et al. (2015) research reported high degrees of enthusiasm amongst teachers who have effectively used these mathematical instructional practices and strategies to increase student progress.

Similarly, Mart (2013) found that teachers' passionate approaches to teaching and learning are positively correlated to their instructional delivery (Mart, 2013). According to this research, effective educators possess the knowledge to challenge and engage children in engaging and productive activities in the subject area. Furthermore, teachers demonstrate clear and concise knowledge of relevant strategies that are effective to instruct and motivate students to participate in class discussion like *Math Talk*.

Moreover, studies conducted by Beetham and Sharpe (2013), Campbell, Nishio, Smith, Clark, Conant, Rust, and Choi (2014), Kleickmann, Richter, Kunter, Elsner, Besser, Krauss, and Baumert (2013), and Lee, Butler and Tippins (2007) have linked teachers' pedagogical knowledge and enthusiasm for teaching mathematics and ESOL students' achievement on standardized tests. Furthermore, according to Campbell et al., (2014) students' mathematics achievement is positively linked to the teacher pedagogical skills in the classroom. This study indicated that teachers should find ways to deliver instruction in ways that specifically address students' entry points into the learning. In addition, a study conducted by Lee et al. (2007) indicated that educators should be knowledgeable of ESOL learners' varied abilities and attempt to make connection with them through their preferences and interest and utilize the information for instructional planning and rapid adjustments made during class.

Other studies related to factors impacting ESOL students' achievement point to the importance of employing strategies connected to the content, the students, and other factors such as contextualizing instruction in a way that students can relate to and feel motivated by (Betts et al., 2008; Bratton, & Gold, 2017; Peercy & Troyan, 2017; Smith,

Esch, Hayes, & Plumley, 2016 Wu, & An, 2016). For example, Wu and An (2016) indicated the need for educators to build conceptual understanding of mathematics skills in students through visual representations, problem solving strategies, making real world connections, and by fostering critical thinking and reasoning skills. Next is a description of the implication of the literature I read relevant to the research question, how do elementary ESOL teachers describe the push-in program for mathematics instruction ?

Implications

The size of the ESOL population in southeastern United States has continued to increase and this is especially true in the school district studied here. Educators at this school and throughout the United States are confronted with the challenge of finding the most appropriate instructional programs to support diverse ESOL populations. The implication of the research I read is that implementing culturally sensitive instructional strategies in the mathematics classroom will empower linguistically diverse students to achievement at higher levels.

Recall that the purpose of this study was to examine the perceptions of ESOL educators who are using the push-in model to improve the quality of instruction in their classrooms. The reason for this is based on the implications of fact that although teachers are working to cultivate a positive, differentiated, and engaging classroom atmospheres, ESOL student are continuing to perform at suboptimal levels. Based on the belief that teachers' thinking matters, it is necessary to examine their perspectives of the affordances and challenges implicit to the push-in model to inform designing strategies to support efforts to overcome barriers and build on what is working.

The research discussed herein raised up important considerations of factors that impact ESOL student learning and provide teachers, administrators, and stakeholders with opportunities to scrutinize the current teaching and learning strategies in use at the research site to inform and drive decisions in the school. These practices carefully target necessary resources such as professional development support and peer support and provide practical ideas for new teaching approaches to be incorporated into lessons to improve students' mathematics achievement. However, in order to foster best practices for the improvement of ESOL students' mathematics skills, more research should be conducted on the current practices teachers employ to improve ESOL students' achievements in mathematics (Moyer, 2001).

Summary

The findings from this literature review support the argument for the need to conduct this research study that examined factors contributing to the problem that ESOL students are not attaining the skills needed to achieve the mathematics requirements as measured by Georgia Milestones Assessment. For example, the research literature strongly supported the necessity of providing instructional mathematical strategies such as the use of manipulatives, schema, culturally appropriate elements, differentiation of learning and strategic scaffolding of the use of language and introduction of mathematical concepts (Bujak et al., 2013; Carbonneau et al., 2013; Fernandez & Yoshida, 2012; Root, Browder et al., 2016).

The research presented here also advocated that using technology allows teachers to plan instruction for students to experience components of mathematical learning and

understanding through the use of digital tools and resources appropriate to specific instructional and interactive activities (Billings, Halstead, 2015; Dell et al., 2016; O'Donnell, Hmelo-Silver & Erkens, 2013). The literature I read indicated that interactive activities such as those involved in schema-based instruction are essential to help ESOL learners to work independently to develop and represent their mathematical thinking in various ways.

Furthermore, the use of manipulatives and technology provide students with multiple modalities of learning. For example, students may use technology to apply appropriate scientific representations to organize, record, and analyze mathematical data, draw conclusions, and communicate mathematical concepts in meaningful ways. Opportunities are provided for students who solve the problems differently from others to share their procedures through math talk, thus encouraging diverse thinking and practical development of academic language skills.

Additionally, the literature review explored factors impacting ESOL students learning and teachers' perceptions and practices in improving ESOL students' achievement in mathematics. Research presented herein has suggested that ESOL students benefit from greater achievement when teachers have high expectations that they can be successful and make a difference in all students' learning (M. B. Webb, 2015). The research presented in this literature review provided evidence to support the power of using a combination of instructional strategies involving engaging activities that provide opportunities for students to use and develop critical and creative thinking skills as

students make real-world connections between new concepts and previously learned concepts.

The achievement of ESOL students is a significant concern within the United States. In response to this concern, the central goal of this study was to examine ESOL teacher's perceptions of the current push-in ESOL program in terms of how this approach impacts the development of students' mathematics skills.

As the percentage of the ESOL student population increases at the school research site, it is imperative that educators be prepared and proficient in providing the best instructional practices to promote the academic advancement of ESOL learners. Investigating the relationship of the perceptions, knowledge, and teaching techniques was necessary to help educators and policy makers understand entry points into the work of improving instructional practices to provide equal learning opportunities and experiences for every child regardless of their linguistic, cultural, or SES background. Obtaining a better understanding of the ways in which teachers plan and deliver instruction for ESOL students may inform the development of research-based approaches to better address individual developmental needs.

Section two presents the methods employed in this study. The section outlines details of the qualitative design and instruments that were employed to investigate the teachers' perceptions of the push-in program at the research site.

Section 2: The Methodology

Research Design and Approach

This section describes the qualitative methodology employed in this study to examine teachers' perceptions of the push-in model to support ESOL students' achievement. The section describes research design decisions related to the problem statement and states the research questions. Section 2 presents the research context and settings along with a description of the data collection and data analysis procedures. The role of the researcher is explicated along with strategies used to limit conflict of interest and potential biases toward selection of participants and collection and analysis of data. Steps taken to protect participants' rights and confidentiality are discussed.

Recall from the first section that the purpose of the research was to examine ESOL teachers' perceptions of the current push-in ESOL program used in the school where they teach in terms of the development of students' mathematics skills and the mathematics instructional strategies required to meet the learning needs of ESOL students. An outcome goal of this study was to provide data to help administrators make instructional decisions as to the most effective ESOL program to increase students' achievement. Another purpose was to elicit and describe teachers' insights as they planned and refined strategies to improve elementary level ESOL students' performance in mathematics. The study also served to identify gaps in teacher knowledge to inform what further professional development is needed to improve the push-in model at the school.

Qualitative Research Design

Creswell (2012) described three research methods: quantitative, qualitative, and mixed methods. The three approaches to research vary by the assumptions of the researcher, the nature of the research problem and questions, research methodologies utilized in the investigation, and the types of methods used in a study.

Creswell (2012) advocated that a quantitative approach should be selected if the problem involves examination of variables that influence measurable outcomes that can be statistically analyzed. Qualitative research is an approach for investigating and understanding the meaning individuals or groups attribute to social phenomena (Creswell, 2012). A mixed methods approach entails combining both quantitative and qualitative analysis to derive nuanced data to inform a research problem (Creswell, 2012).

While a quantitative approach is often explanatory, involves experiments, focuses on statistical calculations, and typically utilizes closed-ended questions or hypotheses, a qualitative approach is exploratory and involves collecting descriptive data through observing a setting often using open-ended or semi-open-ended questions to drive the inquiry process. In mixed methods research, the investigator integrates qualitative and quantitative approaches to collect data and analyze data to generate nuanced understanding of phenomena to inform the research question (Creswell, 2012).

In this piece of research, a qualitative approach was used to elicit data to improve understanding of the research question addressing a local problem. The research design is an instrumental qualitative case study. The rationale for choosing a qualitative design

over a quantitative or mixed methods design was related to the research question and subquestions that focused on building an understanding of teachers' perceptions about a particular educational model. This study did not involve forming and testing a hypothesis, but rather seeking to understand teachers' perspectives related to instructional strategies employed to improve levels of ESOL students' mathematics achievement.

This study was designed as a case study based on the nature of the research goals to develop "an in-depth description and analysis of a phenomenon or a bounded system" (Merriam, 2009, p. 40). A case study approach involves "endeavors to discover meaning, to investigate processes, and to gain insight into an in-depth understanding of an individual, group, or situation" (Lodico, Spaulding, & Voegtle, 2010, p. 269).

Case studies can be used to investigate either single or multiple cases and can use intrinsic or instrumental designs (Harling, 2012). An intrinsic case study is "the study of a case of person, specific group, occupation, department, organization, where the case itself is of primary interest in the exploration" (Creswell, 2012, p. 465). In contrast, the instrumental case study approach, which I used here, is a design to provide a general understanding of a problem with the expectation that the results can be used to inform programmatic adaptations to improve intended outcomes.

The reasons for choosing an instrumental case study approach over an intrinsic case study here was related to the overall purposes of the research study. Again, recall that the key purpose was to gain insight into teachers' perceptions of instructional strategies to support ESOL students' mathematics skills to better understand

programmatic strengths and opportunities for improving the school push-in program for ESOL elementary students in mathematics.

Using a case study has some limitations due to the small sample size that typically limits the researcher's ability to generalize the findings from the study (Sarankatakos, 2012). However, despite the limitations, Yin (2003) argued that the exploratory nature of case study research is a way to increase understanding of phenomena and apply this new knowledge to improve learning opportunities for students.

Another advantage of using an instrumental case study design instead of other qualitative approaches such as grounded theory, ethnographic, or narrative designs was that a case study approach provided opportunities to collect detailed data using multiple instruments over time (Stake, 1995; Yin, 2014). In contrast, grounded theory is a qualitative inductive approach aimed toward the development of abstract theory grounded in the opinions of the participants in a study (Corbin & Strauss, 2014). Grounded theory was not chosen because the objective of this study was not to generate a generalizable educational theory but to better understand participants' perceptions and experiences of the problem in their natural setting with the goal of addressing a bounded local problem (Fraenkel, Wallen, & Hyuan, 2012; Merriam, 2009).

Ethnography is a qualitative design in which the researcher studies and analyzes the shared patterns of behaviors, beliefs, and language of a cultural group that develop over time (Creswell, 2012; Fetterman, 2010). Ethnographic design involves extensive observations and interviews over a prolonged period. Because the purpose of the study

was to explore teachers' perceptions of ESOL students' low academic achievement in mathematics, investigating a cultural group was not an appropriate approach.

Similarly, I did not select a narrative research design for this study because the study would not entail collecting and telling stories about people's lives (Lodico et al., 2010). Therefore, a qualitative case study was deemed to be the most suitable design for this study because an instrumental case study provided the opportunity to develop an in-depth analysis from multiple perspectives of Grades 3 through 5 ESOL teachers on instructional strategies used to improve ESOL students' mathematics achievement in the push-in ESOL delivery program.

In this case study, the bounded system was the school research site push-in model. Data collected were interviews, observations, and document reviews. These three sources of data were then triangulated to identify themes, categories, and patterns.

Participants

This study was conducted in an elementary school in southeastern Georgia in the United States. The setting for the research study was chosen because of the high number of ELLs in the school.

The ESOL teachers involved in this study were the instructors who implemented the ESOL instructional program in the school and have first-hand knowledge of the most effective instructional strategies that support teaching and learning for their ESOL students. I interviewed 12 third, fourth, and fifth grade ESOL teachers who have been employed at the school for at least 1 year.

The study employed a purposeful sampling strategy. Participants were selected based on their involvement with teaching ESOL students at the research site. Creswell (2012) explained that purposeful sampling is where “researchers intentionally select individuals and sites to learn or understand the central phenomenon” (p. 206). Here, the aim of using purposeful sampling was to focus on eliciting the perceptions of ESOL teachers who regularly collaborate with classroom teachers to discuss and reflect upon instructional strategies used to improve ESOL students’ mathematics performance.

The research sample consisted of 11 female and one male ESOL teacher. Participants were selected based on training, experiences, and whether the teacher had the ESOL Endorsement to teach ESOL students. Criteria for participant selection involved purposely selecting teachers in the intermediate third, fourth, and fifth grades who taught core subject areas such as language arts, mathematics, social studies, and science and who have done so for at least 1 year. Information was obtained from the administration as to whether participants met the criteria of having the ESOL Endorsement and had been employed in the school system for more than 1 year.

The research participants instructed small groups of ESOL students for 45 minutes daily, primarily using a push-in model teaching alongside the classroom teachers. However, the pull-out model was used in some cases (e.g., special education groups).

Procedures for Gaining Access to Participants

Protection of Participants

Procedures for obtaining access to participants at the research site involved applying to the school district for approval to conduct the study. To address and protect the rights and confidentiality of participants, prior to recruiting ESOL teachers I gained permission for teachers to participate in the study from the superintendent and from the administrator of the elementary school where this study took place.

Participation was voluntary, and participants were assured of their rights as set forth by the Walden Institutional Review Board (IRB). The Walden University IRB granted approval for data collection on September 8, 2017 (Approval #09-08-17-0056900, expiring September 7, 2018). In addition to the assurances provided on the active informed consent form and throughout the data collection and analysis processes, participants were repeatedly assured of their protections regarding their privacy of their responses. To maintain confidentiality, pseudonyms have been used in place the actual names of the participants and the school.

Once IRB approval was granted from the school district and the building administrator for the study (Appendix E) and the Walden University IRB, I arranged for an introductory meeting to inform staff members about the research study. I invited participants to the introductory meeting in person and through e-mail (Appendix G).

The goal of introductory meeting was to explain the purpose of the study, the procedures for the data collection, and participant protections. Participants were informed about the study details and given assurance about ethical principles such as the

confidentiality of their school, name, and responses. I gave participants an idea as to what to expect from the interview, which would increase the likelihood of honesty, a fundamental aspect of the informed consent process.

At the conclusion of the introductory meeting, I handed out the active informed consent form and an envelope with my name on it. Teachers were asked to place their signed informed consent form in my mailbox at the school. I gained acceptance from all 12 teachers within a 1-week period. There was a follow-up meeting with participants to inform them of the ethical considerations of the study (Lodico et al., 2010; Merriam, 2009). For example, I verbally shared the research purpose in greater detail, provided a description of how data would be used, and elaborated on participants' rights and interests at the meeting.

Finally, participants were assured that the research records would be kept in a secure location during and after the completion of the study for 5 years in accordance with the Walden University IRB protocols. They were also assured that at the conclusion of the 5-year period, all raw data in both hardcopy and digital formats would be destroyed.

Data Collection

A variety of instruments were used to collect data for this study. These instruments were: classroom observation notes, a reflective journal, teachers' lesson plans depicting instructional strategies used to improve ESOL students' mathematics skills, and one-on-one interviews.

Triangulation of data was used to increase the internal validity of the findings of the study (Creswell, 2012; Merriam, 2009). The ESOL teacher interviews were conducted after lesson plan reviews and the classroom observations so that the researcher could ask the teachers about what was planned and observed. This pattern of data collection and triangulation deepened understandings of teachers' perceptions of how they implement mathematics instruction to support ESOL students.

Triangulation of data collected using the four instruments provided nuanced insights into the teachers' rationale for the use of particular instructional strategies, methods of integration, and delivery models used to support the ESOL students. What follows is a description of each of the instruments used in this Project Study.

Classroom Observations

I conducted a total of 24 classroom observations using a validated observation protocol provided as Appendix H. The main purposes of the protocol were to determine how ESOL teachers integrated into the classroom and how they used instructional strategies to support ESOL students' mathematics skills. I observed third, fourth, and fifth grade ESOL classes at the school for approximately one month respectively. The observations began during the first month following IRB approval.

All 12 classes were observed twice during the three-month period and took place at various times throughout the day. The aim was to observe teachers interacting with students who are performing below average in mathematics on the Georgia Milestones Assessments.

Another key purpose of using the observation protocol was to minimize observer bias and increase objectivity. During the observations, I took notes of the actions taken by teachers during ESOL instruction (Appendix I). The observation protocol allowed me to note teachers' classroom behaviors and practices as they relate to ESOL students learning. I noted how the lessons were delivered, what strategies were implemented to assist struggling students, whether there was differentiated instruction strategies employed and how they were used, whether the learning objectives were clear and comprehensive, and whether the lessons enabled expansion and connections between other content subject areas.

During the observations, I adopted the role of a participant observer. According to Creswell (2012), when researchers participate in activities in the setting under observation, they assume the role of a participant observer. In this instance, I was able to interact with ESOL students during the use of mathematical manipulatives or technology to understand more about instructional strategies used to engage students, which assisted with a more accurate interpretation of the ESOL teachers' meaning as they described their rationale for instructional designs and classroom moves during the interviews.

Observation notes were used to identify patterns, themes, and instructional strategies used by ESOL teachers when conducting lessons for ESOL students. Throughout the observations of the ESOL teacher participants at work, I was able to gather detailed descriptions of the way mathematics instruction was being delivered to ESOL students using the push-in model. Classroom observations provided the opportunity to record real-time data and to visualize the purpose of the way activities

were structured and implemented as they occurred in each of the participants' classrooms.

During the observation, I used my field notes journal to describe the classroom arrangements, document the ways teachers interacted with their students, the activities used to support students' learning, and details that answer the research question on how ESOL teachers deliver mathematics instruction in the push-in setting. Upon completion of all 24 observations, I transcribed the information from the field notes along with reflective questions to be used during the interview process. I coded the data applying first initial and then focused codes. I then organized these codes to identify themes that emerged and patterns that appeared. These themes and patterns are described below in the data analysis subsection.

Lesson Plan Reviews

A second data source used in this study was teachers' mathematics lesson plans that guided instruction during a four-week data collection time period. I collected and analyzed lesson plans during a five-day period prior to conducting observations. A total of 24 lesson plans were collected from the 12 participants.

I documented the various types of activities used by teachers to engage students in authentic learning that can inform and influence ESOL students' achievement strengths and gaps in mathematics (Appendix K). The data gathered from the lesson plans helped to inform the research questions by demonstrating ways the teachers used multiple mathematical strategies and representations to support ESOL students' as they work through challenging tasks.

Interviews

Interviews were a third instrument used to collect data on multiple participants' perspectives of strategies used to improve ESOL students' mathematics skills. I asked each of the twelve ESOL teachers to participate in one, 35- to 45-minute interview. These interviews all took place upon completion of the observations.

I utilized a semi-structured, one-on-one interview protocol that took place face-to-face in a classroom. I obtained permission from the principal at the research site to conduct interviews in a classroom at a time that was convenient for each participant so that instructional time was not interrupted. Each interview took place in a private and comfortable classroom where I provided light refreshments.

A standard semi-open-ended interview protocol was used with participants (Appendix J). Each interview involved key questions designed to elicit teachers' perspectives of instructional strategies used to impact ESOL students' mathematics achievement as measured by the Georgia Milestones Assessment.

The interview questions presented below were developed based on the problem, research questions, conceptual framework, and relevant literature. Participants were given a hard copy of the questions at the time of the interview and each question was orally presented one at a time.

In general, participants were able to elaborate on their perception of the ESOL services provided to their students. The teachers provided details about the needs and accommodations of ESOL students and strategies they used that they thought helped struggling ESOL students to achieve their goals. The use of open-ended questions and

probing follow-up questions provided participants the opportunity to respond in their own words to offer responses that were meaningful, rich, and explanatory in nature.

Each of the 12 interviews were audiotaped and transcribed for data analysis. To ensure accuracy and reliability, I summarized the interview at the end of each meeting with each teacher participant. I transcribed the interview responses and saved them in a password protected digital file on my personal computer at home. The printed transcripts were utilized for data analysis.

Reflective Journal

I kept a reflective journal in which I wrote notes during the observations and after each interview. The reflective journal involved hand-written recordings of my thoughts and experiences during the observations as well as the interview process as a way to control potential threats to validity and augment understanding of the other data sources (Lodico et al., 2010). To be clear, these notes were not coded data points.

In this case, the reflective journal was used to create transparency by recording participants' ideas and insights while exploring the research problem. For instance, I reflected upon strategies identified in the classroom and highlighted areas of interest and differentiation during observation of participants. Using a reflective journal helped to control for potential biases by keeping accurate records "of methods, procedures, and evolving analysis" (Bogdan & Biklen, 2009, p. 122). A reflective journal enabled me to analyze my own understanding of insights on teachers' perceptions of the best way to meet the needs of ESOL students who are performing below grade level on standardized tests in mathematics.

Bracketing and referral to epochs of previous knowledge or personal feelings also were used to maintain an unbiased attitude during the data collection, analysis, and reporting of findings. According to Bogdan and Biklen (2010), bracketing “is the analytic tactic of taking an idea, word or phrase that informants, or researcher takes for granted and treating it as an object of study” (p. 271). Creswell (2012) pointed out that bracketing minimizes the effects of subjectivity on the part of the researcher. I used bracketing to reduce bias and ensure validity during the data collection and analysis process. Using a reflective journal helped me identify and isolate my personal beliefs, experiences, and knowledge of the problem to maintain objectivity when conducting observations, asking follow-up interview questions, analyzing lesson plans, and interpreting participants’ responses.

Research Questions Matched to Interview Questions

Here are the research questions that were matched directly to the interview questions used in each of the 12 interviews conducted for this study:

RQ1: How do elementary ESOL teachers describe the push-in program for mathematics instruction?

1. How long have you been teaching at this school?
2. What educational experiences do you have that have prepared you to teach ESOL students?
3. Would you please discuss your teaching experience with ESOL students?
4. Tell me about an ESOL delivery program that you have used that has worked well.

5. Tell me about an ESOL program that you have used that did not work well.
6. Tell me about your experience with the push-in delivery model in use at your school?
7. Tell me about a success you have had with a student in the push-in delivery program.
8. Tell me about a situation you've had with a student in the ESL push-in program that you felt was not successful.
9. In your opinion, what ways can mainstream teachers modify mathematics activities for ESOL students who are struggling to meet the requirements on standardized tests?

SQ1: What are ESOL teachers' perceptions of how they deliver the push-in ESOL program in respect to the development of mathematics skills?

10. Tell me how you think people acquire a second language.
11. What impact do you believe that second language learning has on student learning mathematics?
12. How can ESOL teachers support mainstream teachers in modifying work for ESOL students?
13. What professional development, workshops, or support has your school offered to improve ESOL students' learning?
14. If you could choose any additional professional development, what would you like your school to offer? Please explain.

SQ2: How do teachers describe the instructional strategies they use to meet the instructional needs of struggling ESOL students in mathematics?

15. What specific interventions are in place for ESOL students who are struggling to meet the standards on standardized tests? Prompt: How do you differentiate instruction for these students?

16. How do you make curricular changes for students who are struggling in mathematics?

SQ3: Based on observation, how do ESOL teachers deliver mathematics instruction using the *push-in* model?

17. I observed you using scaffolding. Tell me why you choose to do that and what you think the learning outcome was?

SQ4: Based on lesson plan review, how do ESOL teachers plan to modify mathematics instruction for ESOL students?

18. In what ways may modifications be increased to support students' mathematics instruction using the push-in model?

19. How do you plan your lesson?

20. What concern do you have about implementing lessons using the push-in model?

21. Do you have any comments that you would like to share?

Role of Researcher

I am employed as a teacher of gifted students at the research site. I do not hold any supervisory role over the participants in this study. My position in the school allowed

me to be viewed by the participants, to some degree, as part of the community of teachers investigated (Lodico et al. 2010), which contributed to positive rapport with the faculty and administrators involved in this study.

The teachers involved in this study knew me prior to beginning this research and were supportive and willing to participate in this study. Furthermore, as a former fourth grade ESOL teacher at the research site, I have experienced firsthand the requirements of ESOL instruction and the pressure of standardized testing, thus I was able to build on the foundation of a positive rapport with the participants during the interview process.

Data Analysis

The data collected during the interviews, observation, and reviews of lesson plans were organized, coded, and categorized to reflect recurring themes and patterns identified in the research. Responses were analyzed based on the research problem and questions especially on instructional strategies employed to improve ESOL students learning. Reflective notes assisted in providing personal insights during the analysis process (Houghton, Casey, Shaw & Murphy, 2013). I also reread and studied my field notes to provide a deeper understanding of what was observed.

Triangulation of data from the interviews, observations, and review of lesson plans was conducted to define themes and emerging patterns. What follows is a more detailed description of the steps involved in this process.

I created a case study database to organize data chronologically and topically (Miles, Huberman, & Saldana, 2014). The database tools allowed me to swiftly and systematically locate relevant data during analysis to prevent confusion and delay. The

rationale for using a database was to organize data by categories of instructional strategies ESOL teachers used to support ESOL students' achievement at the site and to identify strategies teacher considered to be highly effective strategies. Coding occurred after the collection of all data to avoid potential researcher bias (Lodico et al., 2010).

After the collection and organization of data, transcripts were manually analyzed. A hand analysis was preferred over the use of computer software because I was analyzing a relatively small database (Creswell, 2012). Qualitative researchers, as indicated by Creswell (2012), "perform a preliminary exploratory analysis of the data to obtain a general sense of the data, memoing ideas, and considering whether more data is needed" (p. 243). This process is known as coding. The purpose of coding is to make sense of data, organize data into segments, label text with codes, examine codes for reoccurrences, and obtain rich descriptions and themes from the findings.

By reducing data into a few themes and setting aside data that do not support the purpose of the study, I utilized an inductive approach to analyze data. This involved a thorough reading through of the text database to understand classroom setting, participants' perspectives, activities, and strategies before assigning a code.

I used a priori and inductive coding to develop themes. The purpose was to condense the data to establish clear connections between the research objectives and the findings derived from the literature review and conceptual framework. A priori codes involved identification of phrases related to language development, language proficiency, classroom practices and strategies, delivery programs, collaboration, differentiation, standardized tests, teaching materials, economic issues, and teachers' perceptions.

These codes were categorized based on the level of occurrence to develop a narrative discussion and to make comparisons between the literature and the findings. I collapsed the codes into seven themes. I also used inductive coding to capture data that did not fit into the predetermined coding scheme.

Once the initial coding was completed, I examined the codes to identify emerging categories (Appendix L). The categories were then reread and summarized. I used different colors to identify emerging categories and themes throughout the analysis of the interview data. This allowed for easy navigation to the various categories and themes as the research progressed.

After categorizing the codes, I looked across categories to developed themes, which I saved to a word document on my computer. Themes were generated when similar ideas expressed by participants were brought together into a single category.

Themes were organized beginning with an analysis of the fine details and then the broader descriptions provided by the participants in order to broaden the scope of understanding nature of the research problem. By collapsing data and setting aside data that did not inform the research question and subquestions, I was able to report data that did speak to the research questions using rich descriptions and direct quotations from participants. Finally, the findings were represented in narrative form as well as visually in tables or diagrams to provide a clear interpretation of the findings.

Next, I compared the results with the findings described in the research presented in the literature review to identify how this study resonated with earlier pieces of research. The interpretation of the findings consisted of reflecting on the data in relation

from the review of literature and the conceptual framework of social learning theory of Bandura (1975) and language acquisition theories (Collier, 1995; Cummins, 1979; Krashen, 1981).

Analysis of Observations

Classroom observations of 12 separate ESOL classes took place over a 2-month period. During that time, I observed 11 women and one man who are third, fourth, and fifth grade ESOL teachers.

Prior to the beginning of each observation, I entered the classrooms quietly without interrupting students and teachers and positioned myself as a participant observer. Once in the room, I made note of the demographics of each classroom.

The demographic breakdown in all grade levels was skewed to the Hispanic Spanish speaking population. For example, in the first third grade classroom I observed, 85% was Hispanic, 10% Black, and 5% White. The second third grade classroom was similar with 82% were Hispanic, 8% were Black, 5% were Asian, and 5% White. Similar demographics were observed in the fourth-grade classroom and another third grade class. The fourth-grade class was 80% Hispanic, 8% Black, 4% Asian, and 8% White. There was less diversity in the first fifth grade class I observed. The class was 84% Hispanic and 16% Black with no Asian or White students.

Although there were similarities in the number of Black students in both fifth grade classes, the other fifth grade class was more diverse with 76% Hispanic, 16% Black, 4% White, and 4% Multi-racial students. Of the two special education classrooms

visited, one consisted of only Spanish speaking students and the other was 75% Hispanic and 25% Black.

Prior to the start of the mathematics lessons, all of the observed ESOL teachers entered the classroom and circulated around the room before the classes were divided into groups. This happened as the classroom teachers were in the process of wrapping up on their daily *Responsive Classroom Morning Meeting*.

This meeting is a routine wherein each classroom teacher assembled the whole class to engage students in discussion for the preparation of the mathematics lesson. The Morning Meeting focused on building a sense of belonging, and promoted an atmosphere of trust, academic success, and positive behavior. During this time, the entire class participated in *Math Talk* that encourages students to practice using academic vocabulary. At the end of this initial interaction, students went to their respective math groups.

Every classroom observed was set up in small groups arrangements. However, several teachers began their lessons with a whole group arrangement and then the children moved into their small table groups. In all of the classrooms, seating arrangements supported flexible grouping instruction. The tables and desks were arranged with spaces used for partner work and small or large groups. In all of the classrooms observed, ESOL teachers were provided with a kidney shaped or a U-shaped table with the capacity to seat six-to-eight students. The tables were placed either to the back or to the side of the classroom. Additionally, there was adequate room for teachers to set teaching materials and manipulatives on tables while at the same time keeping the group focused on the lesson.

The shape of the kidney-shaped table allowed for chairs to be spaced evenly around the table and for teachers to comfortably walk around, observe, and interact with individuals. In some classrooms, the tables were arranged in close proximity to a white board while others had flip charts on rolling whiteboards that could be easily moved around the tables.

During the observations, teachers displayed different instructional strategies consistent with the recommendations put forward by Eristi et al., (2012). As I followed the observation protocol (Appendix H), I was able to identify the use of best practices for ESOL students (Echevarria et al., 2013). These included instructional practices such as flexible grouping, scaffolding, differentiated instruction, vocabulary development, and collaboration.

Recall from section one that Chenoweth (2015) outlined five strategic practices that can improve student learning: (a) knowledge of students' academic needs; (b) working closely with faculty to plan instruction and construct assessments that are appropriate for the student population; (c) gather, analyze, and use assessment to evaluate learners' performance; (d) utilize relevant data to inform instructional goals; and (e) mutual communication between students, teachers, parents, and school personnel. Each time I observed one of these practices in play, I indicated this in the observation form, and I wrote field notes for later analysis. Table 3 shows the instructional strategies used in the observed classes.

Table 3

Categories Supported by Data Aligned with Observations

Instructional Strategies	% of use
Knowledge of students' academic needs	100
Working with faculty to plan instruction	100
Use of data to inform instruction	90
Assessment to evaluate learners performance	80
Communication	80

Following each observation, I coded the instructional strategies employed by the ESOL teachers during the delivery of lessons for ESOL students. I developed additional questions for the interviews based on what was observed.

Analysis of Lesson Plans

In addition to interviews and observations, hard copies of lesson plans were collected and stored in manila folders in a locked location. Despite not having a standard lesson plan template, the teachers all consistently involved the same standard contents in their plans. For example, the five World-Class Instructional Design and Assessment (WIDA) English Language Proficiency (ELP) Standards appeared in all of the lesson plans.

After the data were collected, an inductive analysis of one lesson plan from each teacher was conducted prior to the observations. The lesson plan selected for analysis was

the lesson observed. Lesson plan analysis involved reading the content area standards and lesson objectives, reviewing lesson components and procedures, and identifying activities that reflected collaboration and differentiation in the delivery of appropriate strategies for learners.

When analyzing these data, I paid particular attention to ways teachers provided opportunities for learning new skills and concepts, how students were provided the opportunity to participate in learning situations and assessments based on interest areas and learning styles. I paid attention to how teachers modeled techniques for the solution of mathematical problems, and how manipulatives and technology were used to actively engage students in mathematical problem solving.

Each selected lesson plan was color-coded to identify instructional practices and materials used to support teaching mathematics skills (Table 4). Field notes were recorded to help in the analysis of data from the lesson plans according to the document analysis protocol (Appendix I) and the lesson-planning guide (Appendix K).

Table 4

Color Coding of Typologies Used for Data Analysis

Color Code	Category
Blue	Lesson Preparation
Red	Lesson content area
Yellow	Learning objectives
Purple	Lesson format
Pink	Lesson closure/Wrap-up

The lesson plan analysis revealed that teachers used best practices during the delivery of mathematics instructions as defined by Chenoweth (2015) and by Eristi et al., (2012). Teachers used collaboration, differentiated instruction, remediation and enrichment; elements that are described in more detail below.

Findings from of the lesson plans were consistent with the findings from the classroom observations. Together these two data sources provided insights into how teachers planned instruction to help close the achievement gap of ESOL students who are struggling in mathematics. A summary of the highest frequency activities identified is listed here in Table 5.

Table 5

Percentage of Lesson Plan Activities Used by Teachers

Activity	3 rd Grade (%)	4th Grade (%)	5 th Grade (%)
Manipulatives	100	100	100
Modeling	100	100	100
Scaffolding	100	100	100
Group rotations	100	100	100
Assessments	100	100	100
Questioning	90	90	100
Problem solving	80	90	100
Vocabulary cards	90	90	80
Technology	80	80	90
Real-world	80	80	70

Lesson preparation. The first analytic category developed was lesson preparation. Observable subcategories under lesson preparation involved clearly defining learning targets or objectives, procedures for delivering instruction, lesson content, lesson format, and methods for assessments (Table 4).

Analysis of lesson plans also indicated that all plans involved research-based instructional techniques along with materials and technological resources for each lesson. Material included resources such as manipulatives, books, graphic organizers,

worksheets, and technology. The technological resources involved electronics as well as websites for students to elaborate on their problem-solving steps.

One example was the *X Math* online math practice website, a subscription-based program that the school district provides to support development of students' mathematics skills. The *X Math* program provides comprehensive, standards-aligned math content and offers engaging activities with real-world connections for students at different proficiency levels. The activities encourage students to practice at their own pace and to stay focused.

Each lesson plan began with an introduction of the expectations of the lesson. This plan was consistent with the enacted practices observed in the classrooms. For example, there were activities that helped to activate students' understanding of the content area and activities that involved the use and development of academic vocabulary.

All 12 lesson plans involved opportunities for flexible grouping strategies and activities based on their proficiency levels or interest as witnessed during the classroom observations. For instance, provisions were made for students ranging from support designed for those who needed a more concrete approach to support designed for those who had in-depth knowledge of the concepts and could work at a more abstract level.

However, in the fifth grade plans, some of the lessons were tiered based on learning preferences where the activities were written at the same level of complexity but students had choices for how they interacted with the content such as creating game boards or taking Jeopardy-based assessments on the skills.

Lesson content area. Lesson plans involved both WIDA and grade level standards written in different lesson plan templates. Again, the WIDA language proficiency standards were used by all of the teacher participants as guidelines in the planning of instruction and the construction of assessments for ESOL students. The content standard observed was *Number and Operations*.

Also included in the plans were activities focused on the domains of reading, writing, listening, and speaking. Lesson plans addressed daily skill focus, vocabulary, and instructional strategies. The plans reflected differentiation for remediation as well as enrichment.

The differentiated activities were detailed and involved activities designed at the different proficiency levels of the students and based on their needs. Students in the remediation group were given hands-on activities along with manipulatives to solve problems whereas the students performing at grade level were allowed to choose from menus or choice boards with varied levels of activities focused on the math topic for the week. The students who were above grade level were allowed to go to the computer center to complete individualized activities based on the skill being taught.

In the third-grade lesson plans the math content was differentiated according to tiered or proficiency levels as a means of meeting the needs of all the students in the classroom. The lesson plans involved provisions for collaboration with classroom teachers for rotation of groups. For example, during the 45-minutes math lesson there were three groups rotating. The ESOL teachers and the classroom teacher each worked

with a small group while the third group did individual assignments or worked at the computer center.

For the fourth grade differentiated lesson plans, teachers provided group tasks with cubes. Cubing is a mathematics technique that allows students to roll dice and arrive at an answer in various ways. Likewise, lesson plans in the fifth-grade classes included rotation centers. There were activities with task cards of previous skills taught such as place value, multiplication, and problem solving.

Unlike the other two grades, the fifth-grade lesson plans involved several worksheets that covered math content such as conversion of fractions to decimals and multiple steps problem-solving for differentiated instruction. Vocabulary aligned to the content area standards included terms such as *operations*, *approximate*, *estimate*, *rounding*, *reasonability*, *factors*, *product*, and *quotient*.

Learning objectives. The learning objectives or targets were clearly written in all lesson plans. Included in the objectives were statements for the development of communication skills, critical thinking, and depth of knowledge questions. Phrases such as *create graphs, charts, and models as tools to illustrate information, interpret, and manipulate information, and identify patterns to pose and solve problems* were explicitly written in the lesson plans.

Most of the learning objectives were also written to support scaffolding and differentiation. For example, differentiation strategies in the third-grade plans were based mainly on the students' proficiency levels. For the students who were below grade level, the rigor of activities were based on using level one depth of knowledge terms such as

recall, solve a one-step problem, represent math relationships in pictures or symbols.

Students who were performing at grade level were placed in different centers based on their ability levels. Independent work was listed for the above-grade level students.

In the fourth and fifth grade lesson plans, activities were focused on student interest using menus, choice boards or project-based learning options. These mathematics skills included logical reasoning, guess and check, and work backward to solve mathematical problems.

There was one plan that did not support differentiation for the newcomers. For example, in the area of assessment, the teacher planned activities without taking into account the experience of the newcomers who speak English as a second language and the students who were performing below grade level.

One of the assessments involved in this lesson plan mentioned that students would be given a sticker with a word problem to solve. From the example given in the lesson plans, the teachers gave the same assignments to the entire group without any modification. The task was not differentiated according to the ability of the students. However, from the classroom observations, solving word problems was a task that needed scaffolding tools such as manipulatives, graphic organizers, pictures, and other visual representations for students who were struggling to understand and complete mathematics problems.

Lesson delivery. Although one of the assessments did not reflect differentiation of task, the other eleven lessons were consistently planned to meet the diversity of students' skills, learning levels, language proficiencies, interests, and readiness through

appropriate uses of instructional strategies and multiple data sources such as formal and informal assessments. I identified a variety of materials and resources used in planning lessons. For instance, in the third-grade provisions were made for learners to use real objects in the classrooms while fourth grade teachers listed the use of various graphic organizers like bow tie and place mats from Math in the Fast Lane program resource.

Bow tie is a graphic organizer that allows students to pair share, reason and compare and contrast mathematics problem in centers. Students can also use sticky notes to organize their thoughts on the bow tie when studying for a test. Similarly, *The Placemat* is an engaging graphic organizer, which fosters small groups of activities. The placemat technique encourages the use of questioning and prompts to support the learning targets. It supports collaboration and builds team consensus by allowing each student to share his or her solution to a problem. This instructional technique helps to activate students' prior knowledge of a topic prompts learners to share problem-solving strategies.

Vocabulary activities were also involved in the lesson plans to introduce new concepts and to show connections and relationships between words and concepts. For example, in all the plans, math vocabulary was written in the word problems as well as in the assessments. Several teachers mentioned vocabulary cards to help create visual images in the minds of the learners. An emphasis on vocabulary development was also evident in the observations and during the interviews.

Written in each plan were opportunities for teachers to model concepts that encouraged scaffolding instruction. For example, new vocabulary was listed in context at

the introduction of the lesson to tap into prior knowledge and interest. Also, included were differentiation strategies for small groups along with modification of instruction and assessments based on ability and preferences. In addition, there were opportunities for students to develop critical thinking skills through structured discussions and questioning by think-pair-share, turn-and-talk, and triad teams.

These scaffolding and differentiation strategies were frequently observed during the classroom observations. Indeed, findings from both interviews and observations indicated that the teachers used a variety of strategies to scaffold instruction in their lessons. For example, the data analysis highlighted how teachers used scaffolding to develop background information to meet the language demands of ESOL students by breaking down the concepts into manageable chunks before the formal math instruction. Also, pre-teaching new vocabulary words was identified as a scaffold essential to support ESOL students understanding of important mathematical terms during math lessons.

In fact, scaffolding instruction emerged as one of the instructional strategies used by all participants during delivery of instruction to support students' mathematics skills. During the interviews, all participants shared scaffolding strategies they used to help ESOL students to improve their learning. These strategies will be elaborated below.

Questions and prompts were designed in the plans for different proficiency levels as well as instructional goals that incorporated critical and creative thinking skills that were connected to previous topics. Finally, the use of technology, which included online learning such as *X-math* practices, *Prodigy*, and other on-line math websites were mentioned in all of the plans.

Lesson closure/wrap-up. Culminating activities were listed in all of the lesson plans. Teachers provided three forms of choices to students: (a) choice of tasks, (b) choice of reporting formats, and (c) choice of learning goals. Both oral and written assessments were involved in the planning of the lessons. Learning outcomes were closely related to the curriculum alignment and were clearly reflected in the culminating activities at the conclusion of the lessons.

Several performance activities were identified such as thumb-up, response cards, think-pair-share, quick writes or draw, and exit ticket assessments. The teachers constantly assessed students' learning using formative, summative, or a combination of both types of assessments. Some teachers listed using sticky notes, index cards, and assessment rubrics for each proficiency or tier based on the design of the lesson. At the end of the week, a formal written or online assessment was reported in the plans.

In addition to those mentioned, questioning strategies based on a variety of depth-of-knowledge levels of complexities were identified in all the lesson plan data. For example, there were questions that involved a range of lower-order thinking skills to higher-order thinking skills depending on the proficiency levels of students. For the different levels, phrases from recall, solve a one-step problem, represent math relationships in words or pictures to more complex terms such as interpret data from graph, compare information across data, generalize a pattern, and develop a mathematical model for the problem were identified. An in-depth discussion of these strategies is provided below.

Analysis of Interviews

Recorded interviews were transcribed after each interview was conducted. Interview transcripts were read multiple times for clarity, generalizations, and for coding and categorization of themes. When analyzing the interviews, I formed a hierarchy of codes to group the codes into themes.

Specifically, as I read each interview and focus group data, I highlighted the instances when a concept or word was brought up. Then, I made a tally to keep track of the number of times such words were used. In this manner, I developed initial categories based on the frequency of repetition and created a chart to organize them. I highlighted the frequencies in which certain terms occurred such as *more scaffolding*, *lack of vocabulary*, *build relationship*, or *more hands-on activities*. Repetition of each of these terms was tallied. Next, I grouped the data based on the frequency of occurrences and clustered terms with similar meaning into emerging themes. Table 6 presents the categories and codes derived through this analysis.

Table 6

Coding Categories

Category	Codes
Teaching experiences	ESOL endorsement, Math and Science endorsement, Gifted endorsement, GAN meetings, in-house professional development, book study, Math Talk, Math in the Fast Lane workshops, on-line staff development, independent research
Background knowledge	Second language acquisition, language proficiency, vocabulary development, foundational knowledge, oral skills, listening, making connections, communication, visual representations, professional development, appropriate services, modification, collaboration, planning, scaffolding
Instructional strategies	Modeling, flexible grouping, hands on, project-based, thumbs up, remediation, acceleration, turn and talk, Math Talk, technology, ticket out the door, graphic organizers, visual representations, questioning, vocabulary exercises, differentiated instruction, making real-world connections, formative assessment
Differentiated instruction	Choice menus, centers, jigsaw, project-based inventories, flexible grouping, scaffolding, remediation, enrichment, making real life connections, formative assessments, quick quizzes, thumbs-up, feedback, ticket out the door
Learning Environment	Supportive classroom, diversity, positive attitude, routines, encourages individual needs, finding engaging activities, provides academic rigor, challenging, respect and understanding, collaboration, shares instructional strategies, classroom arrangement, clear expectations, background knowledge, maximize instructional time, student achievement, commitment
Collaboration	Willingness to collaborate, relationship, engagement, support, listen, provide feedback, no labels, high expectations, encouragement, grouping, responsibility choices, feedback, not afraid to ask questions, creativity, positive learning environment, have to plan, interaction, academic optimism, achievement, respect for all, high interest, communication, knowledgeable of needs, diversity of learners

(table continues)

Category	Codes
Using data	Pre and post-tests, formative and summative assessments, ACCESS test, standardized tests, AIM tests, benchmarks, online assessments, quick quizzes, flexible grouping, end of unit tests, tickets out the door
Teachers struggles	Lack of planning time, one-on-one instruction, time constraints, new students, differentiated instruction

After the interviews were analyzed, I compared the findings to what emerged from analysis of the observations and lesson plans reviews. During the comparison of findings, I identified 18 larger codes, which were reduced to seven major categories. The categories were evaluated to determine if they were unique to the individual or only a few interviewees.

Seven major categories emerged as a result of this analysis that inform the research question that examined teachers' perceptions of the current ESOL push-in program in terms of the development of students' mathematics skills. The emerging categories were teaching experience, instructional strategies, differentiated instruction, learning environment, collaboration, using data and teachers struggle to meet the needs of all students. Interestingly, van den Akker (2013) also identified several of these categories as essential to assist ESOL and classroom teachers in the push-in classroom.

These categories were refined into themes that informed the main research question and the four subquestions. What follows is a presentation of themes found in the data.

Themes. Following the process of reducing the initial codes into final codes, I identified themes found within the datasets. The themes were checked to determine commonalities or uniqueness among interviewees' responses. The findings from each

interviewee's responses were recorded by linking the interview questions with the corresponding theme. Nine themes that informed the research question of how do elementary ESOL teachers describe the push-in program for mathematics instruction emerged from the analysis. Five of the themes related the research questions and four additional themes relate to the subquestions.

The five themes related to the research question are as follows:

- Teachers build success through knowledge of second language acquisition.
- Teachers build success by using knowledge of students' cultures and backgrounds.
- Teachers build success by being highly qualified and participating in professional development.
- Teachers build success through collaboration.
- Teachers struggle to meet the needs of all students.

Additional themes emerged that informed the subquestions of how teachers delivered instruction to ESOL students in the push-in program. These four themes were:

- Teachers create a positive and supportive learning environment.
- Teachers use research-based instructional strategies.
- Teachers differentiate instruction for ESOL students.
- Teachers use a variety of data to promote student learning.

Evidence of Quality

Triangulation of data. Triangulation of data from the interviews, observations, and review of lesson plans were done to confirm themes and emerging patterns.

Triangulation of data, (Bekhet & Zauszniewski, 2012) involves using different methods in combination for investigating and interpreting a phenomenon. Triangulation in this study involved comparing the various responses the teachers provided during the interview, observation, and the review of lesson plans and identifying themes across the data sets.

Merriam (2009) pointed out that methodological triangulation is the most suitable method of verification when conducting qualitative research. By using methodological triangulation, I gained insights on teachers' perspectives on the effectiveness of instructional strategies, differentiated instruction, and rationale for choices of interventions used in the push-in model to improve ESOL students' performance on standardized tests. This helped me to identify themes and patterns during the analysis process.

Assurance of trustworthiness. Member checking was used to ensure trustworthiness of the data. Creswell (2012) asserted that member checking helps “to determine the accuracy the findings by taking the final report such as the description, themes, and interpretation back to participants to test for accuracy and approval (p. 259). Once the accuracy is affirmed, the research is said to have credibility and trustworthiness (Birt, Scott, Cavers, Campbell, & Walter, 2016).

Here, member checking was performed to allow the participants to add, delete, or clarify their comments and check the analysis to ensure that the researcher's interpretations of their responses is consistent with their intended meaning. In addition to providing this check, sharing the analysis and findings with the teachers enabled

participants to develop a better understanding of the research and the findings, which increased credibility of the research.

Addressing discrepant cases. Bogdan and Biklen (2007) pointed to several difficulties that may arise during data collection such as problems arising from lack of understanding of what is being said, unwillingness of participants to offer constructive criticism or verbalize potentially controversial standpoints because of fear of repercussion, and interpretative conflicts. In this study, I did not detect a lack of understanding or an unwillingness to voice true perceptions on the part of the participants.

Limitations

One limitation is that the study involved only ESOL teachers who instructed ESOL students in Grades 3, 4, and 5, primarily using the push-in delivery model in one school in one school district located in southeastern region of the United States. Because the study was conducted in one school with a limited number of participants, the findings are not necessarily generalized among other schools in the district.

Secondly, the study was limited to a short period of time in a single school year. Furthermore, participants were not randomly selected, but were purposely selected based on their willingness to participate in the research study.

Finally, potential researcher bias was a limitation. I have been employed at the research site for approximately 8 years. During that time, I have taught both fourth grade and ESOL classes in the school where the research was conducted. Consequently, I had to guard against reliance on an emic perspective of the school context, which could have

led to bias and the inability to question aspects of the phenomenon. I addressed those limitations by working closely with my doctoral committee and instituting several safeguards against threats to validity such as member checking, taking field notes and keeping a reflective journal to assist with checking assumptions, and using observation protocols and pre-established interview questions.

Data Analysis Results

This research was a qualitative case study designed to examine ESOL teachers' perceptions of the current push-in ESOL program in terms of the development of students' mathematics skills. This research also sought to investigate teachers' perceptions of the best practices and instructional strategies used to meet the needs of ESOL students as they learn mathematics. Interviews, observations, and lesson plans were used to inform the research question: How do elementary ESOL teachers describe the push-in program for mathematics instruction?

Participants will be referred to as Interviewee 1 through Interview 12. Due to having only one male participant, referral to gender will remain neutral to protect the participants' identities and maintain privacy. Each of the following subsections involves the interviewees' responses to interview questions, observation data, and lesson plan reviews.

Research Question: How do elementary ESOL teachers describe the push-in program for mathematics instruction?

Ten out of the 12 teachers described the push-in program as successful because they have the experience and background knowledge needed to teach ESOL students.

The remaining two said that they are not able to give individual attention to their students. Therefore, they described the push-in program as not being successful. All 12 participants said they struggle to fully meet the needs of all students.

Teachers build success through knowledge of levels of second language acquisition. Analysis of the interview data indicated that all 12 participants perceived that having knowledge of students' second language development impacted the ways they delivered mathematics instruction in the push-in ESOL program. All of the interviewees said it is important for teachers to be aware of the development stages of second language acquisition in order to practice effective teaching strategies to support ESOL students in the classrooms.

Specifically, the interviewees felt that knowledge of the intricacies of second language acquisition can improve the ability of ESOL teachers to support the academic need of language learners. According to Interviewee 1, "Learning a second language occurs in stages from listening, to speaking, then reading, followed by writing."

The twelve interviewees unanimously reported that the development of oral skills and listening should be priority to improve student's language development. Interviewee 3 stated, "Having a foundational knowledge of second language acquisition is very useful for both ESOL and mainstream classroom teachers and directly impact our ability to provide appropriate content-area instruction to students."

By being knowledgeable of students' language developmental stages, teachers indicated they are more prepared to plan differentiated instruction to encourage progression to the next stage. Interviewee 4 pointed out,

In order to meet each student's need, I have to differentiate instruction according to stages of language development. I used visuals and have the student point to pictures, then modeled short phrase. For example, "Count out ten blocks," and then counted the blocks while the student observed. I make gestures and point to objects as often as necessary.

In keeping with this stance Interviewee 3 said, "A deeper understanding of the language acquisition process will help teachers tailor instruction to meet the needs of diverse classrooms."

Teachers perceived targeted English language development as important when planning instruction for ESOL students. All 12 interviewees felt English language proficiency impacted teaching and learning and requires time.

In addition to time, seven teachers expressed their belief that second language development happens in stages. These seven participants talked about the stages in language development proceeding from listening, to speaking, to reading, to writing. Interviewee 5 explained,

I believe most of my students are either at the intermediate language proficiency stage where students have typically developed close to 6,000 words and are beginning to make complex statements, state opinions, ask for clarification, share their thoughts, and speak at greater length. For example, the students who are on or above grade level. Those students can state the steps they use to solve a word problem and make complex statements, state opinions, ask for clarification, share their thoughts, and speak at greater length.

Interviewees 5 and 6 believed that several of their students, especially those who were functioning below grade level, were operating at the stage three or the speech emergence stage and that this limits their opportunities to learn until they gain English language proficiency. Interviewee 6 said,

A lot of our students are shy and are afraid to take part in class discussions. However, when they are willing to participate, they tend to use short phrases and simple sentences to communicate and can ask simple questions. As their language developed, these students start to gain more confidence and are able to produce longer sentences, and raise their hands to ask questions. It is rewarding when students make progress from having a little knowledge of the new language to a level of competency where they are not afraid to express their thoughts.

Analyzing profiles of the second language learners was seen as important during the instruction of ESOL students. According to Interviewee 7, “It is essential for teachers to educate themselves on the characteristics or profiles of the different language learners in the classroom. By so doing, we are better able to differentiate instruction to meet the needs of all of students.

Similarly, Interviewee 3 expressed the opinion that, “ESOL teachers need to collect information to help understand the background knowledge and language development of ESOL students. The more students know about a topic, the easier it is for them to read a math word problem, understand it, and retain the information.”

Other suggestions made by the interviewees were allowing classmates who speak similar language fluently to interpret and support each other’s learning, have students

work with a partner to solve problems, and provide opportunities for ESOL students to speak their own language during math talk, plus identify essential academic vocabulary and phrases in English and model the use of these terms with one another. In fact, two interviewees revealed that they used partner work or pair-sharing “a lot of the time” to help newcomers’ language development.

Interviewee 11 noted, “I have some ESOL students who are more proficient in speaking English more than others so I pair those students with the ones who are having difficulties understanding the work.” Likewise, Interviewee 7 stated, “I think more ESOL teachers should learn to speak Spanish because it is so frustrating listening to students communicating in Spanish and not understanding what they are talking about.”

Interviewee 4 stated, “I try to prepare activities that allow students to use their background experiences to solve real world problems and concepts being taught.”

Other techniques that teachers used to support building background involved accessing on-line resources that provide activities targeted towards a variety of cultures that appeal to students’ interests. Interviewee 1 reported, “I like websites that focus on both English and Spanish versions.”

Interviewee 6 asserted that teachers need to ask themselves the question, “What do my ESOL students need to understand [about] the content that my English speakers may not need?” She said,

The first step in addressing students’ needs is to determine what core background knowledge ESOL students will need to understand the new information to be learned. Teachers are not to assume that because English is the first language for

most students that they already have the necessary background knowledge for the topic under discussion. No, we should not, but we need to be cognizant of our ESOL students' background experiences in order to support their learning.

Anticipation misconceptions are important to foster background experiences. In addition to assessing levels of language acquisition, the participants pointed to the need to assess student thinking related to misconceptions. Importantly Interviewee 9 pointed out, Students often possess misconceptions that negatively influence their learning, and teachers must take note of these. It is useful to anticipate the kinds of misconceptions students may hold so that they can be directly assessed and then retaught to change understanding. I always start with what students already know and not have to make guesses about areas of confusion or misconceptions on a topic.

In addition, Interviewee 10 stated,

Quick assessments of background knowledge alert learners to their misunderstandings and help teachers make the content a little more relevant to individual learners. Accordingly, the teacher would not need to build most of this informational base but, instead, activate it by showing students how to make real-world connections. This would model the importance of using students' existing knowledge to build new understanding.

Teachers build success through cultural awareness. Teachers have the unique opportunity to foster cultural awareness and empathy in the push-in program, which in turn may promote stronger student relationships and learning outcomes. All 12

interviewees felt that the school staff acknowledges the diverse student population and provides teaching resources and activities to promote cultural awareness through culturally responsive curriculum.

For example, Interviewee 3 said, “I like the multicultural classrooms at my school. I try to foster a cultural awareness in my classroom every day by demonstrating to my students that I genuinely care about their cultural, emotional, and intellectual needs.” Similarly, Interviewee 4 felt that promoting cultural awareness in the classroom is crucial for ESOL students learning. This participant said,

I express interest in my students by encouraging them to discuss cultural traditions to help the other students to be aware of one another’s heritage and culture. For example, my grade level team always incorporates differences in traditions, beliefs, and social behavior in our lesson plans. I use terms, names, places and pictures from different cultures in my word problems. This task helps to point out students’ similarities and differences and promote good conversation in a culturally responsive classroom.

The participants stressed the belief that cultural awareness is necessary to support ESOL students’ success and shape the learning profile of ESOL students. Interviewee 5 stated, “As teachers, we need to teach the content-area standards, while at the same time supporting students’ English-language development, and helping them adjust to a new environment and a new culture through the activities they do.”

All of the participants agreed that a teachers' experience, or lack of experience, with culturally diverse students contribute to levels of ESOL student success. Interviewee 1 suggested,

Speaking, writing, and listening, domains of language acquisition, should be encouraged daily during math talk. By increasing awareness of student's cultures in the classroom is an important step towards meeting the needs of my ESOL students' in the push-in delivery program.

Participants discussed a variety of strategies they have learned and use that incorporate culturally sensitive elements. For example Interviewee 6 shared,

I incorporate cultural themes during my math talks to encourage full participation in the discussions. My students like to talk about current events or about their families in other parts of the world. Sometimes the older students like to discuss topics like immigration or racial equality, but I try to limit such sensitive issues. However, it is important to create a safe space to discuss cultural issues for student to listen to different perspectives and opinions on a given topic.

Participants emphasized that a culturally responsive classroom promotes activities that involve differentiated instruction to meet the various needs of all students. Therefore, teachers must be aware of each student's cultural background, and provides a means for them to incorporate this information into the lesson. Interviewee 7 stated,

Teachers are to be sensitive to matters that are important to their students. At the start of the school year, I prepare questionnaires for students to list something things that are important or interesting to them. This provides them with a degree

of authority over what they get to learn, which can result with greater intrinsic motivation and connectedness to their learning. For “Fun Friday” I encourage students to bring in their own reading material and present it to the class. This provides them with an opportunity to both interact with and share stories, thoughts, and ideas that are important to their cultural and social perspective.

The 12 participants believed that regardless of students’ diversity or culture, it was important to maintain high expectations for all students. Interviewee 3 said, “I expect my students to improve their performance. So, I set goals for them to help them be successful.” The interviewees unanimously agreed that the school promotes cultural awareness in the curriculum and classrooms to help ESOL students develop a sense of identity and to promote success for all students.

Teachers build success by being highly qualified and participating in professional development. All 12 interviewees indicated that they believed they were impacting ESOL students learning in the push-in program because they were highly qualified and experienced to provide relevant instructions to address the mathematics needs of ESOL students. They also discussed the role of professional development in providing them with the knowledge needed to work with ESOL students.

The participants had between three-to-thirty years of teaching experience, were certified with the ESOL endorsement, and six had masters’ degrees, one held a doctorate, and eight held or were pursuing the math and science endorsement.

All of the teachers interviewed had been teaching at the school for three-to-15 years and have taught ESOL students for most of that time. They stated that they

consistently attended ESOL workshops featuring best practices to instruct ESOL learners.

Table 7 provides a summary of each teacher's background experience.

Table 7

Profiles of Teachers of the Study

Interviewees	Years teaching	Degree	Area
ESOL			
1	5	Masters	Early Childhood
2	4	Bachelor of Science	Special Education
3	6	Education Specialist	Curriculum/Instruction
4	5	Masters	Early Childhood
5	4	Bachelor of Arts	Early Childhood
6	7	Doctorate	Special Education
7	12	Education Specialist	Curriculum/Instruction
8	10	Masters	Early Childhood
9	7	Education Specialist	Early Childhood
10	6	Masters	Early Childhood
11	8	Masters	Early Childhood
12	5	Masters	Early Childhood

ESOL endorsement. According to participants, the school district systematically offered and paid for teachers to obtain their ESOL endorsement and they believed this endorsement was helpful. Interviewee 1 stated, “Having the ESOL endorsement has been

very helpful with teaching techniques to improve ESOL students' language proficiency and development of mathematics skills.”

Other interviewees indicated that the ESOL endorsement program helped them to become more aware of the things that impact ESOL students' achievement. For example, Interviewees 2 and 3 both agreed that, “The ESOL classes help to develop a better knowledge about teaching and educating a culturally diverse student population like ours.” Interviewee 8 added,

Getting an ESOL endorsement provides me with quality ideas and strategies to help me differentiate instruction to meet the needs of my diverse students in my class. Whenever I am struggling with finding new ideas to engage my students, I just go back to the notes and activities that I use in my class.

Additionally, three interviewees mentioned the knowledge they gained about the different components of the ACCESS for ELLs 2.0 (WIDA, 2018) assessment and the importance of providing accommodations for ESOL students during testing like the Georgia Milestones Assessment Tests. Interviewees 9, 10, and 11 agreed that, “The results from the ACCESS test help to determine the language proficiency levels of our students. Also, we used it to develop skills and resources and strategies when teaching listening, speaking, reading, and writing.”

All participants felt that being well qualified and having years of experiences helped to provide research-based instructional strategies to support ESOL students' mathematics skills. For example, Interviewee 7 said, “Experience plays an important role

in success. Having years of experience and knowledge of ESOL students' needs creates success for my students and makes me a better teacher.”

Professional development. The participants perceived that professional development enhanced the quality of the push-in program and that the administration is supportive of professional development. All 12 interviewees said that teachers need to constantly improve their teaching skills in light of the ever-changing curriculum, new technology advancement, and new methods of teaching. The newest member of the staff, Interviewee 5, confirmed the importance of professional development especially to employees entering the teaching profession by saying,

New teachers are faced with an overwhelming number of challenges, such as diversified classrooms, curriculum, state standards, and preparing for standardized tests. Therefore, having the opportunity to get extra support in professional development can be rewarding for me and my students. I especially like the ESOL workshops where other ESOL teachers in the school district meet at my school to discuss new instructional strategies to teach ESOL students.

According to Interviewee 1, “Administration understands the necessity of keeping teachers up to date with research practices to help our ESOL students close the achievement gap.” Another interviewee mentioned that the school district consistently creates opportunities for ESOL related professional development throughout the school district. Similarly, Interviewee 9 agreed that, “Workshops are available throughout the school year for teachers to learn new instructional strategies.”

Professional development opportunities included Greatest Area of Need (GAN) meetings, in-house professional development, book study, access to the *Math Talk* and *Math in the Fast Lane* programs, on-line staff development, and book study. Greatest Areas of Need (GAN) meetings are held weekly with grade level team, ESOL teachers, an academic coach, and administrators to discuss strategies to support students learning and are perceived to be important to the interviewees.

According to Interviewee 4, “During GAN meetings we have staff development on enrichment and remediation areas. During these meetings, we are constantly brainstorming on ideas of how we can better serve these students.”

Another interviewee stated.” The GAN meetings offer great assistance in teaching ideas.” She went on to elaborate,

GAN meetings are valuable opportunities for our professional learning community. These meetings are among the few times the entire staff in a grade is together. We find solution to problems and make decisions as a team to help our students who are not meeting grade level requirements. During our grade level meetings, we build relationships and collaborate with other staff members.

Fortunately, during GAN meetings I have the opportunity to work with a group of phenomenal teachers who are always looking for solution to improve their practice and build on their success.

In addition to GAN meetings, nine of the teachers responded that they had received other staff development. Interviewees commented that several speakers shared strategies for improving ESOL learning during faculty meetings. In addition, they

mentioned that they have participated in several book studies on differentiated instruction. They further reported that they had participated in math-related professional development such as *Math Talk* and *Math in the Fast Lane*.

The participants felt the math professional development helped to better prepare them to teach the curriculum in new and engaging ways especially when preparing students for the Georgia Milestone Assessments. Teachers felt that *Math in the Fast Lane* workshops during the summer and at pre-planning were extremely beneficial. For example, Interviewee 2 stated “We had training in *Math in the Fast Lane* where we were taught various strategies to support ESOL students.”

Teachers build success through collaboration. Teachers perceived that collaboration between ESOL and classroom teacher was important for student success in the push-in program. All participants mentioned that they collaborated regularly with grade level teachers, mainstream teaches, and administration to discuss ways to improve students’ mathematics performance. Interviewee 2 stated, “I collaborate and plan mathematics lesson weekly with the teachers in my grade level team. They offer great assistance with strategies to differentiate for my ESOL students.”

Interviewee 6 said, “Meeting to discuss ESOL students’ achievement is very beneficial for all of us. I especially like when we share ideas that are working in the classroom. I also collaborate with the other ESOL teachers to plan common assessments for our students.”

Collaboration between the academic coach and administration was deemed as beneficial to the success of ESOL students. Interviewees 7, 8, and 9 shared that they liked

the support given by administration to plan strategies to improve ESOL students' scores.

Interviewee 9 said,

We brainstorm ideas and look at students' progress with administration, during leadership meetings and at our weekly GAN meetings. We discuss, analyze, plan for differentiated instruction, and develop common assessments at these meetings. Yes, the administrative staff is very supportive with our ESOL program. We get opportunities to attend workshops at the school and at the district level to collaborate with other ESOL teachers to better our teaching practices.

Similarly Interviewee 9 said,

Having regular conversation with other members of staff to discuss ESOL students' achievement helps me to become a better teacher. Through collaboration, I learn different ways to teach my students who are not mastering mathematics concepts." To me, solving problems together is the best part of collaboration. The success of your ESOL students depends on the strength of collaboration. You're never in it alone!

Interviewees said collaboration with classroom teachers, other ESOL teachers, and administration is essential for student success. For example, Interviewee 6 stated, "We collaborate and plan math lessons consistently with classroom teachers so that we are on the same page when it comes to teaching the standards. They offer suggestions for group instruction for ESOL students."

Interviewee 6 remarked,

I always look forward to attend GAN meetings on Wednesdays because of the collaborative planning which helps me differentiate my instruction. I like the atmosphere in the room where everyone discusses ideas contribute to better our ESOL population. We constantly use data especially from the Milestones Assessment tests to drive our decisions when we collaborate.

Interviewee 8 stated, “I collaborate regularly with the other ESOL teachers to share strategies for our math groups.” Interviewee 5 asserted, “one advantage of the push-in model is the collaboration and planning with the classroom teacher to support ESOL students’ education”. She went on to say, “I like my schedule this year because ESOL and classroom teachers at each grade level get the same planning time where we co-plan and collaborate instructional resources for our students”.

Interviewee 9 emphasized that, “The push-in model fosters a community of learners with one goal, that is, greater achievement for all students because students can support each other learning”. Similarly, Interviewee 11 stated, “Push-in offers positive academic and social benefits for ESOL students because they can interact with peers and build self-confident”.

Finally, collaboration between ESOL teachers and administration was deemed beneficial by majority of the interviewees. Interviewees 1, 2, and 7 agreed that the school administration is very supportive by providing collaborative planning sessions not only at the weekly GAN meetings, but also for a half day each semester. Interviewee 1 added,

During the planning sessions we are provided with updated information on students’ progress and use the information to inform instruction. Collaborative

planning is one of the best practices I use when I am planning for differentiated instruction. We gather together and share ideas that work well in our classrooms and say this is what I try to do, try it and see if it works with your students. We not only plan with the team, but we also do collaborative planning with the other ESOL teachers.

Interviewees shared ways that ESOL teachers promote and maximize instruction for the achievement of ESOL students in the push-in program. They said that collaborative planning with classroom teachers and ESOL teachers allowed them to plan instruction strategies, analyze data, and develop common assessments to measure students' progress and develop learning goals for students.

Although there are some challenges to collaboration, the teachers agreed that many more positives than negative outcomes have resulted from collaboration. All of the participants emphasized that through collaboration, teachers are able to work together to plan new ways to support ESOL students' mathematics achievement.

Classroom and ESOL teachers collaborated to deliver instruction through planning and sharing of lesson plans and instructional resources. I observed ESOL and classroom teachers working together with various small groups of students to scaffold instruction, pre-teach vocabulary, and reinforce concepts taught. In most of the classrooms, ESOL teachers taught academic language and vocabulary embedded in the mathematics standards.

For example, in third and fourth grade lessons that I observed, ESOL teachers provided activity cards with word problems and allowed pair of students to pick a card

then solve the problem. Another activity involved sorting vocabulary. In this exercise, teacher placed vocabulary words in baggies and directed pairs of students to sort according to directions also provided in the baggies. For instance, a player could be asked to sort prime and composite numbers, equivalent and improper fractions, then roll a cube for other vocabulary practice. Other strategies included bowties or placemats for practicing new concepts. Again, bowties or placemats are *Math in the Fastlane* program activities that involved supported partnering or pair-sharing while the teacher works with others at the table. Participants reported that these strategies were used as extension activities for both ESOL and classroom teachers to utilize in the classroom.

Teachers struggle to meet the needs of all students. Teachers described challenges to support ESOL students' mathematics skills in the push-in program. In the comments shared by teachers, several common themes emerged. Three of the themes are related to instruction and involve the ability to offer one-on-one instruction, differentiation of instruction, and engage shy or hesitant students. Two of the themes are related to the challenges of co-teaching and collaboration and include feeling welcome in the classroom and having time to collaborate with the classroom teachers. A final theme is related to the teachers' perceptions of how the statewide testing requirements impact their teaching.

Ability to offer one-on-one instruction. One common concern described by teachers was that during the push-in program, they felt they were frequently unable to provide one-on-one instruction to students within a busy classroom. Three participants expressed frustration in their inability to address this challenge. According to Interviewee

4, “I struggle when I am unable to offer one-on-one instruction because with the one-on-one instruction, I can listen to the student and offer immediate feedback.” Similarly, Interviewee 6 stated,

It’s a struggle to provide one-on-one instruction with too many students in a classroom. There are too many distractions so students who need the most help are unable to get that support. It’s hard for those students to communicate with me on an individual basis. As a result, they are falling behind in classes and failing to master the standards.

Interviewee 10 stated, “I sometimes feel like I am not doing enough for the students who need individual attention.” Likewise, Interviewee 11 commented,

From my years of experience, I know that one-on-one learning relationships empower students to take control over their learning. It helps to build their confidence when they are alone with me for a while. They are able to communicate what they need, and receive the personalized attention that will enable them to succeed. Without the distraction of a room full of peers, students are able to focus all of their attention on their instructor and the material being learned.

Differentiating instruction. A shared struggle that needs to be addressed in order to meet the mathematics needs of ESOL students in the push-in program was differentiated instruction. All of the participants felt that differentiated instruction in the push-in classroom is a struggle. Interviewee 1 stated, “There is so much planning to do when differentiating instruction for just one period. It is hard to implement it sometimes.”

Likewise, Interviewee 12 shared that, “It’s a struggle to effectively differentiate the instructional content to meet individual students’ academic needs when ESOL students still have to learn the same standards whether they are below or above grade level.”

Seven participants said that providing resources for the different ability levels of students was a challenge. Interviewee 1 stated, “It’s hard to find remediation resources to support all of my students.”

Similarly, Interviewee 2 said, “I struggle to keep some of my below grade level focus when teaching how to solve word problems because they are reading far below their grade level.” Likewise, Interviewee 3 said, “It’s is a struggle to find the time to meet the needs of all my students because of their language proficiency levels.”

Interviewee 8 stated,

Differentiated instruction can be challenging because you have to take several factors into account such as students learning style, their language development as well as where they are academically and with language ability and then you have to find different ways to teach the concepts for them to understand them.

Along the same vein of thinking, Interviewee 6 specified,

My main struggle is planning tiered lessons for all my groups. There is a variety of concepts to be taught in one 45-minute period. So, I sometimes struggle to find the most appropriate activities for the multiple levels of students in my class. It is difficult because I have so many different levels of students in one group. It’s hard to keep all of them engaged when you are trying hard to move along with the

standard. They still have to learn the same standards like the other students in their grade level.

In contrast, five participants felt that providing recourses for students was not a challenge. They stated that the reason for this is that they were able to get on-line resources from websites such as the *Super Teacher* and *Teacher Pay Teacher* sites.

Engaging students who are shy or hesitant. When asked to tell about a situation they had with a student in the ESOL push-in program that they felt was not successful, all participants expressed several reasons for lack of success such as distractions, loudness of the classroom teacher, too much activities going on at the same time. Interviewee 7 argued, “It is detrimental to success when they are not paying attention and are distracted in class especially those shy and quiet students”. According to Interviewee 7,

The biggest challenge is to keep those shy students focus[ed] when other activities are taking place in the classroom. You don’t know if they are grasping the concepts because they are afraid to participate in the discussion. We may be setting these students up for more failure when they cannot focus in order to master the standards.

Interviewee 9 continued shared a similar concern,

My struggle is communicating with the quiet and shy students who are afraid to participate when too much things are happening around them. The problem is how to motivate or engage those students when they have limited English language proficiency and they are looking all around at the other students in the classroom.

Likewise, Interviewee 10 shared an experience by stating:

In one of the push-in classrooms, there was a student who was shy and afraid to participate in discussions. He knew how to do mental mathematics but could not explain how he arrived at the solution. When the Milestones Assessment results came, he failed because of his inability to elaborate, which is now a requirement of the Milestones Assessments. The fewer students express their understanding, the harder it is to scaffold instruction for them.

There was consistency between what the teachers said in the interviews and what was observed in the classrooms. For example, three participants felt that classroom teachers spoke rather loudly which was a distraction for teachers in the push-in program. Teachers planned their lessons for ESOL students sometimes in collaboration with the classroom teachers as well as individually

Feeling welcome within the classroom. Four ELOB teachers commented that the ability to coordinate effectively in another teacher's classroom can be frustrating and challenging because of the sense of feeling unequal to the classroom teacher. In the words of one teacher, "Students think I'm not a real teacher but look at me like a substitute or paraprofessional."

Interviewee 2 related that other staff members in the school also hold this misconception. The participant shared,

Some teachers in my school think that ESOL teachers are less qualified than them. One classroom that I work with, the push-in the teacher treated me like an

aide. Several students always come up to me and ask me why I am not a teacher.

They see me as an ‘assistant’ or even as one of the college teachers in training.

It was apparent that this experience was not unique to just one participant.

Interviewee 11 expressed similar sentiments stating,

The challenge that I have is in regards to the feeling of inequality that often forms when you enter in some classrooms. ESOL teachers often feel unwelcome in some rooms. You sometimes feel like you are not equal partners even when you are offering suggestions to help ESOL students. I am an equal instructor like the classroom teachers but this topic is always the ‘elephant’ in the room and deserves attention.

Interviewee 4 echoed these ideas and took them one step further stating, “There’s resistance from some classroom teachers to having ESOL teachers in their classrooms. This makes you feel unwelcomed and students can sense the tense atmosphere and become withdrawn.”

Time to collaborate with classroom teachers. There was a sense of frustration from eight participants regarding the lack of collaborative time with classroom teachers. These participants expressed that they experienced a sense of stress that came with searching for unconventional efforts they must make to work with some of the classroom teachers.

On the other hand, four participants expressed that they regularly collaborate with the classroom teachers. Interviewee 4 stated,

Although the school provides us with built-in common collaborative time with grade level teachers, collaboration time between ESOL and individual classroom teachers is still a struggle for me. You see, all collaborative planning is done during our pre-periods, which leave us with little or no planning time by yourself. ESOL teachers are expected to co-plan, as well as to provide resources for each grade level classes.

Similarly, Interviewee 12 said,

I like to collaborate with my team, but sometimes it is time consuming when you have other things to do. I know it is for our students, but at times I feel frustrated having to give up my planning time when I could be grading work or planning and making preparation for class the next day.

In addition, Interviewee 5 related a sense that, “Teaching in the push-in program can be a challenge with so much to teach in such a short period of time. It’s time-consuming to work and complete a project in one setting where you have to travel with your resources on carts where ever you go.”

Testing. Additionally, five participants believed that they were spending too much time testing when they could be reinforcing the concepts. For example, Interviewee 8 stated, “I am frustrated with the amount of testing that my students have to take each month even if they don’t grasp the concepts.”

Seven participants voiced their opinions for the need of an extension of time for new ESOL students from one year to approximately three years before they are allowed to take state wide standardized tests. As a result of the one-year requirement, Interviewee

7 said, “Several students have failed mathematics on the Georgia Milestones Assessments”. She went on to state, “There is the need for schools to provide a variety of assessments to bridge the achievement gap prior to the sitting of the Milestones Assessment Tests.

In summary, interviews, observations, and lesson plan data were analyzed to answer the first research question, *how do ESOL teachers describe the push-in program for mathematics instruction*. Several themes emerged to answer this research question. These themes were: knowledge of second language acquisition, knowledge of students’ cultures and backgrounds, the role of professional development and collaboration with other teachers. However, teachers felt that at times they struggled to meet the needs of all students.

Data That Inform the Subquestions

Recall that the research subquestions were as follows:

1. What are ESOL teachers’ perceptions of how they deliver the push-in ESOL program in respect to the development of mathematics skills?
2. How do teachers describe the instructional strategies they use to meet the instructional needs of struggling ESOL students in mathematics?
3. Based on observations, how do ESOL teachers deliver mathematics instruction using the push-in model?
4. Based on lesson plan review, how do ESOL plan mathematics instruction using the push-in model?

Note that Subquestions 1, 2, 3, and 4 are interrelated in that all the questions examined the teachers' perceptions of their instructional delivery and how their perceptions align with their lesson planning and what was observed. Thus, rather than reporting the findings according to each subquestion, the findings are reported thematically and data from each data source is integrated into each theme.

Teachers create a positive and supportive learning environment. The participants perceived that they provide the positive and supportive learning environment that is important to support ESOL students in the push-in program. They indicated that they believe one component of building supportive learning environments is through peer support. According to the interviewees, peer support involves collaboration between teachers as well as support between students. Peer support also involves modeling behaviors and strategies for both teachers and students.

Creating a classroom community. Teachers perceived the push-in program to be successful because the teachers create a positive classroom of community. Interviewees felt that teachers need to plan, prepare, and implement procedures and expectations, along with students' input, to consistently make creating a classroom community a priority. One interviewee specified that cultivation of good relationships is necessary to have a successful learning environment. Interviewee stated,

One of the first things I do at the start of the school year is to establish classroom rules. The students discuss and come to agreement on classroom rules and expectations. Also, we discuss how and why these rules help students stay safe, learn respect, and how the rules help them learn and care about others.

Interviewees mentioned tools and techniques they used for creating a classroom community that is friendly, engaging, respectful and full of learning. For example, Interviewee 1 stated,

The most important thing I feel makes my classroom successful is building good relationships with the students. At the beginning of the year, the first two weeks is to get to know the families and get to know the students and what they like. I have them share a lot about themselves, and we become a family in the classroom and once I build that relationship they will do anything I ask. They will work their tails off if I ask them to. If they don't understand something, they trust me enough to come up and ask me. They are not afraid to come up and tell me they are having difficulties, and they are not afraid of feeling silly when asking a question or feeling like they are asking a dumb question.

Interviewee 3 supported the sentiments expressed by Interviewee 1 by saying, From the very first day of school, I create opportunities for students to share their views and experiences with their classmates. It is important to get to know each other's likes and dislikes. When we know our students, and our students know each other, we feel safe, supported and respected. The stronger our community, the more productive the class will become and we will have fewer conflicts to deal with. When problems do arise, this strong foundation carries us through and helps find real solutions.

Interviewee 4 expressed similar ideas,

At the beginning of my lesson, I like to dedicate the first minutes of my day to morning meeting. This helps to get students in the right frame of mind. By consistently having engaging conversations where all students are allowed to participate, help to create a sense of community, which is important for the social and emotional development that impact learning and building relationships.

Interviewee 11 also stated the importance of welcoming students to class daily. “I welcome my students with a friendly smile as they enter the classroom every morning.” Similarly, Interviewee 12 stated, “I greet my students at the door with a positive quote like, “today is a good day to do something great.” This participant continued by saying, “These small gestures let each student feel welcomed and help to begin the day on a positive note.”

Seven of the interviewees felt that the receptions teachers as well as students received from the classroom teachers are important to build a classroom of community. For instance, Interviewee 6 stated,

I like to go into the classrooms where the mainstream teachers feel like we are equal partners with the same mission of supporting our ESOL students’ learning. For that reason, I love the push-in model because it allows ESOL students to receive the same instruction and support as the other students in the mainstream classroom. Students get to build relationships with other students and learn the standards just like the rest of students in the classroom.

Likewise, two other participants shared similar ideas. Interviewee 2 related, “Some of the mainstream teachers see my coming in the room as positive and welcome

me all the time. This promotes a climate of trust and teamwork with the classroom.”

Interviewee 9 said, “The reception from the classroom teacher can impact the entire tone of the time spent in the room and students can pick up on it.” Interviewee 11 expressed similar views by stating, “When ESOL teacher is viewed as equal and valuable partner that is there to support students’ learning, it creates success for all.”

Several interviewees felt that it was important to be willing to take risks in order to create classroom success. Interviewee 1 stated,

The things that make my classroom successful vary. It’s a trial and error thing. Just like anything you do. It’s different for every kid, for every personality, subject, content area and student interest. I am willing to take risks and make mistakes and reflect to see what I need to do to be a better teacher. To be successful I have to be opened for changes and take risks in the classroom even if they don’t work to increase student achievement. Then I need to step back and ask what techniques I can use to change my approach in order to meet my students’ needs.

Interviewee 6 remarked, “Creating a friendly family oriented learning environment is vital for the success of all. For example, if one student does not understand a concept another one will volunteer to help them and explain it to them in a way that I may not be able to explain it to them. It just creates a little community in here so it becomes where I am not the only teacher in here they are too.” Similarly, Interviewee 8 said,

It is beneficial when a student in the class is willing to assist another student who does not grasp the concept. It is especially helpful to ESOL students because sometimes they don't have that confidence to speak up. So, listening to classmates helps those students to feel safe to make mistakes. It is necessary to create an environment where it is safe to make mistakes and by teaching them that we need to help each other and we need to understand that we all are going to make mistakes then they feel safer to raise their hands and volunteer.

Likewise, Interviewee 9 said,

When learning about the students, I can see their little personalities coming through and I can begin to learn what products and topics they would love to do in class and the topics that we can incorporate into our math talks. So just by understanding my kids from day one helps me drive how I plan for differentiated instruction in my classroom. I think it helps me whenever I focus on that in the beginning. I have been doing that the last couple of years, and I have seen the rewards.

Peer support. All participants agreed that in order to have success in the classroom, teachers must not be afraid to learn from each other. For example, Interviewee 5 said,

I don't mind going to my colleagues to ask for assistance to help my students. We are all in the same business to provide for the needs of students especially those who are not on grade level. I draw upon whatsoever resources can get and

wherever I can get them. It's not about me. It's about helping our students to succeed.

Additionally, peer learning occurs between students. As Interviewee 6 remarked, "Learning from each other is not just for teachers. It is for students as well. Students can provide valuable assistance to each other. Learning from each other occurs regularly in my class."

Interviewee 7 further explained this perception,

Over the years of teaching, I observe that when students are experiencing problem in understanding a task, the first thing they do is to ask one of their peers, not the teacher. They realize that their classmates, especially those on grade or above grade level can help them to grasp the concept. Sometimes they understand the students quicker than when they go to the teacher. Maybe they feel more confident to go to their peers. Students can provide each other with useful information to help them see their mistakes.

Similarly, Interviewee 8 asserted, "Sometimes we fool ourselves in believing that what we have to offer to students is necessarily what they need to move forward. Yes, our role is important but sometimes we must allow students to develop skills of communicating ideas to their peers."

Modeling. The 12 interviewees said that learning new ways to teaching ESOL students is essential to support their instructional learning. Peer and teacher modeling were thought to be important by several interviewees. Interviewee 2 believed modeling is not just for the students.

Watching other teachers present during faculty meetings and peer observations provides modeling for us. If you don't see differentiation in action, you don't really know what it looks like. Observing other teachers modeling helps to better my ability to differentiate activities to meet the needs of my students.

Likewise, Interviewee 4 said,

Teacher modeling for the student helps guide them through steps to take when solving a problem, especially when introducing a new topic. Once they have a deeper understanding of the concept, I try to make them more independent. I am responsible to teach them how to do the activity and modeling how to do the standard.

Interviewee 12 also mentioned that modeling provides assistance for the students as needed. She continued, "Pairing the students with students who are stronger than they are provides peer modeling support." The interviewees all agreed that peer support is helpful because it increases students learning with minimal input from teachers.

Having high expectations. Six interviewees believed that a safe and orderly classroom environment where rules, high expectations, and positive attitude are important to support ESOL students in the push-in program. Interviewees felt that one way to achieve this is through Classroom Contract. Interviewee 6 said,

I use classroom contracts to build positive behavior and help students recognize things that are important in a classroom and to take responsibility for their actions. I try to tie my classroom contract to the schools' expectations "4 Rs, Ready,

Respectful, Responsible, Role Model”. In this way, students already know what it is to be a responsible role model in and out of the classroom.

Interviewees 3, 4, and 5 stated that they like to have classroom contracts to teach acceptable norms and behavior. Specifically, Interviewee 5 shared,

We often establish a classroom contract at the beginning of the school year. It is like a classroom rules where participation and ideas are welcome from every student. We have conversations about social and cultural topics. Also, we talk about responsibilities, respect, community, teamwork, and other current topics. This is a great opportunity to ask questions and discuss answers in small groups. This encourages critical and creative thinking with varied point of views.

Interviewee 9 believed that it is important to teach social responsibility to students at this age and time. She continued, “As teachers, we strive to teach students to understand and respect themselves, each other, and the world around them. It is promoting thoughtful interactions with others and thinking beyond oneself. It is about making the right decisions and solving conflicts.” The teachers believed that it was imperative that both students and teachers should work together to design classroom rules and expectation to foster students’ achievement in the push-in program.

Being flexible. All 12 participants pointed out that they serve a diverse population with varied needs so it was their responsibility to use flexible strategies to challenge and support students learning. Interviewee 1 said, “In order to engage students, teachers need to tailor their lessons to students’ levels. Teachers need to be creative, engaging, and inspirational while getting the point across.”

Interviewee 2 felt that teachers must possess a positive attitude along with a keen sense of humor to engage students in authentic learning. According to the interviewee, “Having a sense of humor helps me to relieve tension in the classroom especially when students are struggling to understand a concept.”

The most effective teachers develop the ability to be flexible by making changes to lessons on the spur of the moment due to unforeseen circumstances or problem. Interviewee 7 gave an account of the failure of technology during an observation. She stated,

During one of my observations I included the use of technology for one of my groups. As soon as I gave the instructions, the computers started to shut down and would not work properly. I have to think fast and change the group assignment in order to have a smooth flow of the lesson. Yes, teachers have to be flexible and look for variety of approaches to inform learning. Sometimes we just have to laugh at ourselves when things don’t turn out as planned. You have to plan alternative ways to teach and engage our students.

Interviewee 4 agreed and said, “I find myself having to modify my lesson plan and quickly come up with a different technique to teach that concept. As soon as students start to understand that concept, I move on.

In addition, four interviewees felt that having patience goes hand-in-hand with being flexible in the push-in classroom. One of the interviewees said, “Teaching for many years has prepared me to be patient and flexible. You have to be prepared for interruptions like a “code red” or fire drill practice.” Interviewee 9 declared,

Regardless of what is in the curriculum to be covered, I cannot move at fast pace if some students are not getting the concepts. If the students do not understand, I need to be able to provide time to re-teach and remediate. I look where they are and determine what is next and plan for that. The standard may need to be broken down a little more for them to understand it. We may need to go back to a lower grade level standard to provide background knowledge they have not learned. I cannot look at another class and say they are already two or three standards ahead of us on the pacing guide. This is risky because of teacher accountability, but I have to move at their pace so that they will be able to meet standards on the Milestones Assessment Tests. After all that is what we are preparing them for. Similarly, Interviewee 6 remarked,

You need to be constantly flexible with grouping but don't make it harder than what it is. You constantly need to be aware of students' performance whether they are meeting the standard or not meeting the standard. They are then put into another group and remediated or if they understand it accelerated with a project, but don't give more work.

Interviewee 1 concluded,

Teaching, by nature, is in a constant state of change. So, interruptions and disruptions are unavoidable. Therefore, a flexible attitude is important not only for your stress level but also for your students who expect you to be in charge and take control of any situation.

Classroom observations and lesson plan analysis were also analyzed to support the theme of creating a positive and supportive learning environment. During my observations, I saw teachers creating supportive learning environments that challenged and supported all students by incorporating various instructional strategies and resources to enhance students' academic needs.

Observing the arrangement at the tables, I noted how teachers group students based on their strengths and weaknesses and others by interests and readiness levels. Furthermore, teachers demonstrated the knowledge and understanding of students' academic needs by providing appropriate instructional strategies such as scaffolding, differentiation, critical thinking, problem solving, creativity, collaboration, and communication in the presentation of their lessons.

I also observed how teachers directed and guided activities in a positive learning environment. Firstly, teachers created positive relationships by welcoming students by name then prepared icebreakers like *Roll the Dice*, *Find Someone Who...* and *Figure me out!* These icebreakers were aimed at getting students to listen and focus on the lesson ahead.

Teachers posed problems as a method of reviewing previous concepts learned. As the group worked to solve problems, teachers circulated around the table checking answers and offering immediate feedback, clarification, or repetition when needed. Teachers smiled and extended praises such as “good job, well done, that’s the way to go, and high five” throughout the lessons.

Opportunities for interaction were also observed through role playing, talk-and-share, peer sharing, and small group activities. Participants encouraged students to ask questions and were willing to assist them in solving the problems through the use of visual representations and manipulatives.

Additionally, during my observations teachers presented situations that created opportunities to explicitly reinforce and build positive interactions among themselves and students. In all of the classrooms, teachers consistently promoted a sense of pride in students' work or accomplishments by giving them praise and displaying their work on bulletin boards. Teachers distributed stickers with praise words such as "good job, awesome, that's the way to go, and well done" to show appreciation for students' effort.

Fourth and fifth grade teachers created an environment where all students were expected to express their ideas by providing baskets with cards where students could make suggestions about the presentation of the lesson. For example, "Name one thing that you like about the lesson and one way in which the lesson could be improved." There were several techniques that I observed teachers used to achieve building relationship in the classrooms such as communicating positive expectations, calling equally on all students, giving hints and clues to help students to answer questions.

Supporting students as problem solvers. Eight out of the 12 participants perceived that supporting students as problem solvers help to create positive learning environment. Interviewee 12 believed that one of the primary objectives of mathematics instruction should be to have students become competent problem solvers. Problem

solving is the ability of students to identify and solve problems by applying appropriate skills and strategies.

According to Interviewee 1, “Problem solving helps students with diverse learning styles to develop better mathematical understanding.” Interviewee 10 stated that problem solving techniques such as reasoning, making real-world connections, and applying knowledge to problem situations are important to develop students’ critical thinking skills.

Similarly, Interviewee 3 stated, “I use real-world problem-solving experiences to motivate, sparking their interest in a specific mathematical topic or algorithm. According to Interviewee 4:

I use prompts to help students understanding what the problems are asking for. Questions such as “What is the problem about? Rewrite the problem in your own words. What do you know? What is the problem asking you to find? What are the important facts and numbers in the problem? Is some of the information unnecessary in solving the problem? What math terms will help you understand and solve the problem? These prompts provide students with information that are necessary to solve the problems.

Problem solving was used in the classrooms I observed to reinforce skills and concepts that have been previously taught. Interviewee 3 commented,

I use problem solving strategies to teach my students a set of general rules for solving problems such as drawing a picture, working backwards, guess and check

or making a list. I give them ample practice in using these procedures to solve routine problems and I have seen good results.

Similarly, Interviewee 7 said,

Learning mathematics by using different techniques like draw a picture, make a table, look for a pattern, or breaking down the problems in chunks step-by-step help to challenge and engage my ESOL students. It is especially good to accommodate different learning styles. I like how students use real word situations while learning new concepts. Problem solving helps students to develop understanding that is flexible, and reinforces what I teach them in creative ways.

Building on what Interviewee 11 said, Interviewee 4 commented,

When students are faced mathematical problems that interest and challenge them, they are more likely to experience the kinds of satisfaction that keep them engaged as well as promote their oral communication skills. They practice the strategy at home and then review their work and the strategy during a class discussion.

Problem solving familiarizes students with the strategies used to solve word problems in mathematics on standardized tests. According to Interviewee 6,

Teaching students to become problem solvers helps them to approach assessments in a positive way. Furthermore, the state Milestones Assessments Tests has adopted content and performance standards that include an emphasis on problem solving. Therefore, it is essential for me to continuously teach problem solving techniques especially to my below-level students.

Although teaching problem solving strategies help broaden students' ability to be more creative, four interviewees reported not feeling confident in teaching problem-solving strategies on a regular basis. For example, Interviewee 3 stated,

Many teachers feel unprepared to take a problem-solving approach to teaching mathematics. First, teachers have to have a change of thinking and come face-to-face with deeply held personal beliefs about teaching new strategies to solve problems. We have to learn new ways of teaching students to solve a problem. Therefore, I am ready to take risk and initiatives to use best practices to support ESOL students as problem solvers.

Teachers use research-based instructional strategies. The way that the research questions were framed was intended to improve understanding of teachers' perceptions of the research-based instructional strategies used in the push-in program to support ESOL elementary students' mathematics skills. A foundational premise of this study was that when teachers are aware of the development stages of Krashen's (1998) theory of second language acquisition and utilize a variety of teaching strategies in the language classrooms, they can promote ESOL students' mathematics learning.

Specifically, the findings herein were compared with the instructional strategies outlined in the review of literature based on the conceptual framework put forward by social learning theory of Bandura (1975) and language acquisition theories (Collier, 1995; Cummins, 1979; Krashen, 1981). These best practices consisted of knowledge of language development, building background knowledge, use of vocabulary, scaffolding, and the use of manipulatives.

Additionally, the following findings inform SQ1: What are ESOL teachers' perceptions of how they deliver the push-in ESOL program in respect to the development of mathematics skills? and SQ2: How do teachers describe the instructional strategies they use to meet the instructional needs of struggling ESOL students in mathematics?

Using vocabulary to inform learning. Vocabulary is closely linked with students' background experience and influences every aspect of students' mathematics learning and conversational proficiencies. Seven interviewees indicated that they use a variety of strategies to build background knowledge for their lessons. The strategies teachers used most often involved calling attention to the vocabulary words students need to know and linking learning concepts to what students are familiar with prior to learning new content.

Multiple participants made statements such as "There is discussion about the vocabulary," or "we have a review of vocabulary terms," or "I find ways to connect with those vocabulary words by modeling." These were clear examples of teachers building background through the use of vocabulary for their ESOL students.

Teachers described using vocabulary terms to foster students' background knowledge. According to Interviewee 12,

ESOL students do not learn mathematics terms just from highlighting them or simply listening to teachers or other students using them. I model mathematics word solving techniques and provide students with repeated opportunities to solve problems with the words in them. For example, when I am teaching fractions and the word *equivalent* is mentioned. It is important that students learn the word *equivalent* to describe the concept. If the concept is presented for students to see

they will miss the opportunity to connect the right vocabulary word with the concept as they are learning it. So, I make sure students are provided with appropriate vocabulary words to describe and reinforce the mathematical concepts and functions they are learning.

Related to these ideas, Interviewee 11 said,

When teaching vocabulary skills, I try to create connections to words that they may not know. This increases background knowledge. I try to use as many visuals as I can find to help make these connections. Teaching flexible, small groups helps me check for understanding and the connections they are making. It is my belief that by providing visual support along with vocabulary development student will be more engaged which would improve their mathematics achievement. From my teaching experience, I know that vocabulary instruction is essential in acceleration and developing ESOL students' problem solving skills.

Interviewee 3 shared specific steps used in the classroom when teaching vocabulary development by stating,

I try to make sure that students are assimilating and using vocabulary knowledge to help them understand the mathematics concepts. I include these simple strategies in every lesson: Pre-teach mathematics vocabulary, model vocabulary when teaching new concept, use appropriate labels clearly and consistently use vocabulary words in assessments. When I introduce new concepts, I model vocabulary words using appropriate problems as examples. Children need many exemplars as they learn to apply unfamiliar words to very abstract concepts.

When modeling vocabulary, it is important to use examples that children can see and manipulate as well as discuss and write about.

Interviewee 7 perceived vocabulary development as an essential strategy influencing mathematics learning. Likewise Interviewee 7 stated, “The new vocabulary words I know are in the topic for the week I try and find a picture with the words included and display it on the board.”

Interviewee 4 used popular songs to teach challenging vocabulary and to capture students’ interest. This participant shared,

My grade level math topics pose a challenge to my ESOL students, given that they include longer and more complex terms and phrases than what they have previously encountered. To keep them focus and engage I make math fun by allowing students to use the vocabulary words in a rap or musical. You know a lot of my students love to listen to music. So, I challenge them to use math vocabulary to compose a song or musical. That is why I thought that I could make use of their habit and listen to their music in the lessons. Listening to the lyrics of those songs make the lessons more enjoyable and more engaging. They love activities where they are given opportunities to be creative and to show-off their talents. Students need activities and strategies to help them organize their thoughts by building on experiences and make connections with things they like. What better way to do this but with music?

Interviewee 10 also referred to approaches used to draw children in and build on what they know using fun activities. This participant shared,

My class creates a vocabulary flip chart where they use to write the new vocabulary words for each topic. I encourage my students to draw a picture to go along with the word then to show off their illustrations. In this way, students make it more personal and memorable. Next, I instruct students to label each page in their booklet in alphabetical order. This helps students to build connections between words and visual representations.

Interviewees believed that students learn mathematics best by understanding the language of math. Classroom observations and teachers lesson plans analysis showed that teachers implemented academic vocabulary with a high level of fidelity in their mathematics lessons. All 12 teachers provided multiple exposures for the practice of academic vocabulary through word problems, real-world connections, and through speaking. For example, math-specific terms such as fraction, percentage, estimation, probability, and decimal were posted on the fifth-grade standards wall.

Teachers taught the vocabulary as a prerequisite to the topic of the day and aligned instructions to the students' English proficiency. For example, some teachers encouraged a structured response, pictorial choices, or concrete manipulatives during instruction. Structured responses included a sentence starter, a graphic organizer, drawing, or even questions posed with a multiple-choice format.

Opportunities to use academic vocabulary was integrated through multiple and varied exercises in the lessons. Providing these supports allowed teachers to maximize teaching through scaffolding instruction as well as build English oral skills and academic-focused language to support ESOL students' mathematics in the push-in program.

Using scaffolding. Scaffolding in math instruction was perceived as a vital strategy to provide appropriate instruction as well as developing ESOL students' mathematics skills in the push-in program. Scaffolding is a strategy in which a teacher models or demonstrates how to solve a problem and then allows students opportunities to analyze the situation and plan ways to solve the problem while the teacher offers support as needed. The participants indicated that when students are given the support they need while learning a new concept, they are more likely of using that knowledge independently.

Data analysis indicated that all the teachers were familiar with scaffolding and that this instructional strategy emerged as one of the learning theories best practices currently used in the ESOL classrooms. As evidenced in the observations and lesson plans analysis, teachers consistently scaffold instruction for ESOL students in the push-in program.

During the interviews, all teachers shared scaffolding strategies they use to help ESOL students solve mathematics problems especially word problems. For example, Interviewees 4, 5, and 9 indicated that they scaffold instruction by modeling. Interviewee 5 said,

Scaffolding of math instruction requires teacher modeling and intervention as students acquire the concept or skill. First, the teacher leads the students in thinking about what they already know about the topic. What do you know about [blank]? What connections can you make? It also requires students to use their background knowledge to make connections to what they already know about the

topic then use the information to sort out what facts are important to solve the problem. They then think of creative ways to solve the problem.

Similarly, Interviewee 8 explained, “During modeling, I demonstrate and model skills and concepts along with the steps to solve the problem.”

According to Marzano (2007), providing instant feedback is an essential component of scaffolding. Interviewee 1 showed evidence of this knowledge by stating,

It is important for students to know how well they are doing as they learn.

Knowing that they are doing well gives students a sense of achievement, which motivates them to learn more. On the other hand, it is also important to let students know when they have made a mistake so that they will learn from it and take corrective measures. That is why I monitor my students’ learning and give them feedback. I give immediate feedback because the longer the time gap between the completion of the work and its feedback, the less effective the feedback becomes.

Interviewees 9, 10, and 11 stated that they use specific programs like *X Math* that involves problem solving strategies to support students when working at centers.

Interviewee 11 specified, “I provide step-by-step instruction to the students who are having difficulty grasping the concept.” These statements also related to tools used to scaffold instruction for students. Interviewee 4 said, “I use various strategies such as questioning, repetition, or math conversations to scaffold instruction for my students.”

Using visual representations to support learning. All 12 participants perceived the use of visual representations as an essential instructional strategy to support ESOL

students' mathematics skills in the push-in program. Interviewee 2 shared, "It is important to provide instruction in ways that matches the student's learning style and optimize their ability to learn."

Visual supports or concrete representations of mathematical concepts were consistently used in the push-in program to support ESOL students' mathematics skills. During interviews, teachers overwhelmingly mentioned visual support as a strategy they used to support students learning. Interviewee 1 explicitly stated, "Visual representations and graphic organizers are an integral part of my daily instruction. They are especially helpful for my below grade level students who are struggling with abstract mathematical concepts." Interviewee 3 supported those sentiments by saying,

It is a fact; no two students are alike. Some learn better through reasoning, others through listening, and some through doing. For some of my ESOL students, who have difficulty communicating and understanding abstract concepts, I use visual supports like pictures and graphic organizers to support their learning.

Likewise, Interviewee 6 said,

Through visual supports, students can learn to communicate with their peers and make sense of the world around them. These supports can easily be customized to address individual needs and the student's level of understanding. For example, a student who is struggling with reading may not be able to understand a word problem that uses academic vocabulary, so the student would do better with an activity that uses pictures instead.

Interviewee 11 shared that in order to help newcomers to be successful, teachers ought to implement methods to support students' performance as well as help them to adapt to classroom rules and procedures. According to this interviewee,

Visual supports cover a wide range of student needs such as understanding classroom rules, increasing independence, making decisions, communicating with classmates, supporting transitions from one task to the next, providing clarity on what specific work to complete, and offering positive feedback. Visual supports can also diminish challenging behaviors in a variety of ways and can assist with decreasing frustration. For example, if the student needs to complete a worksheet or web-based math assignment, each task can be depicted by objects, pictures, or words placed on a schedule to be used during the math instructional time.

The broad range of responses indicated that teachers have individualized and specific ways of implementing visual representation to support ESOL students' mathematics skills. Next is a presentation related to how participants perceived the importance of using manipulatives.

Using manipulatives. All of the interviewees perceived the use of manipulatives to support ESOL students in the push-in program as an essential tool in helping students to better their mathematics skills and understanding. According to Interviewee 11, "When students are taught to use manipulatives in meaningful ways they can result in greater performance on math assessments and standardized tests."

Similarly, Interviewee 6 perceived that the use of manipulatives is especially useful to students who are struggling in understanding key mathematics concepts.

Interviewee 6 stated,

I like to use manipulatives with my students because it allows them to manipulate objects to represent math concepts that they are struggling with. Students are better able to see the connections better than with numbers and concepts as they manipulate objects to arrive by an answer. This helps to promote creative problem-solving techniques and logical reasoning skills.

Likewise, Interviewee 8 stressed that students need to physically manipulate objects to practice and relate to the concepts taught in the lesson with remarks such as, “They need something tactile to help them visually see the representation,” and “I would always use manipulatives whenever I could because I think it’s good conceptually for ESOL students,” or “I used a lot of hands-on conceptual approaches allowing students when possible to use manipulatives,” as well as “It gives students a chance to continuously practice their skills. The use of manipulatives helps students to develop their mathematical thinking and reasoning skills.”

Furthermore, Interviewee 8 stressed her perceptions that,

Manipulatives can be important tools in helping students to think and reason in more meaningful ways. By giving students concrete ways to compare and operate on quantities, such manipulatives as pattern blocks, tiles, and cubes can contribute to the development of well-grounded, interconnected understandings of mathematical ideas.

The participants emphasized their belief that in order to support ESOL learning, there is a need for ample hands-on activities, discussion, and partnering and the need for students to perform all language tasks in the form of speaking, reading, writing, and listening. Indeed, Interviewees 9, 10, and 12 voiced their opinions on the lasting benefits of the use of manipulative to support ESOL students' achievements. Interviewee 12 said,

There are a lot of benefits for using manipulatives in mathematics. I have seen improvement in students' ability to communicate mathematical thinking during math talks, making real-world connections to abstract mathematical concepts, working collaboratively to help their classmates as well as taking ownership of their learning experiences by using a variety of problem solving strategies to arrive at the solution to a problem.

Using technology. Technology is another tool that teachers used to engage students while at the same time enhance their achievement. Interviewee 11 said, "Integrating technology into the classroom is an effective strategy that has lasting implications for the role of teachers in supporting ESOL students with varied learning styles."

Several other interviewees indicated that technology in the classroom has transformed the way teachers deliver instruction in the classroom. According to Interviewee 3,

Technology is integrated in the classroom to support both teaching and learning. It gives students the opportunity to interact with their classmates and teachers. I like to see my students engaging in solving problems or doing project on the

computers or other devices. It increases student engagement, motivation and accelerates their learning.

Several teachers indicated that they were enthusiastic about using Google Classroom platform to inform students learning. They mentioned some of the benefits they experienced since implementing Google Classroom such as “to exchange feedback with their students”, “share assignments” or “plan their lessons as a team”. Interviewee 4 shared,

Google Classroom helps to make teaching and learning easier for my students and me. It enables me to better organize my time as well as to get rid of a lot of paperwork. For example, it allows me to assign, collect, and view my students’ work online. You can even set filters to see assigned, missing, or returned and graded work. For instance, the other day when I was absent, my students constantly communicated with me. I was able to view the students who completed their assignment as well as those who did not turn in their work.

Moreover Interviewee 7 stated, “It [technology] fosters collaboration in that students are given the opportunity to interact with their classmates on line. Likewise, it provides me with the opportunity to share lesson plans, documents and materials with other members of staff.”

Interviewee 9 added,

I like the assignment page because it allows my students to keep track of when assignments are due. I can easily see who has or hasn’t completed the assignment, and provide direct, real-time feedback and grades right in classroom.

The observations and lesson plans data related to the research question regarding teachers' perceptions of the instructional strategies used to support ESOL students in the push-in program were similar with the interview data. The findings showed that teachers perceived research-based instructional strategies such as scaffolding, use of manipulatives and technology as important to support ESOL students' mathematics needs in the push-in program. What follows are details related to teacher participants' ideas related to differentiation of instruction.

Teachers differentiate instruction. Another theme that emerged from the data finding showed that all teachers perceived differentiation of instruction as important to support ESOL students' mathematics skills in the push-in program. Differentiation of instruction aims to maximize students' success through modifying and adapting instruction, resources, lessons, student activities, and assessment to meet the learning needs of all students. When asked about methods to improve ESOL students' mathematics skills, most of the interviewees referred to differentiated instruction through small groups.

Using small groups. One form of differentiation used was small groupings of students. All the interviewees believed that using flexible small group instruction is essential to support ESOL mathematics skills.

For example, Interviewee 1 stated, "Using small groups allows me to differentiate instruction according to below grade level group on level group, and above grade level." Interviewee 2 indicated that using small groups allows for tiered lessons instruction based on interest or ability level. According to Interviewee 2, "Tiered assignments help when I

am introducing important concepts and skills. I varied the levels of complexity based on student needs.” Similarly, Interviewee 3 said, “Support [of] ESOL mathematics skills [development] require grouping and scaffolding of instruction.” She continued,

I incorporate strong small group instruction with my students and make decision on which students to place into which groups. Grouping provides structured instruction to support mathematics for ESOL students who are not meeting state standards on standardized tests. It is very important for students to have the opportunity to learn and grow with the necessary grouping structure in place to support their learning.

Indeed, training in how to strategically form groups to increase ESOL students’ mathematics learning was perceived to be important to several teachers. Interviewee 7 explained, “We had training on how to facilitate strong small group intervention with our students and how to decide on which students to place into which groups.” Interviewee 8 shared, “We also had training on how to facilitate strong small group intervention with our students and how to decide on placement of students into groups especially for intervention.”

Interviewee 9 stated, “What I like about small group instruction is to see when students grasped a concept. It blessed my heart to see the looks of achievement on their faces.”

Reinforcement by modeling is an essential practice according to Bandura’s theory (1975) of development. Modeling ensures that students learn skills and abilities by observing the actions of individuals like teachers, peers, parents, and siblings. For

example, ESOL students can do tasks by observing other students in the group, eventually internalize the actions, and assume more responsibility in solving the problem. In keeping with this theory of development, several interviewees stated that using flexible small groups to model a variety of strategies is essential to support ESOL learning.

Interviewee 10 stated, “Using small groups gives me opportunities to engage in skills that allow students to discover new mathematical concept.” Similarly, Interviewee 5 offered that grouping for ESOLs requires grouping students to create lessons based on readiness in mathematics concepts. Interviewee 9 stated:

Through small group activities, I am better able to accelerate students to the next level. In this instance, students could discover new concepts on their own instead of teachers instructing them on what to do. As soon as other students mastered the skills being taught, I move them to a more advanced group.

Some interviewees stated their preferences of using mixed ability groups to support their students’ mathematics needs. Echoing ideas reported earlier in this manuscript, Interviewee 10 reported,

Using mixed ability groups enables me to provide the necessary instructional strategy to support students who might be struggling to learn from their peers. I assess those students again and use the result to regroup for remediation or acceleration. I like doing mixed ability groups because they can support each other with their background knowledge and cultural awareness. From my years of experience, I realize that students learn from their peers oftentimes more than

from the teacher. Their peers can provide grade level language and examples that make sense and increase their level of understanding.

Likewise, Interviewee 9 said,

Pairing students to allow for peer teaching is another method of reinforcing the strong student understanding of the concept while providing a struggling student with a peer tutor. This reciprocal learning style is another way for teachers to utilize the strengths in their classrooms to create this differentiated instruction.

Related to this idea Interviewee 12 stated, “I use the results from formative assessments to determine which students should be placed into what group.”

Within every classroom observed, small groups were actively engaged in mathematics activities. By implementing the classroom engagement strategies, teachers made meaningful connections to students’ background, ability, interest, and readiness. For example, a fourth-grade teacher posed a problem in which the response could be completed by acting out the answer, drawing for the newcomer, quick write, or pair-share. The teacher provided opportunities that addressed addresses all four language processes and allowed choices to foster an active-learning environment.

Cross-curricular connections were observed in several classrooms. For instance, during the teaching of multiplication and division, teachers made science connections by using arrays in a garden, cartoon strip story problem through art, and encouraging writing in a math journal where a problem was required to be written, solved, and explained. These activities helped tie learning together, making teaching more comprehensible. Technology was incorporated in all classrooms through online programs such as *Prodigy*

for fifth graders, *X-math*, and other interactive programs. I observed teachers using technology to provide individualized instruction and opportunities to practice in various contexts.

Teachers use a variety of data to promote student learning. Teachers felt it was important to know where the students were in their learning so they could plan and assess their growth. According to the interviewees, they collected, analyzed, and utilized data to guide them when planning, for grouping, and for differentiated instruction.

During the interview process teachers said they used multiple forms of data to determine if students had met or exceeded the standard being taught. For example, participants mention that they gather data from end-of-topic assessments and the Aims Web testing reports. Aims Web is a standard-based universal screener and data management system that is used by the school district to monitor grades K-8 students mathematics progress and to inform instruction.

All participants said the use of data was important for supporting modifications in math intervention. Interviewee 10 stated, “Being knowledgeable of a variety of diagnostic, formative, or summative results is vital to provide the right intervention for ESOL students. All of the teachers spoke of the need to provide ample review and assessment opportunities for students. Doing so involves the teachers’ ability to incorporate key vocabulary and concepts into assessment. Review and assessment also involve evidence of consistent feedback provided to students in multiple forms. Interviewees 4 said,

The alignment of formative assessments allowed teachers to make grouping and provide the most appropriate instruction for students. Using diagnostic, formative, and summative assessments are essential to determine whether students master standard or need remediation. We use the results from the assessments to help us form small groups for remediation and enrichment.

Likewise, Interviewee 11 said, “I use data from assessments to help to address the areas of greatest needs for students who are not passing the tests and to place them in the right group for differentiated instruction.”

Interviewee 12 provided an explanation of how assessment data is used in the school, “In order for me to better understand the needs of my students on a new topic, I establish a baseline by giving a pretest. This helps me to determine mastery of the standard being taught. I then use the data to focus on instructional interventions to ensure for continuous progress.

Several interviewees mentioned the strategy of using data from pre and post-tests to inform instruction. Interviewee 2 said, “I use pretests to determine what my students know and can do before the start of a new topic or unit.” Another interviewee said, “I practice using pretest to determine student proficiency in the skills that will be taught in a unit.”

Interviewee 3 asserted, “If a student has mastered the skill based on the pretest data, I provide enrichment or accelerated activities that reinforce that skill in math centers. For example, if I am teaching measurements, I would provide project based

activities for students to use the concepts to create models, game boards or something of their choice.”

Likewise, Interviewee 7 used pretest to inform instructional moves. Specifically, this participant mentioned using pretests to determine how to differentiate content for each flexible small grouping of students.

Additionally, Interviewee 8 reported using data from the ACCESS test to help determine the language proficiency levels of the ESOL students. Interviewee 5 endorsed using ACCESS information when determining the social and instructional which entailed the proficiencies needed to communicate effectively in the classroom. Interviewee 5 went on to say, “It is important for teachers to know the language development levels of students in order for them to be successful in school.”

Assessing students’ data was reported as vital for both teaching and learning, according to several interviewees. Interviewee 3 believed that information about the student can provide background knowledge which is important for a diverse classroom. This participant went on to say, “Moreover, being knowledgeable of your students can inform planning for scaffolding, interest, and learning style inventories”.

Along similar lines, Interviewee 6 stated,

Knowing data about your students’ strengths and weaknesses can build better relationship and foster respect and understanding for both teacher and student.

Understanding this, I am able to provide the necessary feedback to impact their learning and can increase self-confidence.

Likewise, Interviewee 11 said that knowing your students, “Is one of the most important criteria necessary to empower students to be successful. I want to make a difference in the lives of all my students.”

The twelve participants used both formative and summative assessments to modify instruction in order to determine students’ progress. More specifically, formative assessment was used on a regular basis to monitor student learning. This ongoing feedback was also used to inform adaptations made to instruction to improve students learning. In contrast, summative assessment was used to assess students’ progress at the completion of a unit by comparing it against some standard or benchmark.

The use of ongoing formative and summative assessments was perceived by all interviewees as important tools used to measure students’ mathematics progress in the push-in program. According to Interviewee 1,

Using formative assessment like quick write and questioning allows me to keep a watch to see if the students are grasping the concept. I can immediately identify which students are struggling or confused. I can then use that information to place students into flexible small groups for the next lesson.

In addition, Interviewee 4 said, “After using daily formative assessment, I take notes to help plan the next day’s lessons. Then I adjust the instructional strategies as needed.”

Interviewee 4 had more to say on that topic later in the interview,

When I teach content, at the end, I give short formative assessments. Then I use it to look at the areas where the students are having problems. Then I pull the

students into flexible small groups so that I can explain the standard being taught using other methods. Formative assessments include ticket out the door, thumbs up, thumbs down, paddle boards and one-minute quiz. I give immediate feedback to students.

Additionally, all interviewees stated that they used summative assessments at the end of the grading period, for midterm exam, or at the completion of a project.

Interviewees 7 and 9 reported that they have collected, analyzed, and utilized data to make instructional decisions to support ESOL students' mathematics skills.

Furthermore, data to drive instruction was mentioned continuously by all twelve interviewees. Interviewees reported that they used data from formative and summative assessments, ACCESS tests, and Aim Webs to inform instruction for ESOL students. Data about the learner was also mentioned as being useful to support ESOL students learning and modify instruction. Next, I will report on specific ideas teachers shared about lesson modification.

Teachers modify instruction based on data. The 12 participants stated that they used some form of math intervention to provide additional support to improve ESOL students' mathematics skills. The teachers said they used small group instruction, Response to Intervention (RTI) sessions, or one-on-one tutoring if time allows. Three participants agreed that gathering and analyzing data is needed if they are to identify student needs and make the necessary accommodations. According to Interviewee 2,

I begin the process of modification of instruction by pre-testing students to determine the level of background knowledge they have on the topic. Then I use

the data to place them into groups for enrichment or for remediation, as the results indicate.

Interviewee 5 supported that claim by saying,

I consistently use data to support modifications of mathematics practices for my ESOL students. When I introduce a new topic, I make sure that I have remediation tasks, on level tasks, and acceleration tasks. I can just check the data results to help place the students into small group for remediation or acceleration.

Additionally, Interviewee 7 reported that there are adequate resources and materials at the school to help teachers plan for modification for group activities. She said,

I can easily put my hands on a lot of resources at this school that I use for enrichment and remediation. Most of the resources offer a section for enrichment as well as remediation. I like to use what they suggest instead of trying to come up with something on my own. By using the enrichment and remediation within the resources, I know the activities are research-based,

Interviewees 11 and 12 felt that re-teaching is important for modification of instruction. These participants also agreed that when pulling intervention groups to reteach a topic, it is essential to reteach the concept in different ways. Interviewee 12 said,

When providing intervention, it is important to reteach the concept in a different way than was initially presented and using the data to drill down to the specific skills the students need addressed. If they didn't get it in the main lesson, usually

it's not always like they can just see it more times, then finally get it. It takes careful planning and time to build in this differentiation piece. Progress monitoring is vital to ensure the intervention supports are truly affective.

Multi-tiered Systems of Support (MTSS), originally known as RTI, is used to monitor students' performance. MTSS is a process of systematically monitoring student performance and addresses the way schools provide support to students with learning and/or behavior problems by delivering a range of interventions based on demonstrated levels of need (GCSS, 2017). All 12 participants mentioned that they used RTI to monitor students who are struggling in mathematics skills. For example, Interviewee 12 stated, "I am able to access RTI resources through Google classroom which makes it easier to provide intervention based on the levels of need."

Similarly, Interviewee 6 related,

I have several of my ESOL students in the RTI program. These students are performing two grade levels below the rest of the class in basic skills like regrouping and subtraction. I have to make changes in my lesson plans to improve support for them. RTI helps me to monitor the performance of these students on a daily basis.

Teachers use data as feedback to set goals. The 12 participants indicated that they systematically collected, analyzed, and used information assessments to inform teaching and learning and to provide timely feedback to both students and parents. As teachers assessed lesson contents, they analyzed data to monitor student progress, develop strategies and set learning goals.

I observed teachers using assessments records such as projects based activities to support students learning. In one of the classrooms, the project featured real-word problem solving tasks involving using materials in the classroom to construct 3D geometrical models. The project was focused on the learning targets and approached learning standards-based skills such as reasoning, problem solving, and creativity. Drawing from the data, teachers used the results immediately to adjust the pace or delivery of instruction. For example, some teachers quickly rearranged the groups and tried a different approach to engage students and support their instruction needs.

In one of the fourth-grade groups, teachers handed out papers with word problems and instructed students to work with a partner to solve the problem. While circulating around the class, I observed the teacher offering feedback and then rearranging student partners because the prior pair of students was experiencing problems understanding some of the vocabulary. She gave the new partners a revised activity that involved using the vocabulary words to answer questions.

During the observations, I saw teachers systematically gather and use data to determine the readiness and learning needs of students. At the start of a new topic, teachers administered a pretest to establish students' background knowledge on the content. They then used the data to plan flexible, differentiated, small group lessons support students learning. On each table, teachers displayed lesson plan journals with information of student performance data to track students' progress. Teachers drew on these data to establish students' academic and proficiency levels for groupings and to make decisions related to how to differentiate instruction.

As the lessons progressed, teachers gave quizzes recorded the information and then adjusted the learning and support accordingly. In the fifth-grade classes, teachers circulated each group and recorded students' ability to solve the problems. Teachers used the information from observations to adjust their lessons for the next class. Based on the results of the quizzes and tests, teachers constantly rearranged the groups to meet individual needs.

In the fifth-grade classes, two teachers gave an end of topic project where groups used materials like manipulates and macaroni to build a tower in five minutes. Participants gave each group a rubric, communicated the purposes of the assessments, explained learning intentions and criteria for the tasks, and invited questions before the task was performed. The teachers allotted grades based on participation and efforts and provided feedback that moved students forward. The two teachers also used the results from the activities to make adjustments to teaching the next lesson and to design differentiated instruction.

Summary of data that informs the four research subquestions. Interviews, observations, and lesson plans were analyzed to answer the subquestions. All 12 participants perceived that they create constructive learning environments by creating a positive classroom community, using peer support, using modeling, having high expectations, being flexible, and supporting students as problem solvers. In all three data sources, the theme of creating positive and supportive learning environments was evidenced. With regard to evidence of instructional strategies, all three data sets revealed the strategies used to support ESOL students in the push-in program.

Observations and lesson plan data indicated that teachers planned their lessons to accommodate each student using their strengths, interests or experiences. Teachers included descriptions of ways that instruction or lessons were modified to advance ESOL students learning. I observed well-organized flexible groups with students productively engaged with solving mathematics problems. Classrooms were arranged to accommodate individual learning needs.

For example, the students who exhibited low levels of proficiency on the tests and demonstrated other signs of struggling with the content were seated in close proximity to the teachers or in front of the class so that they could receive extra support. The students who scored at grade level were given more advanced activities or went to other centers like a technology station to complete more advanced activities.

Throughout the observations, I saw the 12 teachers collect data from pretests to homework, quizzes to exit tickets and in-class spot checks. These data sources assisted teachers when planning instruction to support and to develop assessments to close the achievement gaps. Teachers collaborated with classroom teachers by providing data to assist in making accommodations during the ACCESS testing.

Triangulation of data. Again, an important component of this study was to ensure credibility of the data and the findings. I used triangulation of data to ensure validity. Recall that the three types of data I collected were observations, lesson plans and interviews. I looked for repetition and common themes that emerged in the observations, lesson plans, and interviews. Once transcribed and printed out, I read the interviews multiple times and coding was used to identify categories and themes. The data collection

and analysis process was iterative to allow categorization of common themes and trends as they were collected.

I considered each interviewee's data from the observation, lesson plan and interviews to look for discrepant cases. I then triangulated the data individually as well as collectively to look for any inconsistencies. I determined that there were no discrepant cases. Therefore, the findings reflected the results of the triangulation of data.

Discussion and Interpretation

This qualitative study examined ESOL teachers' perceptions of the current push-in ESOL program as it relates to students' mathematics understanding and perceptions of best practices to meet the need of ESOL students. As discussed previously, ESOL students in a suburban school in Georgia are not attaining the skills needed to achieve the mathematics requirements as measured by Georgia Milestones Assessment tests. By using the conceptual framework of the social learning theory (Bandura, 1975), and language acquisition theories (Collier, 1995; Cummins, 1979; Krashen, 1981), I was able to elicit and analyze data related to teachers' perceptions of the problem at the school site and their suggestions to help improve ESOL students' mathematics skills.

Teachers' Knowledge and Experience

The 12 participants indicated that the knowledge and experience they gained from holding an ESOL endorsement as well as participating in the professional development offered by the district was a strength of the push-in program. Cummins (1979) argued that knowledge of BICS and CALP is needed to increase teachers' knowledge of the timelines and struggles that ESOL students face as they work with their classmates

during academic language instruction. BICS are language skills needed by children to interact and communicate day-to-day with one another. Cognitive academic language means that students can synthesize and express learning objectives both verbally and in written forms. Cognitive academic language is essential for ESOL students to improve their performance in the classroom. Teachers must provide the necessary support and remediation if ESOL students are to increase their achievement in academic areas such as mathematics because mathematics involves skills such as synthesizing, evaluating, comparing, and inferring.

All 12 participants perceived that having knowledge of students' second language development impacted the ways they delivered mathematics instruction in the push-in ESOL program. Cummins (1979) emphasized the importance of promoting language development by providing students with opportunities to develop new ideas and employ creative thinking in a manner that helps learners to think in the novel language. The teachers were observed using both BICS and CALP skills to encourage interactions and communication in small groups and in math centers, which helps to increase levels of language proficiency. Supporting both BICS and CALP development also addressed the struggles that ESOL students faced as they compete with their classmates during academic language instruction. For example, at the introduction of the lessons for the day all of the 12 participants were observed using various cues such as gestures, miming, and visual representations, modeling or demonstration to encourage students in real world math conversations to support students BICS skills. The teachers also used depth of

knowledge questioning techniques to propose different means to solve a problem and to support students' academic language.

By actively maintaining awareness of the need to support language development through professional development, school personnel were empowered to intelligently draw on theories such as social learning theory (Bandura, 1975), second language acquisition theory (Krashen, 1981), language proficiency theory (Cummins, 1979), and second language acquisition theory (Collier, 1995) to inform adaptive instructional decisions to support ESOL students. Specifically, teachers built on knowledge of (a) vocabulary, (b) socioeconomic status, (c) student motivation, and (d) learning environment as identified by Ortega and Cohen (2014).

The theme of professional development is further supported in the literature by Guzey, Tank, Wang, Roehrig & Moore, 2014; Nishimura, 2014, who asserted that in order for professional development to be effective it must be meaningful and relevant to participants. One objective of professional development is to enhance teachers' instructional practices (Blandford, 2012). Therefore, for professional development to improve teacher practices and be effective it must be a continuous practice in the school and school district and include specific skills that are relevant to teachers needs and (Cordingley, Higgins, Greany, Buckler, Coles-Jordan, Crisp, & Coe, 2015; Krasnoff & Education Northwest, 2015). In addition, teachers must perceive the professional development as essential to their practice in order to support students learning (Sanders, Parsons, Mwarumba, & Thomas, 2015).

Collaboration

The teachers identified collaboration as one of the strengths as well as one of the challenges of the push-in program. Their experiences are consistent with what is found in the literature, which supports push-in programs but also identifies barriers to successful collaboration. The push-in model has been praised for its beneficial attributes of fostering a collaborative learning environment by emerging the knowledge of mainstream teachers with that of ESOL teachers into the same classroom (Baecher & Bell, 2017; Shore, 2016). Thomas and Collier (1997) argued that a collaborative approach to the teaching of ESOL students is different from the previous practice of submersion, where ESOL students were placed into mainstream classrooms without the assistance of ESOL teachers.

In contrast, the collaborative or co-teaching approach is an organized approach where teachers utilize engaging practices and activities to improve the individual needs of ESOL learners (Ronfeldt, Farmer, McQueen, & Grissom, 2015). In addition, the push-in model can include flexible centers, team teaching, and parallel teaching, in which the two educators are held accountable for planning instructional strategies, providing remediation and acceleration to meet individual developmental needs, and choose a variety of diagnostic assessment to measure ESOL students' progress (Murphy, Torff & Sessions, 2016). The data showed that some participants used these collaborative approaches in the push-in setting.

The importance of collaboration to maximize instruction for ESOL students is supported in the literature by several researchers. Honisfeld and Dove (2010) and Elfers

et al., (2013) argued that building a strong relationship with coworkers is the foundation for successful collaboration which can help to maximize instruction planning, share knowledge, build relationships, and ensure support for students. Moreover, Goddard, Goddard, Sook Kim, and Miller (2015) affirmed that collaboration amongst teachers improves student achievement. Classroom and ESOL teachers were observed collaborating through parallel and co-teaching. The collaborative effort offered valuable feedback to both teachers during planning of instruction that resulted in improvements to practice. This approach is consistent with Honigsfeld and Dove (2010) who asserted that co-teaching practices have a positive impact on students' academic development.

Challenges

Although teachers perceived the push-in program as successful, they also described how they struggle to meet the needs of students in the push-in program. Several themes emerged as challenges: ability to offer one-on-one instruction differentiated multiple instructions, engage shy or hesitant students, ability to meet one-on-one with students, differentiating multiple tiers instruction, engaging students who are shy or hesitant, time constraints, and how to build partnership with collaborating teacher. Two of the themes are related to the challenges of co-teaching and collaboration and involve feeling unwelcome in the classroom and lack of sufficient time to collaborate with the classroom teachers.

The use of one-on-one instruction in the push-in program was supported in the literature by as one of the challenges of the push-in program. One-to-one is essential to students' learning and development. Studies suggest that one-to-one instruction is

essential to students' learning and development and plays a valuable, even irreplaceable, role in the teaching and learning process (Bleistein, & Lewis 2015; Carey, & Grant, 2015).

Bleistein and Lewis (2015) argued that one-on-one instruction has contributed to significant improvements to learning performance and provided individual learning that is hard to achieve in larger language classrooms. Since one-on-one instruction is essential to enhance students learning (Clark, 2015), it is apparent that in some cases, teachers do need to find ways to create opportunities to support ESOL students in one-to-one.

Differentiating instruction into multiple tiers was identified by the participants as a challenge in the push-in setting. Cash (2017) showed that teaching multiple tiers during instruction can maximize instructional practices to improve student achievement as well motivate and engage students in the learning process. When teachers understand students' learning styles, are familiar with their culture and background, and consistently assess them to identify students' strengths and weaknesses, educators are better able to plan adaptive instructional activities to meet the various needs of students in the push-in classroom.

Additionally, the study participants stated that students who are shy and hesitant to participate in class activities are a challenge in the push-in setting. Strebe (2017) argued that even the shy and hesitant student can increase their learning and levels of confidence if the teacher creates a supportive classroom atmosphere. For example, Strebe (2017) suggested that when teachers use pair sharing rather than sticking with whole

group exercises, students tend to feel less hesitant and more likely to participate in engaging activities in the classroom.

Another theme is related to the teachers' perceptions of how the policy level requirements for the demands of testing impact their teaching. Researchers have described how testing in schools (e.g. Shohamy, 2014; Smith, 2016; Wagner, 2014) affect students' self-esteem. Smith (2016) argued that when students do not perform well they are sometimes labeled as unsuccessful and this can affect their overall performance which can result in anxiety.

Teacher participants voiced their opinions for the need of an extension of time to collaborate with classroom teachers to increase ESOL in the push-in setting. This challenge is supported in the literature by Honigsfeld and Dove (2014) and McLeskey, Rosenberg, and Westling (2017) who argued that a collaborative approach to teaching can improve ESOL students' performance within a push-in program.

Creating a Positive and Supportive Learning Environment

When asked about how they deliver instructional strategies to meet the instructional needs of struggling ESOL students, teachers stated that one of the ways they did this is that they created positive learning environments, use research-based instructional strategies, and using a variety of data to support ESOL students in the push-in program. Creating a positive and engaging classroom atmosphere is essential for teaching and learning.

Cacciatore and Morey (2017) indicated that a positive classroom atmosphere provides teachers with engaging and powerful strategies to support childrens' learning.

Building student engagement creates a supportive classroom environment with positive learning outcomes (Stronge, 2018). Within every classroom observed, small groups were actively engaged in mathematics activities. By implementing the classroom engagement strategies, teachers made meaningful connections to students' background, ability, interest, and readiness.

The teachers' use of peer support is consistent with research that points out the importance of collaboration among ESOL students and their peers as a beneficial for language acquisition (Case, 2015). For example, Case (2015) found that students interacted and communicated in "often a creative, situated, and multidirectional process" (p. 12) when asked to collaborate. According to Case, this partnership between ESOL students and their newcomer peers promoted a dynamic learning experience for these students. By pairing ESOL students with a more fluent or proficient peer, teachers can expect deeper levels of understanding and greater participation of the new ESOL students.

Using Research-Based Instruction Strategies

Teachers described a variety of best practices such as the use of vocabulary, use of scaffolding, use of visual representations and the use of manipulatives and technology, use of differentiated instruction, as well as use of data to support ESOL students' mathematics skills in the push-in program. These findings are consistent with the larger body of literature on the topic of research-based instructional strategies for teaching ESOL students' mathematics in a push-in program. Eristi and Akdeniz (2012) suggested that instruction is fundamental to the teaching and learning process, and by utilizing

instructional strategies, educators can direct students in the right direction to success.

Other researchers argued that if students' academic performances are to increase schools have to identify instructional strategies that will close the achievement gap (Kober, 2001; Moughamian, Rivera, & Francis, 2009; Salend, 2015).

Supporting language acquisition. Language acquisition theories (Collier, 1995; Cummins, 1979; Krashen, 1981) contributed to the conceptual framework of this project study. The conceptual framework is apparent in one of the objectives of teaching ESOL students in the push-in program, which is to develop English language and communication skills (Betts et al., 2008; García, 2008, White & Turner, 2005; Tobin & McInnes, 2008). Furthermore, Collier (1995) argued that SLA is a developmental process that takes 4-12 years of language development to attain the same level of academic proficiency like their English speakers. All 12 participants understood the importance of ESOL students obtaining English proficiency to increase their learning within the time frame allotted by the state.

The overall findings from this study revealed that teachers perceived that the main objective of instruction for ESOL students in the push-in program is to ensure that the students learn the math content while also gaining English language skills through various teaching and learning practices. The data analysis showed that teachers made instructional decisions based on this perception. Furthermore, the teachers instructed the students in a way that is consistent with Knowles et al.'s (2014) claim that the teachers instruct students in the ways they would like students to perform.

Additional classroom support with scaffolding, vocabulary development, manipulatives and technology were some approaches participants used to support ESOL student performance (Kim, Wang, Ahn and Bong (2015). The teachers stated that they believed that these practices are essential for ESOL students' learning. This stance was affirmed by Cohen (2014), who argued that ESOL students need additional, targeted instructional support to maximize their achievement in the push-in setting.

The teachers also used modeling, which is consistent with Bandura's (1975) social learning theory. Social learning theory centers on students observing others and then imitating their actions. According to Knowles et al. (2014), social learning theory allows the teacher to behave in the manner he or she would like the student to act. Peer and teacher modeling were thought to be important by eight of the interviewees. For example, one interviewee believed modeling is not just for the students but also for teachers to model research-based strategies that support ESOL students' learning. All 12 participants felt that they consistently modeled desired expectations for all students and modeling was seen during classroom observations. For example, three different teachers were observed using a variety of techniques to teach the concept of equivalent fractions. Consistent with social learning theory, several interviewees also stated that they use flexible small groups to model a variety of strategies.

Using manipulatives. Studies have shown that using manipulates to promote mathematical skills is an effective teaching strategy (Bujak, Radu, Catrambone, Macintyre, Zheng, & Golubski, 2013; Carbonneau, Marley, & Selig, 2013; Root, Browder, Saunders, & Lo, 2016, Rosli, Goldsby, & Capraro, 2015). These researchers

confirmed that manipulatives are powerful instruments for teaching mathematical skills. Likewise, research has supported the use of technology to promote learning and enhance ESOL students' engagement by providing alternative avenues for communication and participation in their learning (e.g. Bester & Brand, 2013; Billings, Halstead, 2015; Dell, Newton, Petroff, 2016; Jeong, H., & Hmelo-Silver, 2016).

The participants shared their perception that instructional strategies used by teachers can promote a climate of meaningful engagement, active class participation, and improve self-esteem in students. This stance is alignment with findings in a study conducted by Kopcha Ding, Neumann and Choi (2016). Furthermore, these findings are important because they confirm that most of the social learning theory best practices outlined in the conceptual framework of this study are consistently taking place in the push-in classrooms. Additionally, these findings are important because they directly address the research problem and the research questions.

Differentiating instruction. The study participants indicated that they differentiate instruction using a number of strategies. For example, they described activities that involved small groups to motivate and engage ESOL students at their instructional level. Additionally, teachers provided remediation and enrichment to further engage students based on their own learning interests, by topic, and by ability levels. These strategies were supported in the literature by various authors such as; Echevarra, Voght and Short (2009), Salend, (2015); Tomlinson (2012) and Weber, Johnson, & Tripp (2013).

Differentiation supported both mathematics and second language development through interaction in the child's natural language. According to Krashen (1981), language development is achieved when a child communicates naturally in contrast to the standard teaching of a language, and learning is enhanced when concepts are embedded in authentic learning assignments that refer to familiar contexts students can relate to in everyday life. This was evidenced in the lesson plans and delivery of lessons where teachers provided differentiated instruction that reflected the students' conceptual development level and ability level. For example, seven teachers were observed scaffolding students' learning by creating a language-rich environment using vocabulary cards, labels, posters, games, as well as allowing students to speak academic language consistently throughout the lesson. To support this, the new vocabulary words for the day were displayed on the word wall. Additionally, teachers modified activities to accommodate individual differences and language development. This was done by pairing newcomers with students who were more proficient in English language and communication skills for group activities. Additionally, teachers provided opportunities for students to choose activities based on their interest and their language abilities.

Using data. The use of data can help teachers to provide the resources to improve ESOL students' performance in the push-in program. Using data to inform ESOL students' mathematics skills in the push-in program was perceived as important by the interviewees. The teachers agreed that ongoing formative and summative assessments with feedback were important to support ESOL students' mathematics skills.

Research conducted by Fisher and Frey (2015) and Dixson and Worrell (2016) have shown that using a data driven approach to instruction provides a baseline for teachers to set measurable goals, collect, and continuously analyze data to inform instruction through formative and summative assessments. Fisher and Frey (2015) suggested that teachers used data to check for students understanding of key concepts through oral language, questioning, writing, projects and performances, and tests. Moreover, Fisher and Frey believed that by using those techniques, teachers are better able to identify which students understand the content and which students need additional instruction.

The teachers who participated in the study shared that they use data to identify student's strengths and weaknesses and use these data to inform instruction in the push-in program. This finding is consistent with earlier studies that have shown that utilizing assessment techniques and providing feedback to students will help to increase ESOL students' mathematics skills (e.g. Chappius, Stiggins Chappius, & Arter, 2012; Hattie, Fisher, Frey, Gojak, Moore, & Mellman, 2016).

Summary of Findings

The central purpose of this study was to examine ESOL teacher's perceptions of the current push in ESOL program in terms of the development of students' mathematics skills. This research also sought to investigate teachers' perceptions of the best practices and instructional strategies to meet the needs of ESOL students as they learn mathematics. This research was guided by one encompassing research question and four

subquestions that were based on the conceptual framework of the social learning theory and language acquisition theory.

The research question guiding this study was how do elementary ESOL teachers describe the push-in program for mathematics instruction? The four subquestions were important in attaining data related to the instructional practices utilized in the instruction of mathematics in the push-in program. Additionally, the analysis of the data revealed that teachers' struggle to meet the needs of ESOL students in the push-in program.

The results of the data analysis are themes that informed the research question of how do elementary ESOL teachers describe the push-in program for mathematics instruction. These themes were: teachers build success through knowledge of second language acquisition, teachers build success by using knowledge of students' cultures and backgrounds, teachers build success by being highly qualified and participating in professional development, teachers build success through collaboration, and teachers struggle to meet the needs of all students.

Additionally, themes emerged that informed the subquestions of how teachers delivered instruction to ESOL students in the push-in program. These themes were: (a) teachers create a positive and supportive learning environment; (b) teachers use research-based instructional strategies; (c) teachers differentiate instruction for ESOL students; and (d) teachers use a variety of data to promote student learning.

Subquestions 1, 2, 3, and 4 were intended to understand teachers' perceptions of the research-based instructional strategies used in the push-in program to support ESOL students' mathematics skills. The data showed that the ESOL teachers used the best

practices that were outlined in the conceptual framework of this study. Furthermore, the findings also revealed that the teachers struggle to provide one-on-one instruction for students, differentiate multiple tiers of instruction, engage students who are shy or hesitant, and lack the needed time to collaborate with the classroom teacher. This finding is connected with the overall research question because it provides data on teachers' perceptions of the instructional practices that the participants believe help ESOL students who are struggling to increase their mathematics skills in the push-in program.

In summary, in Section 2, I presented an explanation of the qualitative case study findings from teachers' interviews, observations, and lesson plans that revealed themes that informed the research questions (Creswell, 2012). The data analysis used the processes of organizing the data, data exploration, coding, building themes, and interpreting the data (Lodico et al., 2010). Triangulation was used to ensure credibility and validity of the data and produce a deeper understanding of the meaning of each of the data sets (Bogdan & Biklen, 2007; Creswell, 2012).

The findings provide a comprehensive description of teachers' perceptions of the push-in program to support ESOL students' mathematics skills and how they deliver instruction within the push-in setting. A description of the research study project will be discussed in Section 3.

Section 3: The Project

Introduction

This section is a description of the project that details the recommendation for the teacher professional development project based on the findings from the research study and the review of literature. This section also describes the goals and rationale of the project, how the project will be implemented, a timetable for implementation of the project, potential supports needed as well as potential barriers that might arise. The section will also provide a description of the project evaluation plan, the roles and responsibilities of teachers, and the local and far-reaching implications of social change.

Purpose

The purpose of this study was to examine ESOL teachers' perceptions of the current push-in ESOL program in terms of the development of students' mathematics skills and the mathematics instructional strategies used in the school to meet the learning need of ESOL students. The purpose of the research was also to elicit and describe the perceptions of educators as they plan strategies to improve ESOL students' performance to provide insight into strengths and gaps in the program and what further professional development was needed.

Analysis of the data indicated that while the ESOL teachers perceived the push-in program to be effective because they saw themselves as highly qualified and as using best practices, they continued to struggle with addressing the needs of all students due to a variety of barriers including the challenge of collaborating with the classroom teachers. One way to address this gap in practice is through designing and implementing a

professional development project that promotes collaboration between ESOL teachers and the classroom teacher.

Description and Goal

The project resulting from this study is a 3-day professional development project (Appendix A) intended for Grades 3 through 5 ESOL and classroom teachers. The problem and findings from the qualitative case study form the basis for this project. The goal of the professional development is to provide an opportunity for classroom and ESOL teachers to learn how to better collaborate to meet the needs of all students.

A professional development workshop was created based on lessons learned from research literature and the data collected during this study that revealed a need for building collaborating partnership within the push-in setting between ESOL teachers and their collaborative classroom teachers. The professional development sessions will help classroom teachers connect with their colleagues and build a more collaborative atmosphere in the push-in classrooms. This in turn will support ESOL students who are struggling in mathematics.

Finally, the professional development will provide resources to ESOL and classroom teachers to support ESOL students' mathematics skills. The professional development will take place at the beginning of the 2018 school year.

Rationale

This project was based on the research findings that indicated that the push-in teachers were highly qualified educators using best practices in the push-in classrooms. However, the teachers continued to struggle to meet the needs of ESOL students in the

push-in setting. Two aspects that emerged related to the challenges of coteaching and collaboration were that (a) ESOL teachers did not always feel welcome in the classroom, and (b) participants had insufficient time to collaborate and plan with the classroom teachers. Despite these challenges, the participants perceived that collaboration between ESOL and classroom teacher was important for student success in the push-in program. One way to address this gap in practice may be through professional development that provides coteaching strategies to improve collaboration and planning time between ESOL teachers and the classroom teachers.

Review of the Literature

The literature review was conducted to identify professional development strategies that can help ESOL teachers and classroom teachers collaborate to better address the needs of ESOL students. This section discusses the literature search strategies and describes what the research literature has recommended as professional development learning focused on collaboration for ESOL and classroom teachers.

I conducted the literature search using peer-reviewed articles gathered through the ERIC, Sage Journals, Education Research Complete education databases. Google Scholar was also used to find additional information regarding professional development that focused on collaboration. The key words I used in the search were *professional development, professional development practices, ESL teacher and professional development, ESL teacher support, teacher learning, collaborative learning, co-teaching, partnership, benefits, advantages, and feedback.*

Professional Development

Professional development is intended to increase teachers' instructional growth (Kennedy, 2016), improve teacher performance, and bring about change in teaching approaches by correcting unsuccessful practices (Sharma, 2016; Whitworth & Chiu, 2015). According to Bayar (2014), professional development is a vital tool schools and school districts use to ensure that teachers continuously improve their instructional practices and provide opportunities to learn new approaches and knowledge required to improve instruction to increase students' learning.

Research has shown that professional development for teachers improves their classroom instruction approaches through increased knowledge, pedagogical practices, and self-confidence (Dixon, Yssel, McConnell, & Hardin, 2014; Krasnoff & Education Northwest, 2015; Lin, Cheng, & Wu, 2015). Most importantly, it is necessary that teachers receive professional development that provides them with opportunities to focus on the needs of their student to enable to adapt in a more sensitive manner to meet their needs.

Professional development must be authentic, meaningful, and relevant to teachers in order for them to engage in active learning and to maintain their interest in the professional development experience (Cheon, Reeve, Lee & Lee, 2018; Dever & Lash, 2013). In order for professional development to improve teacher practices used on a regular basis and promote academic learning, it must be continual and ongoing (Michaels, & O'Connor 2015; Murray, 2013).

If professional development is going to matter it has to be specific to what teachers teach and the skills they need (Krasnoff & Education Northwest, 2015; Murray, 2013; Parise, Finkelstein, & Alterman, 2015). In other words, in order for professional development to be effective in terms of influencing systemic changes to practice, teachers must perceive the need in a practical sense (Sanders, Parsons, Mwarumba & Thomas, 2015).

Carefully designed professional development consistently helps teachers learn how to implement a more supportive and engaging classroom atmosphere (Cheon, et al., 2018; Lin et al., 2015). The proposed professional development project meets these requirements in that it addresses what the teacher participants identified as a practical need. The experience will provide teachers with useful tools they can implement immediately from the very beginning of the school year. Furthermore, the follow-up evaluation given 3 months after the professional development seminar will determine in what ways, if at all, the experience improves teacher performance and contributes to teacher growth likely to result in lasting positive change. The evaluation will also provide an opportunity for teachers to communicate their insights as to what ongoing professional development is needed and how to improve the seminar they experience for the benefit of future participants.

Teacher Collaboration

For the professional development project, I will be using a collaborative learning experience to model and build teacher collaboration. Teachers will work together to view and analyze curricular models and modeling of best instructional practices along with

lesson plans, unit plans, student work samples, observations of peer teachers, and videos of teaching practices in action.

Chapman et al. (2016) indicated that collaborative learning improves teachers' instructional strategies in the classroom. Dimock (2015) argued that effective collaborative practice requires time and space, support from school administration, access to external expertise, a sense of autonomy, and a belief that teachers have ideas to contribute.

To meet these requirements, the proposed professional development is designed to take place over 3 days to allow sufficient time for participants to engage in collaborative learning, participate in planning, and build coteaching relationships before the school year begins. The professional development seminar is also designed to allow teachers to demonstrate their expertise and make choices based on their needs.

The power of teacher collaboration. Schools are increasingly investing time and resources toward teachers' collaboration (Vangrieken, Dochy, Raes, & Kyndt, 2015). Briars (2016) and Edmondson (2013) have shown that there is the need for teachers to be consistently involved in collaborative learning to successfully perform their job. Briars argued that collaboration among teachers is vital to support teachers' continuing professional growth, which helps to deepen their teaching practices and understanding of mathematics.

An important feature of teacher collaboration and a collaborative school culture is its task-oriented focus involving working and reflecting together for job-related purposes with the shared objective of increasing levels of student achievement (Bond, 2014; Boyd

& Glazier, 2017). A professional development seminar is a powerful tool to foster collaboration between ESOL and classroom teachers that can lead to improved teaching (Vangrieken et al., 2015).

One of the purposes of collaboration is to make team members stronger by collaborating through sharing of ideas to maximize team learning. As teachers work together during the professional development seminars, they can share their knowledge of best instructional practices and collaborate toward solving classroom problems. Team learning can be maximized through positive interaction, interdependence, individual accountability, and the development of engaging group activities (Sawyer, 2017). According to Sawyer, group collaboration can lead to positive interactions in the school environment. Additionally, results from a teaching and learning survey conducted by Retnowati et al. (2017) revealed that collaboration among teachers resulted in best instructional practices that can promote greater job satisfaction.

Teacher collaboration has also been reported to have lasting impact on school improvement. Shaffer and Thomas-Brown (2015) indicated that collaboration is beneficial to teachers and students. One benefit is continuous opportunities to learn new practices from team members resulting in improved teaching strategies because of sharing of ideas and activities (Echevarria et al., 2016). Researchers Ronfeldt et al. (2015) emphasized that academic success that can be achieved through collaborative planning, sharing of resources and strategies, and delivery of improved instructional strategies. When each member of the coteaching partnership is working collaboratively to complete tasks, the work of the other teacher will be easier (Tran, 2013). The professional

development seminars will help to establish relationships and share resources and strategies that will allow teachers to function as a cohesive team with an aim of achieving a shared goal.

Furthermore, collaboration embedded in ongoing professional development impacts the teaching approach of all teachers individually as well as collectively (Shaffer & Thomas-Brown, 2015). Because ESOL and classroom teachers can learn and grow in their teaching practices together, collaboration is an effective form of on-the-job professional development (Mandel & Eiserman, 2015). Therefore, a collaborative approach to teaching can result in greater outcomes for the school capable of closing achievement gaps in mathematics.

Because mathematics achievement is an area of concern throughout the research site, teachers who attend the professional seminars would be able to work with their team members to use and share engaging strategies and resources. These can be potentially used by the entire teaching staff to support the needs of all students.

Challenges of collaboration. Collaboration, according to Shand and Farrelly (2018), has its challenges as well as benefits. Teacher collaboration can be challenging because it comes with different types of resistance. Some of the challenges involve the teacher or group dynamic (Kiron et al., 2015; Ronfeldt et al., 2015; Vangrieken et al., 2015).

Important challenging personal characteristics of teachers may involve issues such as competing against each other, lack of skills, unwillingness to collaborate, fear of or resistance to a sense of loss of autonomy, and differences in personalities or

pedagogical philosophies. Challenging group characteristics may involve disagreement about team objectives and poor leadership skills (Vangrieken et al., 2015). Finally, the most important organizational characteristics that may possibly influence the success of collaborative efforts involve norms of professional autonomy, institutional traditions, time constraints, and discipline-related concerns (Jenkins & Grace, 2016).

According to Dee and Wyckoff (2015), competitiveness can have negative impacts on teachers, especially when performance is linked to teacher evaluation, incentives, pay, and tenure. As a result, some teachers might refuse to share ideas and best practices that work well in the classroom; this type of resistance may lead to interpersonal conflict and tensions among teachers (Johnson, 2012).

To avoid conflicts, teachers need to be given incentives to change their thinking to a growth mindset (Rattan et al., 2015). They must be convinced of the need to move away from valuing individualism, autonomy, and independence, over leveraging resources for the benefit of all children. Furthermore, each coteacher must develop a clear role for each member to support collaborative learning.

Incompatibility and mistrust of coteaching situations can lead to conflict (Pratt, 2014). Therefore, the professional development could address these conflicts by providing opportunities for open communication among teachers to establish clear understanding of each other's rationale for instructional choices and negotiate agreements for classroom behaviors. This professional development seminar will involve frameworks used to facilitate discussion and listening as teachers collaborate on curriculum content and lesson planning for their students.

Visone (2016) identified several additional challenges to the collaborative process. One challenge is the organizational characteristics of the school where some teachers may see collaboration to tie standardized results to their performance and a means of disciplining teachers for not using strategies discussed in training. In contrast, the goal of this seminar is not to train teachers to teach with fidelity to a particular program but to gain flexibility with the push-in model. Thus, this clear difference is likely to reduce a sense of resistance or anxiety for participants.

Another challenge Visone (2016) discussed is that time constraints are one of the biggest barriers to collaboration. Many, though not all, teachers often regard collaboration as something extra they need to do and not as a way to share the work and improve teaching. Developing a sense of the practical benefits of collaboration takes time and experience. It takes time to learn a new skill or technique, such as collaboration and teamwork, to the satisfaction of all team members (Ronfeldt et al., 2015).

Teachers need time to observe and work with one another to develop trust and learn how to offer and receive constructive feedback from their peers, one of the most useful tools for improving practice (Darling-Hammond, 2015). Team members often feel that they have to accomplish a certain amount of work in a particular time frame. Some of these challenges are out of the control of teachers but need to be taken into consideration when planning collaborative seminars.

To address these challenges, teachers need a positive and supportive atmosphere that allows them to share their experiences, stories, and knowledge so everyone can have the opportunity to learn from each other. Administrators need to be supportive of the staff

by providing additional time for professional learning and collaboration (Darling-Hammond, 2015). To make teacher collaboration effective, school administrators must support the collaborative learning process by developing clear expectations for teachers along with providing time for teams to collaborate. Guidelines need to be set at the start of the process so that all members know what is expected and required of them. These guidelines include that members will attend the meetings, pay attention to each other without interruption, place no blame or judgment on others, and are open to comments and interpretations from other members. Through the discussions, interaction, and sharing of ideas, the professional development will provide teachers with skills to build collaborative relationship as they develop a give-and-take attitude to learn from one another and build relationships.

The professional development will foster this sense of openness by providing periods of time where teachers will interact and discover ways to communicate with each other. Therefore, the planned professional development seminar can also contribute to positive collaboration between the third through fifth grades ESOL and classroom teachers at the research site as they collaborate to plan and share lessons and responsibilities, discuss each other teaching strengths.

Models for collaboration. Co-teaching developed out of the field of push-in for special education students, but the methods of co-teaching are applicable for ESOL learners. Co-teaching involves two or more teachers delivering instruction in the same classroom as a way to better support the needs of diverse group of students like ESOL learners (Dove & Honisfeld, 2017). Friend and Cook (2013) described six co-teaching

models that can be implemented within the classroom: (a) one teach, one assist, (b) one teach, one observe, (c) station teaching, (d) parallel teaching, (e) alternative teaching, and (f) team teaching. According to Friend and Cook (2003) learning and implementing these models have a strong potential to address the challenges the teachers and students are experiencing in schools such as the research site.

One teach, one assist. During the co-teaching I observed, several of the teachers used the one teach, one assist model described by Friend et al. (2013). The classroom teacher taught the lesson while the ESOL teacher walked around the class providing guidance and feedback by asking and responding to students' questions. The one teach, one assist model has been identified to be the most popular approach to co-teaching (Friend & Cook, 2013). This approach is consistent with Honigsfeld and Dove's (2017) study that found this co-teaching practice can help to improve students' academic development.

However, the participants indicated that there are challenges within the coteaching model they currently use in the classroom. Successful co-teaching depends on the strength of the co-teaching relationship, the shared responsibilities and agreed upon goals of the teachers involved (Conderman & Hedin, 2013; Cleaveland, 2015). The proposed professional development seminar could provide structured activities and time to facilitate teachers to negotiate more successful co-teaching strategies. ESOL and classroom teachers would be given the opportunity to work alongside each other to share ideas and skills to support the development of their instructional practices that can be beneficial to all students. The benefits of guided co-planning are confirmed by research

conducted by Conderman and Hedin (2014) and by Gerlach (2017). These studies found that there are lasting benefits to students and teachers alike when teachers are provided with practical activities that facilitate opportunities for them to combine and leverage their knowledge and strengths in the classroom.

One teach, one observe. In this co-teaching model, one teacher provides the majority of the instruction while the other teacher walks around observing the class and providing feedback to the main teacher. This approach is sometimes used for special education purposes where the co-teacher collects information on students to assess their performance in the class. This co-teaching model is not in use at the research site.

Parallel teaching. Parallel teaching is a model of co-teaching wherein the class is divided into two groups and the ESOL and the classroom teacher each instruct a group (Heck & Bacharach, 2016). In this model, the two teachers plan and deliver essentially the same lesson. They each deliver the same content and utilize similar or the same teaching resources during the delivery of a lesson, however, the ESOL teacher is allowed to make modification for ESOL students (Friend & Bursuck, 2012; Johnson, 2012). In addition, teachers may rotate during the presentation of specific parts of the lesson.

Parallel teaching allows for a smaller teacher-to-student ratio, but limits the potential benefit of having two teachers cooperating to serve all students in the classroom simultaneously. While some students may benefit from working directly with the specialist teacher, some may never receive the opportunity to work with the classroom teacher, who may also provide valuable instructional assistance to students in a co-taught

classroom (Friend, 2015). This model is used mainly in the fifth-grade classrooms at the research site.

Station teaching. In station teaching, the two educators are jointly responsible for teaching the lesson, however, each teacher is responsible for providing specific content and supporting particular station activities (Friend & Cook, 2013). This model creates opportunities for small-group instruction and independent learning at different activity centers to support ESOL students' mathematics needs. Teachers can work directly at one of the centers or rotate to supervise the class.

Station teaching involves an equitable distribution of resources, increased instructional options for all both teachers, diversity of instructional techniques, and positive interactions in the classroom. Furthermore, teachers proactively collaborate with each other to support high expectations for students' learning by consistently sharing information and best practices. Station teaching is used at the research site as it allows students to interact with both teachers continuously.

Alternative teaching. In the alternative approach, the classroom teacher is often in charge of most of the students while the ESOL or specialist teacher *pushes-in* to the classroom and provides small group instruction to the ESOL students (Friend & Wilson, 2015). There can be challenges with this approach when this is the co-teaching model used the most consistently (Honigsfeld & Dove, 2015b; Wilson, 2015). One such challenge is that ESOL students miss opportunities to socialize with their English-speaking peers when they are taken out of the regular classroom environment. This situation may ultimately slow ESOL students' language acquisition rates and compromise

their sense of inclusion as members of the whole classroom community (McClure & Cahnmann-Taylor, 2010; Wilson, 2016).

It is vital for both teachers to collaborate in the classroom with a feeling of shared responsibility for this model to work effectively and prevent feelings of isolation on both the students' and the ESOL teachers' part. This model is consistently used at the research site in the push-in setting.

Team teaching. Team teaching is another co-teaching model in which both teachers share equal responsibility for planning and the delivery of instruction (Friend & Cook, 2013). In this approach, teams of teachers collaborate to plan content area units, and the teacher with the most expertise on a given topic teaches the lesson to a large group of students.

Following whole class instruction, students are divided into small groups for differentiated instruction and assessments (Friend et al., 2010; Mandel & Eiserman, 2015; Richards, Frank, Sableski, & Arnold, 2016). Although teams of teachers do collaborate to plan lessons at the school, this particular approach to team teaching is not one of the models in use at the research site.

Co-teaching summary. Co-teaching is intended to influence the approaches of both ESOL and classroom teachers as they support students' academic needs (Isherwood, Barger-Anderson, and Erickson, 2013; James, 2017; Villa, Thousand, & Nevin, 2013). However, each co-teaching model has benefits and challenges, thus teachers need to know what each entails to inform careful selection of approaches for different situations

and before implementation in the classroom (Jenkins & Grace, 2016; Pratt, 2014; Shand & Farrelly, 2018).

Isherwood et al. (2013) urged teachers to study each model to identify the appropriate models for instruction. Therefore, the professional development seminar has the potential to support ESOL and classroom teacher collaboration through the development of teacher teams and a shared understanding and agreement of what co-teaching model will work best for each set of teachers. This collaboration can build better working relationships and result in improved instruction (Truijen, Slegers, Meelissen & Nieuwenhuis, 2013).

Professional Development as Collaborative Learning

Collaborative learning is effective for improving teachers' collaboration (Hallam, Smith, Hite, Hite & Wilcox, 2015). The professional development seminar will focus on collaboration between ESOL and classroom teachers and will be structured as a collaborative learning experience. The underlying premise of collaborative learning is consensus building through cooperation amongst group members (Sun, Loeb & Grissom, 2017).

Through collaborative learning, there is a sharing of authority and acceptance of responsibility among group members (Dimock, 2015; Sun et al., 2013). Collaborative learning emphasizes a team approach in which the group effort determines the success of the team (Spillane, Hopkins & Sweet, 2017). Research conducted by Spillane et al. (2017) indicated that when a school district invests resources in collaborative learning, the outcome can result in changes in teachers' beliefs about mathematics instruction.

Friend (2014) suggested that collaborative learning is based on “mutual goals, parity, voluntariness, and shared responsibility” (p. 10). In keeping with these ideas, ESOL teachers and classroom teachers involved in the professional development seminar will be provided with structured activities that will involve examining a variety of strategies to remove barriers to mathematics learning and develop rationale for how to select effective ways to scaffold learning experiences. With support, teachers will be empowered to arrive at common goals that inform the design of instructional strategies that involve an effective division of labor to positively support students in an equitable manner (Moore, 2014, Williamson, Archibald & McGregor, 2016).

Social benefits. Collaborative learning is important because the development of learning communities promotes the development of a social support system for teachers (Sherif, 2017; Tyler, 2017). Building in social benefits is consistent with the conceptual framework of social learning theory on which the study is based (Bandura, 1975).

Collaborative learning builds diverse understanding and establishes a positive atmosphere for modeling, a key element of social learning theory. A significant benefit of using a collaborative learning model is that when members of a group work together long enough during a course or seminar, the members of the teams will get to know each other and may result in teachers spending time together outside of the classroom (Grant & Ray, 2018; McLeskey, Rosenberg & Westling, 2017; Hallam, Smith, Hite, Hite, & Wilcox, 2015).

The professional development addresses this practice by providing an extended opportunity for teachers to build relationships before entering the classroom. Positive

relationships built during the professional development wherein teachers develop understanding of their shared strengths and how they may leverage each others' expertise to bridge any gaps in experience and expertise may contribute to the creation of a solid foundation of trust and willingness to share responsibilities that will extend into the school year.

Project Description

Participants in the professional development seminar would consist of ESOL teachers, including the research participants, and the classroom teachers. The following section involves a discussion of the needed resources, potential barriers, and potential solutions to those barriers. The section also presents a timetable for delivering the professional development and a description of my role in the project.

Needed Resources

The success of the professional development seminar project would depend on the provision of time and professional resources. The school district Chief Professional Services Officer would be asked for assistance in implementing the professional development seminar. The school academic coach would be called upon assist with identifying individuals qualified to serve on a panel of experienced co-teachers.

As depicted in the appendices, I have developed teacher recruitment materials, a seminar syllabus, and a set of prompts that outline the learning goals, objectives, and activities for each of the three days. Another key resource I would offer the participants is practical information regarding research-based practices on collaborative teaching models

and ESOL best practices described in the literature I read. Plus, I will bring the lessons learned from my study.

I would also offer to this seminar handouts adapted for the purposes of this particular professional development experience. Another key resource I offer are selected readings that provide another modality for communicating the details of the co-teaching models and how they can help ESOL and classroom teachers improve their collaborative skills.

Potential Barriers

There are several potential barriers associated with planning professional development. One factor may be teachers' willingness to participate in the seminar. However, the most problematic barriers may be time and scheduling (Dailey-Hebert, Mandernach, Donnelly-Sallee & Norris, 2014).

Time and scheduling is mostly likely to be a potential barrier because during the interviews teachers indicated that they sometimes could not find the time to plan with their team members. The immediate demands on teachers' time for lesson planning, grading and preparing for class the next day tend to take precedence during the academic year. I would work to alleviate this barrier by providing meaningful information beforehand to help the teachers to better anticipate the planning, implementation, and reflection cycles. Understanding what is involved in each step will assist participants' with time management and understanding the value of spending time in the seminar and the in follow up support and evaluation processes.

Reminding teachers that the professional development is designed in direct response to their perceptions of their needs during the interview process and not in response to a mandate from the administration may help to encourage teachers to understand the value of the experience.

Also, I would arrange with the principal and the Chief Professional Office at the school district to hold the seminar during the scheduled teacher planning days in August at the beginning of the 2018-2019 academic year. Thus, the seminar would be part of the time the teachers already expect to spend on professional development or planning rather than being an additional requirement.

Proposal for Implementation and Timetable

As mentioned above, the implementation of this project would take place during the month preceding the beginning of the academic year. I would schedule an appointment with the principal, present my findings, and provide a timetable for the professional development seminar. This timetable would coincide with the school district schedule for the four-days staff planning and in-service training held every year at the beginning of the academic year.

Aligning this proposed seminar with the calendar already in place would enable me to integrate my work into the School district and school calendar more easily because the three-day seminar fits into time already designated for staff development. Furthermore, this beginning date would give the District and school administration time to provide the necessary resources for the seminar.

Once the school district and building administrators accept the professional development plan, I would send an email to the third through fifth grade teachers detailing the learning goals, objectives, and contents of the professional development seminar. At the same time, the principal would send out a letter to the school staff that would describe the professional development venue, dates, and times to begin on the first day of the usual staff development days. This would include informing the third through fifth grade teachers of their session dates, times, and room number.

Roles and Responsibilities

As the project lead, it would be my responsibility to make sure the goals of the professional development are met. My responsibility would be to further plan the details of the seminar sessions, obtain the supplies, prepare and provide supporting resources.

For example, I would work with the school administration and Chief Professional Officer to ensure that the three days of professional development are counted toward the number of professional development days teachers are required to participate in prior to recruiting teacher participants.

Next, the role of the school administrators would be to provide feedback and support on logistical planning. This would involve reserving the instructional space and equipment for the presentations and teacher planning activities and work sessions. I would work with the school secretary to procure supplies and materials such as mathematics and language instruction manipulatives useful for modeling and simulating activities. As mentioned above, I would work with school district personnel to identify suitable people to serve as members on the expert panel of experienced co-teachers.

Next, I would work to advertise the learning opportunity and recruit the expert panel of experienced co-teachers. I would also work with the school administrator to schedule the seminar as one of several offerings available at the back-to-school teacher professional development days in August.

My role during the seminar is that I would serve as the lead seminar instructor during the three days and facilitate collaborative work amongst the participants. I would also create and implement the evaluation of the professional development seminar.

The teacher participants' role would be to attend and actively participate in the professional development. The teachers also would have a responsibility to collaborate with their colleagues and to implement the new instructional strategies in their mathematics lessons. Their final responsibility would be to provide reflective feedback by participating an evaluation. The next section describes the evaluation plan.

Project Evaluation Plan

The proposed professional development plan is designed to provide an opportunity for ESOL and classroom teachers to learn how to better collaborate to meet the needs of all students. At the conclusion of each day of the professional development seminar, I would provide teachers with an anonymous evaluation sheet to fill out and return to me. This exit ticket would provide useful feedback to inform any necessary adaptations for the session to be held on the following day.

I would also send out a follow up evaluation 3 months into the school year. The purpose of this evaluation would be to get a sense of whether or not the ELOB and classroom teachers implement what they learned in the seminar and if so, how they draw

on the strategies they learned. I would also elicit their reflections on how the new instructional strategies are working in their classrooms to support student learning. The purpose of this follow-up evaluation is to provide some sense of the effectiveness of the professional development to improve practices.

The main stakeholders include ESOL teachers and third through fifth grade classroom teachers along with the administrators at the school where the study took place. Feedback provided through the teachers' evaluations of the seminar and techniques learned therein would be used to inform changes to the design of the professional development experience. It is expected that ESOL teachers who are new to the school will benefit from improvements made to the revised seminar.

Depending on the results of the evaluation, follow-up professional development could be created for the participating teachers. The results of the evaluations would be analyzed and shared with the school administrators, the school-based instructional coach, and the Chief Professional Officer at the school district to develop a plan for further supports.

Again, the overall purpose of the professional development is for ESOL and classroom teachers to learn how to better collaborate in order to meet the needs of all students. Likewise, the overall evaluation objective is to provide teachers with the opportunity to voice their opinions and reflect on the effectiveness of the professional development.

Project Implications

Recall that the expected implication for social change is to address the practice of collaboration between classroom and ESOL teachers at the research site to improve instruction to better serve the needs of all students, especially ESOL students who are struggling in mathematics. The project design was based on the research findings that indicated the need for improved collaboration between ESOL and classroom teachers to meet the needs of all students.

The study participants perceived that the push-in program was successful because the teachers were highly qualified and able to use best instructional practices, but they also indicated that better collaboration between ESOL and classroom teachers was important for the success of the push-in program. In direct response to this observation, the professional development design would provide opportunities involving structured activities to facilitate improvements to teacher collaboration in the service of providing culturally and linguistically sensitive instruction. As a result of the project, the school culture could shift to being more collaborative overall, which could result in a more satisfying and productive learning environment and higher levels of achievement for all students.

Recall that through the collaborative learning seminar, teachers would be able to share best practices that can support ESOL student learning. Documenting these practices during the seminar and collecting evaluation data during the implementation of the new and revised collaborative learning strategies could contribute useful data to inform improvements in other school districts throughout the region.

The potential of contributing to improvements to ESOL instruction beyond the study site is important. Given that ESOL students nationwide are failing to demonstrate adequate levels of proficiency or progress in mathematics on mandated state tests (Farah, 2017) the revised design of seminar could be shared with instructional coaches and ESOL teachers beyond the research site who can use the strategies provided to serve the needs of their students.

In conclusion, Section 3 described the development and details of the professional development project designed to address the problem of ELOB students' low levels of mathematics proficiency that inspired the study. This section presented an introduction to the proposed professional development seminar, detailed project goals, and provided rationale for conducting the project. A review of literature related to co-teaching models was provided; these are models that will be introduced during the seminar to broaden teachers' pedagogical knowledge of strategies available to them to work in a collaborative manner to teach all students. Finally, Section 3 also described potential barriers to the project, project implementation, and roles and responsibilities.

The last section of this manuscript is Section 4. This section will conclude the study with final reflections and conclusions.

Section 4: Reflections and Conclusions

Project Strengths and Limitations

A qualitative research method was used to conduct this study to examine third, fourth, and fifth grade ESOL teachers' perceptions of the current push-in ESOL program as it related to students' mathematics understanding and perceptions of best practices to meet the need of ESOL students. Section 4 consists of a review of the project's strengths and limitations. This section also involves recommendations for ways to address the problem of practice. Finally, Section 4 will share what I learned about scholarship, project development, and evaluation as well as leadership change.

Project Strengths and Limitations

Strengths

This project has several strengths. First, researching ideas to design the collaborative learning professional development seminars allowed me to address the problem at the focus school regarding the challenges of coteaching and collaboration between ESOL and classroom teachers. Through this project, I can offer current research-based recommendations relevant to ESOL and classroom teachers in busy push-in classroom settings. These recommendations could be used within other schools.

In addition, this study and project could provide teachers with useful skills to implement a more collaborative teaching atmosphere within their classrooms. Specifically, the seminar and follow-up period during which participants will implement their plans developed during the 3-day seminar will provide teachers with opportunities to collaborate with peers. Lessons learned while developing their coteaching approach

can be incorporated in mathematics instruction and in other disciplines taught at the elementary level. As teachers gain perspective on how and why the strategies they try work to support students, they can subsequently share their ideas with other teachers to the benefit of the entire school.

To promote an analytic mindset in the seminar that encourages teachers to build on what is already known, the first half of the first day of the professional development would provide a detailed yet concise overview of the study findings and recommendations. Specifically, I would address the themes identified in the case study and provided recommendations that address each theme.

In the second half of the first day, the professional development would focus on the different coteaching models. Activities are planned that specifically focus on building productive, trusting collaborative relationships between the classroom and ESOL teachers such that ESOL feel welcome and valued in the classroom for the important resources they have to offer the classes.

Limitations

Despite the strengths of this project study, there are also some limitations. First, the research study for this project was based on the perceptions of ESOL teachers in one elementary school in the southeastern region of the United States. Therefore, the recommendations may only address the needs of ESOL teachers in the geographical region and possibly only at this specific research site. Also, the study was limited to 12 participants who were purposefully selected at one elementary school.

Although the teachers would be provided with coteaching strategies during professional development, they might still need additional assistance with the actual implementation of the different coteaching approaches within the busy classroom. They might need assistance on when to implement the different models in their daily schedule, and they might need a model of how coteaching should flow in their class. Finally, a possible limitation is the acceptance of the different coteaching models within the school district. The district's personnel may not choose to implement the recommendations.

Recommendations for Alternative Approaches

There are several approaches that can be used to mitigate the limitations to this study. For example, one approach to addressing the limitation of this piece of research being based on the perceptions of ESOL teachers in one elementary schools would be to conduct studies using a similar or the same research design within the other elementary schools in the school district that are also experiencing adapting instruction to meet the needs of large and rapidly expanding ESOL student populations.

Furthermore, this study and professional development design could also be applied and compared in different regions of the county. Similarly, limitation of 12 participants at one elementary school could be resolved by expanding the study to more ESOL teachers in the other grade levels and across the district and county.

Another limitation of the project study is that teachers may require additional assistance with the actual implementation of the different coteaching approaches following the initial seminar. This limitation can be addressed by having samples of coteaching strategies lesson plans in a curriculum resource book or in Google classroom

or Google Doc for ESOL teachers, classroom teachers, administrators, and instructional coaches to access when needed.

In addition, I could have the administrators arrange to incorporate additional, ongoing professional development coaching in the different coteaching models. This ongoing professional development could be informed by study results and reflections in the evaluations provided by teacher participants. The plan for the professional development would allow the inclusion of the recommendations without impeding on current training plans by the district.

The final alternative solution focuses on the limitation that the district personnel may potentially not accept my recommendations of coteaching models. This limitation could be resolved by introducing the different coteaching approaches during a faculty meeting presentation. Districts may need to establish or increase professional development opportunities to address specific approaches and strategies that teachers used infrequently. Providing ESOL and classroom teachers with ongoing professional development would build a more supportive learning environment to meet the needs of all students. Therefore, stakeholders could support the development of opportunities for collaborative learning among teachers to increase students learning.

Scholarship, Project Development and Evaluation, and Leadership and Change

Engaging in this research process has contributed to my understanding of what it means to be a scholar. I have learned that conducting research involves a long, cumbersome, and repetitive process. One of the greatest benefits of this experience is the knowledge and skills I gained conducting a relevant literature review by using current

peer reviewed, primary, and reliable sources. I not only gained new research-based insights, I also learned how to systemically conduct a literature review and how to apply criteria of analysis to understanding how the literature I read relates to my results and to my stance as teacher-researcher.

Another major skill I have attained around scholarship is the ability to gather and analyze data to inform a research question in the social sciences. I also learned to organize data to discover themes that address the research questions. I learned to present my findings and recommendations that directly relate to the research data. The knowledge and understanding gained through this process were vital in the completion of this project and in my growth as a scholar.

During this doctoral journey, reflection has become an integral aspect of my practice as an emerging teacher-researcher. This doctoral journey has allowed me to reflect on my doctoral work and provided me with a clear path to move forward as a professional.

One phase of the doctoral study that was difficult was time management. However, this obstacle was overcome due to the support of my dissertation chair, which has allowed me to complete my doctoral studies after 4 years. The work on this project study has expanded my interest in collaborative learning through coteaching. I am interested in pursuing future research in the alternative methods to assist teachers in collaborative learning in busy classroom settings.

Project Development and Evaluation

The development of this project allowed me to broaden my research skills. One of the most compelling facts I learned during the development of my project is that it takes careful planning and organization to implement a successful professional development seminar. Developing a project also involves considering the audience to ensure that teachers will gain valuable experience to take back to their classroom that meets the needs they expressed throughout the study. I realized that a collaborative learning professional development would allow me to present my study, findings, and recommendations that would address the major challenges and lessons learned from my study in a manner that would allow me to reach and benefit a broader audience of stakeholders interested in strategies for improvement ESOL students' learning outcomes in mathematics.

Leadership and Change

I have always seen myself as a leader who can influence changes in my workplace and this project study confirmed this self-concept. As I collected, analyzed the data, and began planning the professional development seminars, I re-conceptualized leadership as I gained new experiences, confidence, and responsibilities by engaging with teachers to bring about purposeful learning that can result in changes and growth in the school.

Along with the acquisition of this knowledge, this project allowed me to further validate my understanding of how to arrive at a solution to a research problem through exposure to various educational journals, articles on education, and dissertations. Based on the research-based knowledge gained through this experience, I am now in a

strengthened position to provide guidance to policy makers and administrators to ensure that the available teacher in-service opportunities are effective and meet teachers' needs.

Finally, I am confident that this project will create a renewed awareness within my school culture of the importance of drawing on available resources within and beyond our own community to strengthen the push-in program. This project will provide teachers with valuable resources necessary to make changes to their practices through coteaching to support ESOL student mathematics achievement.

Reflection on Importance of the Work

Analysis of Self as Scholar

The increase in the population of ESOL students is a major concern within the United States. Through the study, I have identified this growing concern at my research site. A major implication of this study is the impact it has on supporting ESOL students' mathematics achievement. Through the collection and analysis of data several themes emerged that revealed teachers' perceptions of the push-in program. Consequently, it was determined that a professional development seminar with follow up would provide teachers with the opportunities to collaborate to overcome the challenges identified in the study.

Finally, I gained confidence that research-based, ongoing professional development has the potential to result in improvements to student achievement. Ultimately, because the professional development design emerged directly from the concerns participants related, I feel confident that this work will address significant barriers to ELOB student success. Indeed, I learned from reading about similar work that

this study and resulting professional development seminar has strong potential for bringing about positive change to the ESOL teachers and students throughout the school and indeed my school district.

Analysis of Self as Practitioner

As a practitioner, I achieved huge milestones from completing this study. At the beginning of this journey, I struggled to understand the expectations of a scholar. However, as the journey continued my understanding became clear and it now brings me great pleasure to reflect on this experience of becoming a scholar. Throughout the study the influence of my opinions and personal biases challenged my work. However, I learned to understand how to control for this potential threat to validity while focusing on the facts presented in the data and from the related literature reviews. Through this scholarly research, I learned that the problems inherent to collaboration in the push-in program model are not unique. However, my new sensitivities of the nature of barriers and affordances to collaboration have expanded my awareness far beyond my focus school.

Analysis of Self as Project Developer

As I developed this project, I focused on problems of practice I was most interested in and the challenges I faced as a full-time educator, parent, and doctoral student. The challenges I faced were limits of time and the large amount of work and detail required to complete the project study. The breadth of study necessary to thoroughly understand the issues involved was extensive because, although the project

study was about collaborative learning, it was also necessary to develop understanding of the different coteaching models of instruction and how they function.

To develop the appropriate type of project study, the effort entailed deep exploration of my questions, which entailed constant consideration and refinement as incoming data analysis refocused my understanding of the problem. Throughout the research process, paying attention to every detail of the data collection and coding was essential to ensure the data were valid and reliable. During the interpretation section, the process of using the data and applying findings to the project study design required me to expand my understanding of both the data and its effective application to the project study design.

Finally, mindful that changes to teaching practice require the involvement of reflective practices, the project evaluation required multiple design iterations to ensure that it entailed value added potential for both the participants and for my own work. Here, my own work requires that I continue to maintain a growth mindset as I draw on the study, observations during and following the seminar and the evaluation data to develop improvements to the seminar design.

The Project's Potential Impact on Social Change

This project has a potential for impacting social change in the schools and classrooms for the ESOL push-in program within the school district as well as the county by fostering a more collaborative environment within schools and building stronger co-teaching skills among teachers and specialists such as ESOL teachers. This project recommendation could be incorporated in elementary schools throughout the county by

directly addressing the policy of implementing and supporting collaborative learning between ESOL and classroom through co-teaching approaches to provide best instructional practices to meet the needs of all students.

Implications, Applications, and Directions for Future Research

The purpose of this study was to examine ESOL teachers' perceptions of the current *push-in* ESOL program model in terms of the development of students' mathematics skills and the mathematics instructional strategies required to meet the learning need of ESOL students. The goal was to draw on the study findings to inform the design of a professional development project that will provide teachers with the skills necessary to collaboratively implement co-teaching models in their learning groups to increase ESOL mathematics skills.

Ultimately, I believe that this project could be implemented throughout the county to accurately assess what supports teachers perceive that they need to better serve the rapidly increasing number ESOL students in the schools. Additionally, I argue that professional development needs to be ongoing and that similar seminars should be developed as a result of similar studies.

Furthermore, such programs will need to be evaluated and reviewed to ensure that changes to teaching practices actually do result in supporting improvements to ELOB students' levels of achievement in mathematics. Such evaluations are critical to informing improvements to the professional development activities themselves and shifting practices in adaptive ways over time to better suit the changing needs of diverse students.

I recommend that future research should examine the Georgia Milestones Assessment data for the school to ensure that ESOL students are indeed closing the achievement gap. I also recommend follow up professional development be provided to teachers at the research site and that a follow up study be conducted that builds on what is to be learned from this study and the evaluation data collect three months after the implementation of the seminar.

The implications for further practice are to encourage the use of the most effective co-teaching models by ESOL and classroom teachers. The practice of using collaborative instruction with ESOL students in the push-in classrooms should be promoted and advanced in the educational community to provide ESOL students with every opportunity to succeed in the state wide standardized tests.

The main recommendation for further research is to develop a qualitative study on the experiences of ESOL teachers to involve additional school districts and other schools around the country that have a high population of ESOL students. In addition, I recommend that a broader qualitative study be designed to observe the use and planning of collaborative instruction in the push-in settings through classroom observations of teachers using different co-teaching models. This further research should involve the perceptions of all teachers of ESOL students at the K-12 level.

Conclusion

Section 4 provided reflections and conclusions of the project. This section focused on the limitations and strengths of the study and project and provided recommendations

for further research to examine the impacts of the co-teaching collaborative models in math classes throughout the school, district, state, and nation.

Section four provided an analysis of what I learned about scholarship, project development and evaluation, and leadership and change. I shared a sense of what I learned about myself as a scholar, practitioner, and a project developer. I hope that through the recommendations from the study, educators will continue to collaborate on efforts to solve the challenges inherent to teaching in busy classrooms one step at a time.

The increasing number of ESOL students in classrooms across the country has created a need for research on teaching ESOL students in the push-in classroom. Therefore, this project study was conducted in an effort to determine what ESOL teachers do to meet the mathematics needs of ESOLs in classrooms on a daily basis. This study contributes to addressing a gap in the literature regarding teachers' perceptions of teaching ESOL student in the mainstream classrooms. Although various studies have been conducted related to collaboration between ESOL and classroom teachers, very few focused on the use of the various co-teaching models approaches in the mainstream classroom. Therefore, teacher perceptions of teaching ESOL students in the push-in classrooms were explored within this qualitative case study.

Furthermore, the interviews with ESOL teachers revealed that these teachers perceived that to be successful teaching ESOL students in the push-in setting educators need to be data-driven to provide a supportive classroom atmosphere. Teachers shared the importance of being willing to collaborate, flexible, willing to take risks and be problem-solvers. They also perceived the need to attend ongoing job-embedded

professional development workshops that offer opportunities to learn new strategies, try them out with students, reflect on how those strategies work in different situations and apply these observations overtime to improve their choices of supports provided to ESOL students.

In conclusion, teacher perceptions of using collaboration to meet the needs of ESOL students in the push-in classroom included the idea that it was time-consuming both in and out of the classroom, it was difficult to plan for, and teachers often dealt with a lack of educational resources to use during instruction. Although the participants described a number of challenges they perceived they needed to overcome, they felt that collaboration between classroom and ESOL teachers were necessary to meet the needs of ESOL students.

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Appendix A: Project

Collaborative Professional Development Outcome and Objectives

Program Goals

- A. Review with teachers the foundation of collaboration/co-teaching.
- B. Provide teachers with the necessary skills to implement a more collaborative teaching atmosphere within their classrooms.
- C. Provide teachers with the opportunity to collaborate with peers while developing lesson that can be incorporated within their classroom and content area.

Program Outcome

- A.1. Teachers will demonstrate an understanding of the foundations of collaborative instruction/co-teaching by designing mathematics lessons using the five co-teaching models and sharing those lessons with other participants in the training.
- B.1. Teachers will demonstrate the skills necessary to collaboratively implementing co-teaching models within their classrooms.
- C.1. Teachers will collaborate with peers to develop collaborative lessons plans for classroom use.

Program Objectives

- A.1.a. As a result of the introduction to co-teaching teachers will be able to identify the different co-teaching models and implement the models that are most appropriate for their instructional needs.

- B.1.a. As a result of hearing from teachers who are already implementing co-teaching models within their classrooms, teachers will be introduced to the tools of collaborative instruction and will have the opportunity to plan lessons using these tools.
- C.1.a. As a result of the time spent with peers, teachers will leave the professional development with eight-to-ten lessons using the various co-teaching models that can be implemented upon returning to the classroom.

Appendix B: Professional Development Seminar Schedule

This professional development seminar would occur over the course of three professional development days at the beginning of the 2018-2019 school year.

Day One: Taking action to build collaboration in busy classrooms

Time	Activity
8:00-10:30	<p>Participants gather in the school media center. Presentation begins after a brief ice breaker which will focus on “Getting to know your co-teacher on a personal and professional level.”</p> <p>The presentation will begin with a review of the findings from the project study and an introduction to co-teaching.</p> <p>Participants will be asked, “What is co-teaching?” Following the overview, a short PowerPoint presentation will be used to explain the benefits of co-teaching. To conclude this segment of the session I will reiterate the definitions of collaborative instruction and co-teaching and will present components of co-teaching models that will be later demonstrated by teachers.</p>
10:30-10:45 AM	Restroom and snack break.
10:45-11:30	Presentation continues with focus on building a collaborative relationship with co-teachers so that ESOL teachers feel welcome in the classroom. Professional development

	<p>participants will be encouraged to write and submit questions to be answered by an afternoon panel of teachers currently using co-teaching.</p>
11:30 AM -12:30 PM	Lunch on your own
12:30-1:15 PM	<p>Review of building a collaborative relationship with co-teachers. Professional Development participants will be encouraged to write and submit questions to be answered by the panel in the afternoon.</p>
1:15-2:00 PM	<p>I will share a co-teaching lesson plan, go through the lesson, and discuss implementing collaborative instruction.</p> <p>Professional Development participants will be encouraged to write and submit questions to be answered by the panel in the afternoon.</p>
2:00-2:20 PM	PM Restroom and snack break
2:20-2:55 PM	Teachers who are successfully co-teaching will sit on a panel for a question and answer session with the participants.
2:55-3:15 PM	The presentation will be wrapped up with an evaluation that includes space for any additional questions that can be

	addressed in the next session. An overview of the next session will include a reminder of the supplies the teacher participants will need to bring the next day.
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Day Two: Collaboration and Creation

Time	Activity
8:15-9:00 AM	Coffee After a recap of the information and activities from the previous day, questions from the evaluation will be addressed.
9:00-9:30 AM	Discussion on the five models of co-teaching to support the diverse needs of students.
9:30-9:45 AM	Restroom and snack break.
9:45-11:30 AM	Teachers will come back to the media center and continue the discussion on the co-teaching models. The professional development leader will share websites with the five models of co-teaching models. Participants will break into groups with their co-teachers to develop lessons that use each of the

	<p>co-teaching models. The professional development leader will show teachers lesson planning collaboration sites to help with planning their lessons.</p>
11:30 AM -12:30	PM Lunch on your own
12:30-1:30 PM	<p>Teachers will work with their grade level team to develop teaching strategies using the co-teaching models for helping individuals within busy classrooms. Teachers share lessons and teaching strategies with the larger group of teachers who might use similar co-teaching strategies for the next lesson development. The groups will send a copy of the lesson as an email attachment to the professional development leader.</p> <p>After the teachers refine the lesson, another copy will be sent to the professional development leader.</p>
12:30-1:30 PM	<p>Teachers will work with their grade level team to develop teaching strategies using the co-teaching models for helping individuals within busy classrooms. Teachers share lessons and teaching strategies with the larger group of teachers who might use similar co-teaching strategies for the next lesson development. The groups will send a copy of the lesson as an email attachment to the professional development leader.</p> <p>After the teachers refine the lesson, another copy will be sent</p>

	to the professional development leader
1:30-2:00	The professional development leader will call on grade level team to share a lesson with strategies and resources from another co-teaching model. Professional Development participants will be encouraged to write and submit questions to be answered at the beginning of the next day's session.
1:05-2:15 PM	Restroom and snack break
2:15-2:55 PM	Teachers will begin to develop collaborative lessons that will implement co-teaching strategies. The lessons will be shared and refined the next day.
2:55-3:15 PM	The presentation will be wrapped up with an evaluation that will include space for any additional questions that can be addressed in the next session. An overview of the next session will include a reminder of the supplies the teacher participants will need to bring the next day.

Day Three Collaboration and Creation Continued

Time	Activity
8:15-9:00 AM	<p>Coffee</p> <p>After a recap of the information and activities from the previous day, questions from the evaluation will be addressed.</p>
9:00-10:30 AM	<p>Teachers will come back to the media center and sit with their co-teachers.</p> <p>Teachers will have this time to create or adapt more lessons that integrate the co-teaching models.</p>
10:30-11:00 AM	<p>Restroom and snack break.</p>
11:00-11:30 AM	<p>Grade level groups of teachers will each share a lesson with the larger group of teachers who might use similar strategies for the next lesson development. The groups will send a copy of the lesson as an email attachment to the professional development leader. After the teachers refine the lesson, another copy will be sent</p>

	to the professional development leader.
11:30-12:30 PM	Lunch
12:30-1:30 PM	<p>Grade level groups of teachers will each share a lesson and strategies with the larger group of teachers who might use similar strategies for the next lesson development.</p> <p>The groups will send a copy of the lesson as an email attachment to the professional development leader. After the teachers refine the lesson, another copy of each lesson will be sent to the professional development leader as an email attachment.</p>
1:30-2:00 PM	<p>The professional development leader will share another lesson with collaborative learning strategies. Professional Development participants will be encouraged to write and submit questions at the end of the day.</p>
2:00-2:15 PM	Restroom and snack break

2:15-2:55 PM	The professional development leader will describe the plan for developing a resource document of lessons with the co-teaching models for collaborating instruction in busy classrooms.
2:55-3:15 PM	The presentation will be wrapped up with the panel of teachers answering questions. Teachers will also complete the evaluation form and include a question for additional professional development workshops.

Appendix C: Evaluation of Professional Development Sessions

Evaluation 1: Formative Feedback

School: _____

Please answer each question to help maximize the usefulness of this session.

1-Not helpful 2- Somewhat helpful 3- Very helpful

1. Teacher Panel 1 2 3

2. Peer Collaboration 1 2 3

3. Materials Presented 1 2 3

4. Creating Lesson Plans 1 2 3

6. Overall Experience 1 2 3

Any additional information that you wish to share to make this experience more helpful to others:

Evaluation 2: Outcome Based

School: _____

Please provide a response to each question with enough information to help leaders improve the program.

1. Do you feel you had sufficient background knowledge to begin creating lessons in your content area using the co-teaching models? Why or Why not? What was missing?
2. How, if at all, did collaboration with your content area peers help you when creating lessons using different co-teaching models?
3. How, if at all, did the materials presented in the professional development session help you create your lessons?
4. Which, if any, co-teaching models do you think you'll be using and why?
5. What do you predict will be successful with your co-teaching?
6. What do you think might be a challenge of co-teaching?
7. What information would you like to add that may be helpful to others in the future when implementing and reflecting on the co-teaching models?

Evaluation 3: Summative

School: _____

Please provide a response to each question with enough information to help leaders improve the program.

1. How do you think collaboration with your content area peers will help you provide instruction to ESOL students?
2. What do you think will be your biggest challenges? What do you think will work and won't work in your classroom?
3. Which co-teaching models will you use in your classroom? Explain why.

Evaluation 4: 3 Month Reflection

School: _____

Please provide a response to each question with enough information to help leaders improve the program.

1. How did collaboration with your content area peers help after the professional development seminars?
2. What were your biggest challenges? Describe what works and doesn't work in your classroom
3. Which co-teaching models have you used in your classroom? Describe your experience.
4. What information would you like to add that may be helpful to others in the future when implementing and reflection of the co-teaching models of instruction?

Trainer Notes for Day 1

Overview of Project Study Data and Collaborative/Co-teaching Instruction

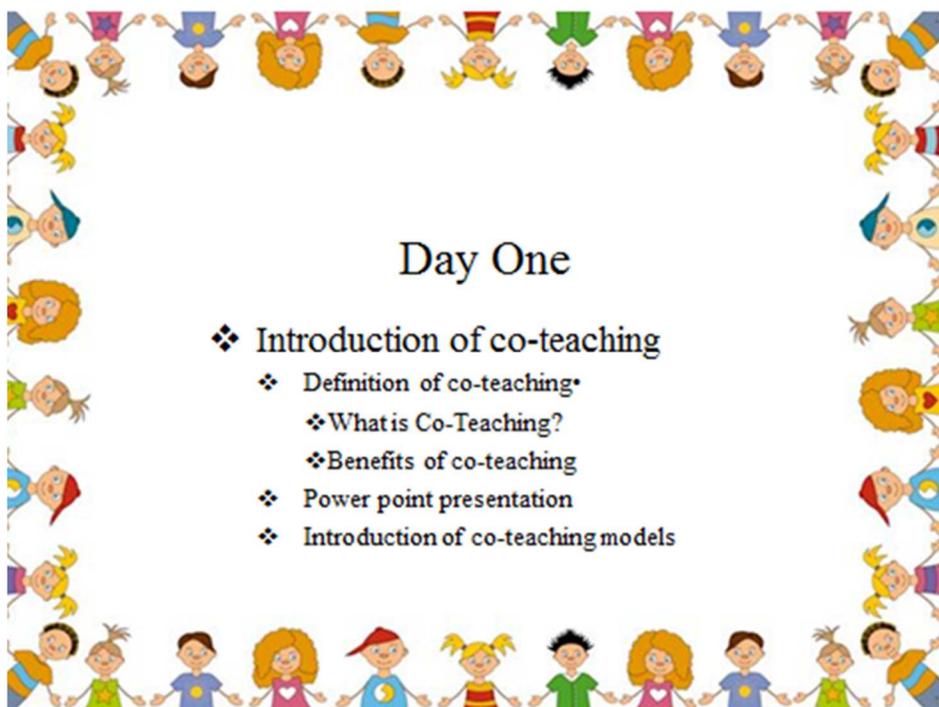
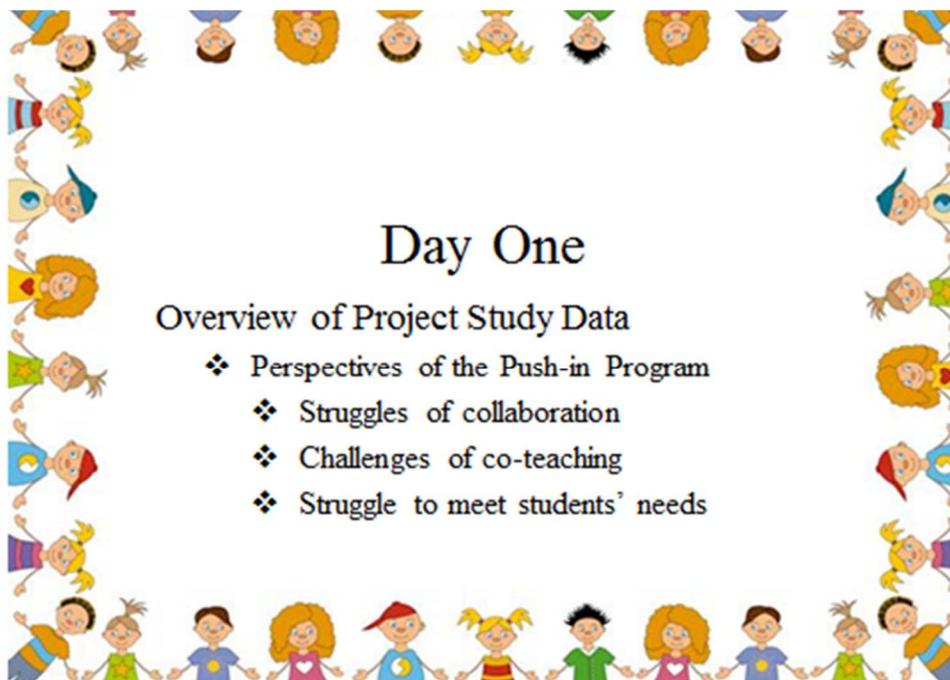
The trainer will attend to the following tasks at the beginning of the Day 1, before the presentation:

Welcome participants and explain that this is a three-day professional development program that will help them incorporate different co-teaching models during collaborative instruction. Explain that the first day will involve receiving information about the results of the study and an overview of co-teaching models and instructional approaches. There will be small group discussion on the study findings. A Carousel Activity protocol will be used to set up the groups. Each teacher will draw a number, one through three. All those who draw the number one will work together, all those who draw the number two will work together, and all those who draw the number three will work together. There will also be a discussion about what teachers would like to do to encourage better collaboration and a discussion to address the most appropriate co-teaching models to be implemented in their classrooms. The subsequent days will be more tailored to create lesson plans using the co-teaching models. Participants will leave on the third day with strategies developed to assist them with implementing co-teaching approaches within busy classrooms. Please remember that the slide shows are simply a frame for the day's activities. I will be in a presentational mode for a most of the day, but the slides are to be used to help provide vital information for participants to engage in the activities. All relevant information for participants will be presented in the slide shows and in the handouts of the presentations that the participants will receive during each

session. The presentation/handouts clearly indicate when each type of material will be needed for the sessions. Please review each slide deck at the beginning of the day to ensure to have all materials in place.

What three words would you use to describe your personality?	you prefer (e-mail, telephone, text message)?
How would you describe yourself?	What time is best to contact you?
How would others describe you?	How would you like to be approached when a problem arises?
Why did you become a teacher?	





Co-Teaching Strategies and Examples - Handout

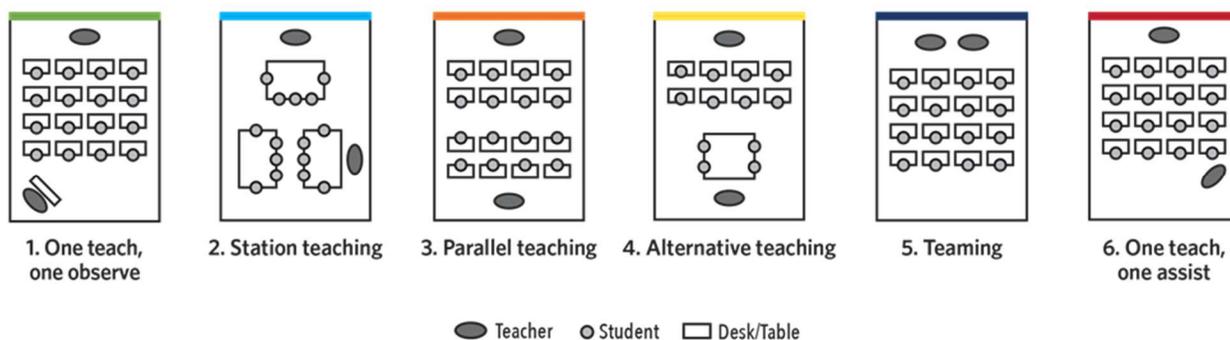
These strategies are not hierarchical- they can be used in any order and/or combined to best meet the needs of the students in the classroom.

STRATEGY	DEFINITION/EXAMPLE
One Teach, One Assist	<p>Definition: This strategy is an extension of One-Teach, One-Observe. One teacher has primary instructional responsibility, while the other Assists students with their work, monitors behaviors, or corrects assignments.</p> <p>Example: While one teacher has the instructional lead, the teacher assisting is a “voice” for the students when they don’t understand or are experiencing difficulties.</p>
One Teach, One Observe	<p>One teach, one observe, in which one teacher leads large-group instruction While the other gathers academic, behavioral, or social data on specific students or the class group.</p>
Station Teaching	<p>Definition: The co-teaching pair divides the instructional content into Parts and the student into groups. Groups spend designated time at each station. Often an independent station will be used along with the two teacher stations.</p> <p>Example: One teacher leads the station where the students play a money Math game where the other teacher runs mock store where the students purchase items and make change.</p>
Parallel Teaching	<p>Definition: Each teacher instructs half of the students. The two teachers Address the same instructional material and present the material using the same teaching strategy. The greatest benefit to this approach is reduction of the student-teacher ratio.</p> <p>Example: Both teachers lead a question and answer discussion on specific and current events and the impact they have on our economy.</p>

STRATEGY	DEFINITION/EXAMPLE
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Alternative or Differentiated Teaching	<p>Definition: Alternative teaching strategies provide students with different approaches to learning the same information. The learning outcome is the same for all students; however, the instructional methodology is different.</p> <p>Example: One teacher leads the group in predicting the plot of a story by looking at the book cover and illustrations; the other teacher leads a group in predicting the plot by pulling specific items and/or story clues from the bag.</p>
Team Teaching	<p>Definition: Well-planned team-taught lessons exhibit an invisible flow of instruction with no prescribed division of authority. Using a team teaching strategy, both teachers are actively involved in the lesson. From a student perspective there is no clearly defined leader, as both teachers share the instruction freely interject information, assist students and answer questions.</p> <p>Example: Both teachers share the reading of a story/text so that students are hearing two voices.</p> <p>Source: Adapted from Cook, L., & Friend, M. (1995). Co-teaching: guidelines for creating effective teaching practices.</p>

Source: Adapted from Cook, L., & Friend, M. (1995). Co-teaching: guidelines for creating effective teaching practices.



Source: Visual Representation of Co-Teaching Models (Friend 2014)

Day One

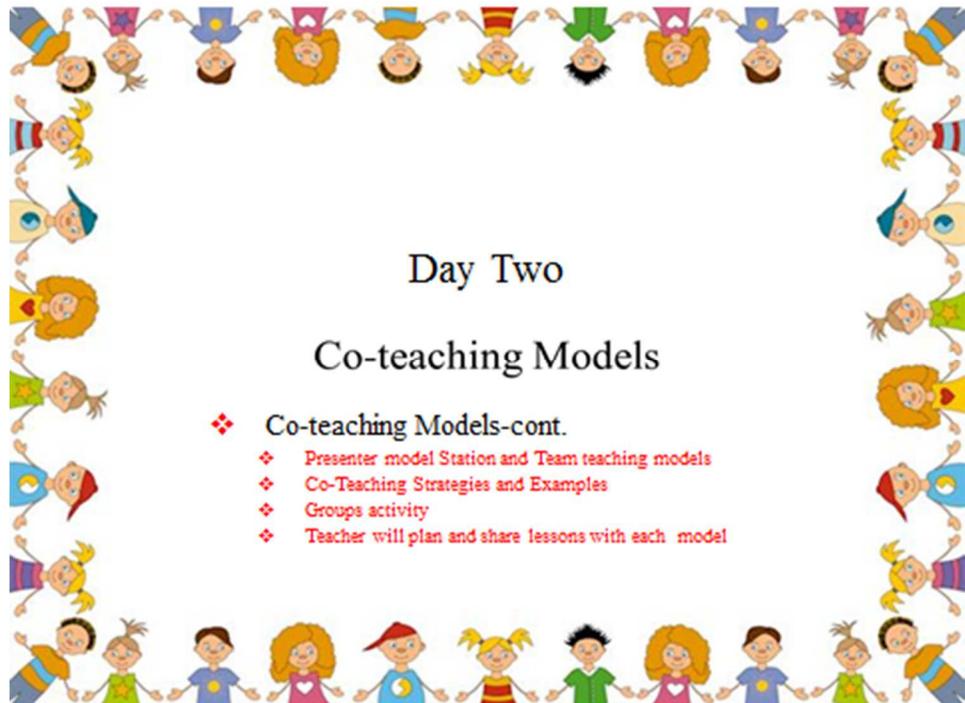
- ❖ Overview of Building Collaborative Relationships
 - ❖ Discussion on the five co-teaching models
 - ❖ Groups activity
 - ❖ Lesson planning

Trainer Notes for Day 2

Collaboration and Creation of Co-teaching Strategies

The trainer will attend to the following tasks at the beginning of the Day 2, before the presentation:

Welcome participants to the second day of this PD that will help them learn about planning collaboration and co-teaching strategies. Remind them that the goal is that teachers will leave on the third day with a concrete plan to assist with implementing co-teaching models in busy classrooms. Explain that in today's sessions the presenter will tailor sessions to the interests of all participants through developing lesson plans using the different co-teaching approaches. The presenter will model accepting and encouraging all ideas presented by the participants as they would do with their students. As the teachers are engaged in their activities, the presenter will circulate and assist participants in their groups.



Collaborative Lesson Planning

1-Determining the co-teaching model

2-Teaching roles

3- Preparing materials

4- Providing input on the lesson

5-Accepting suggestions

6-Agreeing to disagree



Best Practices-Handouts

Best practices are helpful hints to think about while developing and implementing lesson plans. These hints help facilitate student learning. Best practices help make the co-teaching process fluid. In order to maintain an effective co-teaching classroom, it is important to include the following best practices:

- Share responsibility of all students,
- Be aware of the students' strengths and needs,
- Monitor and modify teaching to meet the needs of all students (Universal Design for Learning),
- Evaluate student grouping across the curriculum to meet each students' needs,
- Use appropriate humor,
- Use critical thinking skills,
- Employ equitable practices,
- Implement heterogeneous grouping,
- Encourage student discourse,
- Use technology.

Planning Strategies-Handouts

Prior to Planning	During Planning
Time of day allocated for planning Duration of planning period Frequency of planning Where planning takes place Method used for communicating Familiarizing yourselves with the curriculum Determining the planning style (i.e.; plan books, flip charts, list, etc.) Developing emergency substitute plans	Determining the co-teaching model Teaching roles Assessing student learning Preparing materials Providing input on the lesson content and means of differentiation Accepting suggestions Agreeing to disagree

Trainer Notes for Day 3

Collaboration and Creation of Co-teaching Strategies Continued

The trainer will attend to the following tasks at the beginning of the Day 3, before the presentation:

Greet the participants to welcome them to the third and final day of the three-day PD. The third day continues the planning collaboration and co-teaching strategies reading strategies. The trainer will continue to circulate and assist participants within their groups with their activities. The role of the presenter is one of the facilitator who will assist participants with their activity efforts. I will also place a box at the front of the room to collect formative and summative assessment products at the end of session.

Collaboration Lesson Planning

- 1-Method used for communicating
- 2- Familiarizing with the curriculum
- 3-Developing emergency substitute plans
- 4-Use of technology



Lesson Planning Collaboration Sites-Handouts

Name	URL	Information
Google Drive	https://www.google.com/drive/	Free – 15 GB Storage
UDL Exchange	http://udlexchange.cast.org/home	Free – provides template, build lessons individually or collaboratively, share, remix, or use other’s lessons
Common Curriculum	http://www.commoncurriculum.com/	Free – provides templates, build lessons individually or collaboratively.
Plan Board	https://www.planboardapp.com/	Free - Individual Site \$5/month - Collaborative Site

Source: Adapted from Meier, & Fisk, 2016.

Instructional Strategies to Support Struggling Learners - Handouts

Name	URL
Five Common Techniques for Helping Struggling Students	https://www.understood.org/en/schoollearning/partnering-with-childschool/instructional-strategies/5-common-techniques-for-helping-struggling-students
How to Adapt Your Teaching Strategies to Student Needs	http://www.readingrockets.org/article/how-adapt-your-teaching-strategies-student-needs
Instructional Strategies for Struggling Students	http://www.edubabbling.com/instructionalstrategies-for-struggling-students/
Differentiating Instruction in the Inclusive Classroom (Book)	http://imis.cec.sped.org/cec_prod/ItemDetail?iProductCode=P6180&Category=BOOK&WebsiteKey=269141f1-45d0-49b9-9769-40de3a48419c

Source: Adapted from Meier, & Fisk, 2016.

Appendix E: Invitation to Participant Email

Dear ESOL Teacher,

You are invited to an informational meeting about the research I am hoping to conduct in your school district. The purpose of my study is to examine teachers' perceptions of the push-in model to support ESOL students' mathematics skills and conceptual understanding. The study will also examine the instructional strategies you use for teaching ESOL students. As an ESOL teacher, you are in an ideal position to give me valuable first-hand information from your own perspective.

This research is the culminating project of my education doctorate at Walden University. Although you will be invited to participate in the research, attending the meeting does not require you to participate. At the meeting I will distribute consent forms and privacy envelopes that you can return to me later in the week should you decide you want to participate in the research.

To understand your perspective and experience, I will collect lesson plans, conduct interviews and observe in classroom over the period of 2 months. Your involvement will be kept private. There is no compensation for participating in this study; however, through this research I will provide teachers and administrators with an understanding of how effective teachers plan instruction for ESOL students.

The informational meeting will be in the conference room [date to be determined after IRB approval]. If you have any questions, please do not hesitate to email me.

Thank You,

Joye Henry

Appendix F: Observational Protocol- Push in Classroom

Observe Classroom Arrangement

Purpose: Determine how ESOL teacher enters and exits classroom when serving ESOL students

Diagram of Classroom	How ESOL Teacher Integrates into the Physical Arrangement of Classroom	
	<u>Classroom Feature</u>	<u>Entrance</u>

Observe Instructional Strategies of ESOL Teacher

Purpose: Determine how instructional strategies of ESOL teacher support student achievement.

How do ESOL teacher deliver instruction to improve ESOL mathematics skills?	What strategies are implemented?

Observe Use of Collaboration

Purpose: Determine how instructional practices of ESOL teacher and classroom collaborate to support ESOL students' learning.

How do ESOL teacher and classroom teacher collaborate to deliver instruction?	What impact does this have on students learning?

Observe Use of Differentiated Instruction

Purpose: Determine what differentiated instruction is evident during the delivery of instruction.

Identifiable Differentiation	Student Engagement

Appendix G: Observation Notes Template

Observations	Note to Self

Appendix H: Interview Protocol

Process

Each interviewee will be taken to a comfortable spot that is private. I will give each interviewee the list of questions to look at as I ask them. I will explain that I will be audio-taping the interview and ask for their permission. I will email a copy of the transcript and ask them to read it and confirm if it is correct or suggest corrections.

Introduction and Welcome

Good day. Thank you for participating in my research study. This interview will last 45-60 minutes and with your permission, I will audiotape it for my later analysis. I thank you for your participation. Just a reminder, the purpose of this study is to examine teachers' perceptions of the push-in model to support ESOL students' mathematics skills and conceptual understanding, and what research has been reported to improve ESOL students' academic performance. The study will also examine research that addresses instructional strategies for teaching ESOL students.

Interview Questions

How long have you been teaching at this school?

What educational experiences do you have that have prepared you to teach ESOL students?

Would you please discuss your teaching experience with ESOL students?

Tell me about an ESOL delivery program that you have used that has worked well.

Tell me about an ESOL program that you have used that did not work well.

Tell me about your experience with the push-in delivery model in use at your school?

Tell me about a success you have had with a student in the push-in delivery program.

Tell me about a situation you've had with a student in the ESL push-in delivery program.

In your opinion, what ways can mainstream teachers modify mathematics activities for ESOL students who are struggling to meet the requirements on standardized tests?

Tell me how you think people acquire a second language

What impact do you believe that second language learning has on students learning mathematics?

How can ESOL teachers support mainstream teachers in modifying work for ESO students?

What professional development, workshops, or support have your school offer to improve ESOL students' learning?

If you could choose any additional professional development, what would you like your school to offer? Please explain

What specific interventions are in place for ESOL students who are struggling to meet the standards on standardized tests? Prompt: How do you differentiate instruction for these students?

How do you make curricular changes for students who are struggling in mathematics?

I observed you using scaffolding. Tell me why you choose to do that and what you think the learning outcome was?

In what ways may modifications be increased to support students' mathematics instruction using the push-in model?

How do you plan your lesson?

What concern do you have about implementing lessons using the push-in model?

Do you have any other comments that you would like to share?

Closing

Thank you very much for your time. I will contact you again in order to check the transcription and offer any other suggestions you wish. I will send you a transcription of the interview via email. Please check for the accuracy and presentation of your ideas.

When the study is concluded, I will share my interpretation and conclusions with you and ask for your response.

Appendix I: Lesson Planning Guide

Lesson Title:	
Content Area Standards	ESOL Standards:
Objectives:	
Lesson Procedures	
Overview of lesson Component	ESOL Teacher delivery
Warm-up:	
Core Lesson:	
Closure/Wrap-up:	
Lesson Preparations	

Source: Adapted from Parrish, 2015

Appendix J: Codes and Categories

Categories Supported by Data Aligned with Observations

Instructional Strategies	% of use
Knowledge of students' academic needs	100
Working with faculty to plan instruction	100
Use of data to inform instruction	90
Assessment to evaluate learners performance	80
Communication	80

Appendix K: Document Analysis Protocol

Lesson Review Analysis

Purpose: Identify how lesson can be planned to differentiate or further modify to scaffold for student proficient levels.

Document Type	Indication of Differentiation	How differentiation of instruction was used to scaffold students learning

Source: Adapted from Parrish, 20155