

A CASE STUDY ON TEACHER AND TUTOR PERCEPTIONS OF THE  
INFLUENCE OF PEER TUTORING IN THE NEWCOMER ENGLISH LEARNER  
MATHEMATICS CLASSROOM

by  
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## Abstract

**Background:** Research studies have shown that Latino immigrants entering secondary U.S. classrooms have lower academic achievement, higher rates of absenteeism, and reported higher levels of stress in their communities, peer groups, and families in comparison with other high school students (Fry & Passel, 2009; Lopez, 2009; Patel et al., 2016; Roosa et al., 2012). Considering these circumstances, it is critical for schools to intervene on behalf of this growing student population in need of academic support systems. In order to do this, schools could consider developing prevention and intervention strategies that foster positive relationships and integrate peer groups to promote students' mutual peer respect and academic engagement. Secondary Algebra I and Geometry classrooms for newcomer English learners provide an ideal setting for an intervention program such as peer tutoring to be a powerful support for this student demographic's academic success. Peer tutoring provides multiple opportunities for newcomers to enhance their academic skills while working alongside a more knowledgeable peer (Vygotsky, 1978, 1987) in a low-anxiety environment (Krashen, 1981, 1982). **Purpose:** The purpose of this study was to explore the academic and affective influences of peer tutoring on 9th and 10th grade newcomer English learners in an Algebra I and a Geometry classroom in a typical urban high school located in the nation's fourth largest city. **Research Question:** How might peer tutoring influence the academic achievement and affective stance of 9th and 10th grade newcomer English learners in a mathematics

classroom? **Methods:** Participating tutors and teachers volunteered for inclusion in the peer tutoring program. Tutors were selected based on their demonstrated competence on a state Algebra I assessment as well as their expressed interest to tutor. Tutors were simultaneously scheduled in the mathematics classrooms that they supported providing support from three to four and a half hours per week. This qualitative study adopted a case study design. The qualitative approach was appropriate for this study because the data collected and analyzed was in text format. Qualitative data points included written feedback from the study's three peer tutors, three participating classroom teachers, and one mathematics instructional specialist who also worked closely with the peer tutoring program, teachers, and identified classrooms. Participating tutors were asked to write open-ended reflections about their experiences in their assigned classrooms at the end of each of the three semesters. Data also included the researcher's classroom observations and journal notes. Feedback from the teachers and specialist was collected during and after the peer tutoring intervention. Qualitative data were holistically coded (LeTendre & Lipka, 2000) which included chunking all written text and analyzing for emerging themes. Findings were debriefed with participants and critical friends to check for accuracy and researcher bias. **Results:** Feedback from participating tutors and teachers related to the peer tutoring program was positive. Overall, the three peer tutors had positive experiences in their respective classrooms. Peer tutors felt that they learned as much or more from their tutees as the tutees learned from the tutors. Being current and former English learners and immigrants themselves, the two male tutors identified with the current circumstances of their tutees expressing empathy and support for their peers. The female tutor's experience varied in that her assigned classroom was larger and she

occasionally experienced some behavioral issues with some tutees. The participating teachers unanimously agreed that peer tutoring positively affected student performance and attitudes toward content based on classroom assessments and teacher observation. Teachers indicated that having tutors who shared a common native language with their tutees and had a sincere willingness for working with diverse students was significant to the program's overall success. **Conclusion:** Schools looking to replicate a similar peer tutoring program would do well to actively recruit a variety of students who have the affective willingness and academic capacity to support students who are challenged with mastering mathematics content in a new language. Thus, for the newcomer classroom especially, we would recommend tutors who speak the native language of the tutees with whom they will work. Finally, the initial and ongoing training and monitoring of selected peer tutors is critical to achieve desired results.

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## CHAPTER ONE

### Introduction

In my role as the English as a Second Language Instructional Coach on my high school campus, I regularly conducted observations of classrooms in different content areas with the purpose of providing targeted feedback to teachers. This feedback could be used as a reference point for classroom teachers to reflect upon their instructional delivery as it pertained to best practices for English language acquisition. More often than not, I would walk into a classroom and, within the first few minutes, identify which students were English learners. These students often sat huddled together in the rear of the classroom. There was an obvious lack of participation in the classroom discussion, blank facial expressions, and disconnected body posturing that shouted their disengagement. After a full lesson delivered entirely in English, often with little to no student discourse or supporting visual aids, the classroom teacher would walk over to this small group of students and ask if they understood the material or if they had any questions before they embarked upon their next task. Most times, one student in the group would respond with a quick smile and nod of affirmation which apparently satisfied the teacher who would then go on to work with other students.

This scenario played out in class after class, both breaking my heart and frustrating me each time I had to bear witness to it. As a non-evaluative observer, I was helpless to change these occurrences beyond following up with the teacher

after my visit and encouraging him or her to brainstorm ways they might consider changing this experience for their English learners. After one too many of these classroom observations, I decided that, we as a campus, needed to do more. Much more.

After several weeks of the aforementioned classroom observations and conferencing with affected students, I got to work in order to find a practical solution to this classroom crisis. We needed something that could be quickly implemented, that would enhance English learner academic engagement while improving our school's overall sense of community especially as it concerned our newcomer learners. I knew that this solution would have to be one that did not require more staff or school funding – both of which we did not have at our disposal.

Ultimately, my idea of a peer tutoring program was proposed to campus administration late in the fall semester of 2014. I spoke with fellow campus leaders in depth about the logistics of implementing a peer tutoring program on my high school campus, as soon as the very next semester. A priority for the program would be that tutors accompany their tutees to the same classroom for the same amount of time daily and weekly. I strongly suggested that this not be an afterschool program, but one where tutors would serve up to four and a half hours per week in the same classroom that their tutees were assigned to. I would continue to meet with various members of campus administration to discuss how to schedule a 90-minute tutoring block and whether we had the student pool to pull from to make this idea come to fruition. Campus administration agreed to

release students previously scheduled to be office assistants to serve as peer tutors. I titled our peer tutoring program *Each One, Teach One* as we set out to do just that.

### **Statement of the Problem**

Schools across the United States have become overwhelmed by a rapidly increasing English learner population. According to the Texas Education Agency (TEA, 2017), of the 5.3 million students enrolled in Texas public schools during the 2016-2017 school year, over 1 million were identified as English learners. That is equivalent to 19% of the overall public student body (TEA, 2017). Research studies have shown that recent Latino immigrants entering secondary U.S. classrooms have lower academic achievement, higher rates of absenteeism, and reported higher levels of stress in their communities, peer groups, and families, in comparison with other high school students (Fry and Passel, 2009; Lopez, 2009; Patel, Barrera, Stambler, Munoz, Macciomei, 2016; Roosa, 2012). In addition to the academic challenges many of them face, newcomer English learners often also grapple with social, economic, and mental issues. This holds especially true for new arrivals (newcomers) from Latin countries (Patel et al., 2016). Considering these circumstances, it is critical for schools to intervene on behalf of this growing student population in need of specific academic support systems. In order to do this, schools might consider developing prevention and intervention strategies that foster positive relationships and integrate peer groups to promote mutual peer respect and academic engagement.

Mathematics classrooms pose a unique problem for English learners because many educators hold the belief that math computation is universal and therefore, equally accessible to all learners. However, mathematics classrooms encompass so much more than basic computation or calculator work. The content in mathematics classrooms is often packaged in scenarios or word problems. The word count and academic vocabulary alone on standardized tests can contribute to lower performance for ELs when compared to non-ELs (Driver, 2017). Powell (2011) explains that for students to successfully solve mathematical word problems, they must first decipher text which is almost always exclusively written in English, identify missing information, make a plan to solve the problem, and perform one or more calculations to reach a solution. The language in this multi-step process can prove difficult for ELs, especially newcomer ELs. Thus, ELs often fall behind native English speakers in performance on standardized mathematics measures involving word problems at both the elementary and secondary levels (Abedi and Lord, 2001).

### **Need for the Study**

It is important that schools recognize the need to create a variety of customized support systems for English learners on their campuses. Peer-to-peer mentoring and tutoring has proven successful for many U.S. secondary schools (Boes and Grubbs, 2009; Cardimona, 2018; Maheady and Gard, 2010; Magee, 2009; Nawaz and Rehman, 2017). However, unfortunately, there is not much

research that highlights the effectiveness of such programs with newcomer ELs. Given the lack of research on this topic, it is my hope that this study encourages further research in this area so as to guide schools in making the decision of whether an intervention such as a peer tutoring program is worth the investment of time and talent for their newcomer English learner population.

### **Purpose and Significance of the Study**

Secondary Algebra I and Geometry classrooms for newcomer English learners provide an ideal setting for an intervention program such as peer tutoring to be powerful for this student demographic especially in the state of Texas. This is due to the fact that most recent immigrants of high school age will be presented with high stakes state testing in Algebra I within their first year of arrival. Peer tutoring provides multiple opportunities for newcomers to enhance their academic and language skills while working alongside a more knowledgeable peer.

The purpose of this case study is to use qualitative data collected over multiple academic semesters to explore the influence that peer tutoring had on the academic growth and affective stance of 9<sup>th</sup> and 10<sup>th</sup> grade newcomer English learners in two Algebra I classrooms and one Geometry classroom in a typical urban high school located in the nation's fourth largest city. The significance of this study is to help determine whether peer tutoring programs like the one evaluated in this study would be beneficial for other schools to replicate with their newcomer ELs in mathematics classrooms. A close look at the changing variables

in the implementation and oversight of such a program may prove useful for school instructional leaders hoping to pilot such a program on their campuses.

### **Research Question**

The research question guiding this study is identified as the following:

How might peer tutoring influence the academic achievement and affective stance of 9th and 10th grade newcomer English learners in a mathematics classroom?

### **Definition of Terms**

For the purpose of this study, the following terms are defined here: EL, LEP, L1, L2, affective filter, language acquisition, language proficiency, newcomer, and comprehensible input.

1. The acronym EL stands for English learner. An English learner is defined in most states as a student whose primary or home language is one other than English. These students are identified as such so that they are eligible for targeted educational services based on the results of an English language proficiency assessment as deemed necessary by state or district standards.
2. LEP stands for limited English proficiency. Campuses designate students as such based on a number of factors accumulated upon school enrollment.
3. L1 is defined as a language learner's native language.
4. L2 is defined as the target language or the language that is to be acquired. L1 and L2 are often contrasted.

5. The affective filter is a term coined by Stephen Krashen to describe the complexity of emotional and motivational factors that may interfere with the reception and processing of language. Such factors include anxiety, self-consciousness, boredom, alienation, motivation, etc. The higher a learner's affective filter, the less likely he or she can be successful in an educational setting where language and/or content is to be acquired.
6. Language acquisition refers to the process which culminates with the ability to communicate effectively.
7. Language proficiency refers to the level at which the English learner can communicate effectively through the four language domains of listening, speaking, reading, and writing.
8. A newcomer is a student who has never attended school in the United States before. Students are identified as newcomers based on their educational history.
9. Comprehensible input refers to information shared with a learner in such a way that he or she can grasp its meaning more effectively despite not understanding all the words or structures in the message. Comprehensible input is a combination of current and target knowledge or language messages.

## **Summary**

Newcomer English learners make up an extremely vulnerable student population. They arrive at U.S. elementary and secondary campuses with a variety of financial, social, and emotional stressors. Without sufficient support and scaffolding, research shows that acquiring content and language in the classroom setting can be extremely frustrating for both the newcomer language learner and

his or her classroom teacher (Gandara, Maxwell-Jolly, Driscoll, 2005; Harper and Jong, 2004; Walker, Shafer, and Liams, 2005). Schools, therefore, might consider putting intervention programs in place to support English learners and their teachers as they work together to advance their growth in both academics and language.

This study will explore what research shows about the structure and impact of peer tutoring programs, the dynamics of the newcomer English learner mathematics classroom, and examine how multiple Algebra I and Geometry mathematics classrooms fared in the researcher's efforts to implement such a program.



## CHAPTER TWO

### **The Newcomer English Learner – A Profile**

According to a 2013 prediction by the National Center for Education Statistics, English learners are expected to reach 40% of all school age children by the year 2030. Of that 40%, many will be recent arrival immigrants. As the data at the center of this study focuses squarely on English learners who are identified as newcomers, it is important to consider the stressors that newcomer English learners face.

Though not the case for all schools, Patel et. al (2016) points to research that suggests that, overall, newcomer ELs perform better academically than non-immigrants and immigrants who have spent more time in the United States. This is remarkable considering the social, economic, linguistic, and discriminatory challenges that these students are faced with. These challenges often predict academic difficulties, emotional and psychological upset, and overall stress. This is especially true for those who arrive in U.S. schools during their high school years.

Immigrants from Latin American countries commonly have particularly high stressors when compared with immigrants from other countries due to 1) the likelihood of being separated from parents or making the decision to migrate unaccompanied 2) the fact that two-thirds of this population is undocumented 3) 47% not being fluent in English and 4) one-third of this demographic lives in poverty (Fry and Passel, 2009).

A study at one New York high school has shown that Latino immigrants had lower academic achievement, higher rates of absenteeism, and reported higher levels of stress in their communities, peer groups, and families (Patel et. al, 2016).

Schools and teachers that work to academically and socially support their English learner populations through targeted measures have had various degrees of success. The following literature review explores some of those cases and the theoretical frameworks that serve as their foundation.

### **Theoretical Framework**

This research study primarily draws upon the language and learning research of Stephen Krashen and Lev Vygotsky, respectively. Each man compiled a substantial body of research that explores optimal environments for learning and language learning to occur. The encouragement of social interaction and dialogue with a more knowledgeable peer is at the cornerstone of Vygotsky's work while creating an optimal environment that supports the mental and emotional variables that make language learning more possible is at the center of Krashen's work. Both their findings could support the inclusion of peer tutoring programs in classrooms with newcomer English learners in order to grow both their linguistic and academic knowledge simultaneously.

Russian psychologist Lev Vygotsky's Zone of Proximal Development is often referenced as the theoretical foundation for cooperative learning structures in classrooms (Doolittle, 1997). The zone of proximal development is defined as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In other

words, the zone of proximal development is the space between where a learner is and where he or she can be with sufficient support. In order to reach this place of optimal learning, the learner must regularly collaborate with an adult or peer who is more knowledgeable in the content that the learner is attempting to engage with. The adult or peer can propel the learner toward his or her potential through scaffolding strategies such as effective questioning, modeling, and reflective practices.

In his work, linguist Stephen Krashen, discusses five hypotheses regarding language acquisition. One of these hypotheses is described as the Affective Filter Hypothesis. Within the Affective Filter Hypothesis, several variables that relate to successful language acquisition are identified. The affective filter refers to the complexity of emotional and motivational factors that may interfere with the reception and processing of language. Such factors include anxiety, self-consciousness, boredom, alienation, and motivation. Settings with high anxiety, or a high affective filter, where the learner has a poor self-image may impede language acquisition. To the contrary, Krashen states that learners with high motivation and a positive self-image in a setting of low anxiety, or a low affective filter, acquire language at a quicker rate (Krashen, 1981,1982). Thus, classrooms that promote low anxiety environments create a greater opportunity for language learning.

Krashen (1981, 1982) also proposes an Input Hypothesis which details the importance of having comprehensible input as an integral part of instructional delivery in classrooms where language is being acquired. Comprehensible input is defined as information that is just beyond what the learner can understand at his or her current knowledge level. Essentially, most of the information or language structures are

understood by the learner, or are comprehensible, but some are unfamiliar, usually from the target language. Comprehensible input includes language supports like the use of visuals or gestures or native language (L1) support while interspersing words and structures from the target language (L2). Therefore, the learner must stretch or expand his or her cognitive abilities from what they currently know to what they need to know in order to grow in the instructional setting. It is in this space where significant language acquisition and academic growth is most likely to occur.

Thus, a classroom that consistently incorporates both a low anxiety environment with comprehensible input is more conducive to language learning.

Real language acquisition develops slowly, and speaking skills emerge significantly later than listening skills, even when conditions are perfect. The best methods are therefore those that supply "comprehensible input" in low anxiety situations, containing messages that students really want to hear.

(Krashen, 1982, p. 11).

Further, attending to the affective needs of students, especially those who are considered 'at risk' such as newcomer English learners, is key for all educational settings. Students who have a positive self-image, a sense of belonging to a community, and can see themselves as academically successful in the future, are far more likely to be motivated to achieve their educational goals (Yeager and Walton, 2011).

As students feel more secure in their belonging in school and form better relationships with peers and teachers, these become sources of support that promote feelings of belonging and academic success later. When students

achieve success beyond what they thought possible, their beliefs about their potential may change, leading them to invest themselves more in school, further improving performance and reinforcing their belief in their potential for growth

(Yeager and Walton, 2011, p. 286).

In conclusion, Krashen, Vygotsky, and many others advocate for classroom environments that will promote language, learning, and a sense of belonging. Thus, whatever efforts teachers or schools can make to ensure the newcomer language learner feels at ease and consistently encourage him or her to stretch for and reach their academic potential, will create the environment that makes learning more attainable. These efforts can come in the form of having positive peers and/or adults who serve as academic role models in a low anxiety setting such as a classroom with a teacher who is aware of and attends to the learner's affective stance.

### **The Benefits of Peer Tutoring in General Education Classrooms**

Vygotsky's theories (1978, 1987) stress the critical role of social interaction in cognitive development. Essentially, students in any learning situation learn best when they are socially engaged with one another. Peer-to-peer tutoring can serve as a vehicle for optimal cognitive development to occur.

Peer-to-peer tutoring can assume several formats. Peer tutoring occurs within same societal groups and may be formal or informal, one-on-one or in small

groups, and may involve furthering classroom discussions or solving specific problems (Mastropieri, Scruggs, Norland, Berkeley, McDuffie, and Tornquist, 2006). In some cases, students of the same classroom are identified as peer tutors based on their academic skillset by the program's coordinator. These students have been selected by their classroom teacher, counselor, or peer tutoring program coordinator as tutors/mentors based on their prior satisfactory performance in the content area class. In other cases, peers from outside of the students' classroom or school are placed in the class for the sole purpose of tutoring. These students have been identified by the coordinator of the peer tutoring program as possessing the ability to be able to work with struggling students in a variety of subject areas.

Peer tutoring has been shown to be effective in early elementary grades, schools in urban areas, and in structured tutoring programs. Maheady and Gard (2010) discuss the benefits of peer tutoring programs at various levels including those for students, teachers, and school systems. Among others, those benefits are higher academic achievement, increased motivation, improved interpersonal relationships, and enhanced personal and social development with little to no cost to schools (Maheady and Gard, 2010).

The Access Center in Georgia state public schools described three common types of peer tutoring used in their schools (Boes and Grubbs, 2009). Cross-age tutoring involved older students tutoring younger students. While tutors received training, the format of the sessions remained unstructured. Tutors acted as models for behavior, organization, and improving study habits. Another tutoring method was Peer-Assisted Learning Strategies (PALS). The PALS approach included very structured tutoring in math and reading two or three times a week for about 30 minutes. Higher and lower-

achieving students were paired together. The higher achiever always began the session as the model and encouraged the lower achieving student to complete the next step. The last peer tutoring program model was Reciprocal Peer Tutoring (RPT). RPT consisted of two or more students working in a structured format of prompting, teaching, monitoring, evaluating, and encouraging. Tutors and tutees alternated roles in RPT. The main differences in training were the amounts of structures in place and number of participants in tutoring sessions, but all three programs indicated that peer tutoring was beneficial for their learners (Boes and Grubbs, 2009).

When implemented school-wide, the form of tutoring that is employed in a particular classroom has its own unique benefits to the student(s) in need, the classroom culture, and the campus overall. Peer tutoring can be especially beneficial in English language learning classrooms because it can lower the affective filter of ELs and assist them in making the transition from the use of the learner's native language to the use of their target language of English. To this, Krashen states:

Research over the last decade has confirmed that a variety of affective variables relate to success in second language acquisition. Most of those studied can be placed into one of these three categories: (1) Motivation. Performers with high motivation generally do better in second language acquisition (2) Self-confidence. Performers with self-confidence and a good self-image tend to do better in second language acquisition and (3) Anxiety. Low anxiety appears to be conducive to second language acquisition, whether measured as personal or classroom anxiety.

(Krashen, 1982, p. 30)

Classrooms of low anxiety, or those that have a low affective filter, are intentionally created by the purposeful structuring of the classroom environment. High levels of motivation and self-esteem coupled with low levels of anxiety promote an environment within which language and content can most easily be acquired. Thus, one could argue that having the opportunity to work alongside a peer who speaks one's native language and is fluent in both the native and target language, shows to the language learner that he/she can achieve that level of accomplishment also. This motivation could lead to improvements in academics, social behavior, discipline, peer relations, self-esteem, subject attitudes, and school attendance as benefits of peer tutoring. In other studies, those social, emotional, and academic benefits were often reported for the tutor as well as tutee (Kalkowski, 1995).

Mandy Roth's (2010) research on peer tutoring in a secondary Algebra classroom found that teacher and student feedback on the initiative was largely positive. Tutors liked helping someone else and tutees felt that tutoring helped them learn the class material. Roth's class showed nearly equal gains using class wide peer tutoring in comparison to independent practice, but students enjoyed tutoring as a classroom strategy more.

Nawaz and Rehman (2017) conducted a study to determine the effectiveness of a peer tutoring program also at the secondary level. A pre-test and post-test was administered to students in experimental and control groups of homogenous male and female groups. The program lasted for 8 weeks with 50% of the highest achieving students being randomly paired with 50% of the lowest achieving students.



The researchers noted that the program brought about positive changes not only for low achieving students but for gifted or high achieving students as well. It was suggested that teachers be trained to use peer tutoring as a strategy on a regular basis to maintain results. The researchers found their students enjoyed other benefits from their peer tutoring efforts.

Class wide tutoring is found to be effective in improving students' grades, increasing knowledge of subject matter, developing students' engagement and improving students' behavior in the classroom.

(Nawaz and Rehman, 2017, p. 17).

The tutors themselves shared that they benefited from helping their peers. They reported increased self-satisfaction and self-confidence (Nawaz and Rehman, 2017). Peer tutors also improved their communication skills and their own understanding of the content material (Nawaz and Rehman, 2017).

San Diego's Scripps Ranch High School and its Falcon Incentive Program has proven that peer tutoring is a success on their campus (Magee, 2009). In the Falcon Incentive Program, struggling students who are failing three or more of their core classes stay after school to work with upperclassmen to go over their homework up to four times a week. In addition to support from their peers, students in the program also meet weekly with counselors and administrators who track their grades and attendance closely (Magee, 2009). This segment of the school staff also assists their students with study skills, planning, and goal setting. The school staff hold contests for academic performance and attendance and reward achieving students with items such as movie passes or gift cards.

The program began by identifying the top 40 students with the most failing grades. Students and parents were told that participation in the program was mandatory (Magee, 2009). The program quickly spread in popularity with more and more students requesting to join. The school's administration hopes to expand the program to include more freshman and even sophomore students in need of the extra push.

When the program's 37 tutors finish the school year, they would have acquired an astonishing 400 hours of teaching (Magee, 2009). The tutors know the students they work with can be challenging, but they want to see them succeed, to feel more connected to their school and each other. Emily Berg, a peer tutor, said:

“At first, they would say they didn't care about school or going to college. But then they start to get it, they do better, and you can see they do care,” Emily said. We try to get them to connect – this is their school, too. Some have never joined a club or even gone to a dance.”

(Magee, 2009).

Tutor preparation is critical to the success of any tutoring program. Training can, however, also take various forms. Program coordinators must determine how often tutor training should take place and what those sessions would look like. In their research, Bond and Castagnera (2006) reported five training sessions were necessary. The first would teach about equity, fairness, and special education. The second offered simple on-the-spot teaching strategies. In the third session, training focused on communicating with those who have difficulty communicating. The fourth session encouraged reflection on the importance of friendships and facilitating friendships with tutees. The final session

was to share what tutors had learned over their semester. Training may provide units on orientation, helping relationships, communication, behavior management, principles of education, and content area tutoring. The type of training offered to tutors and by whom must always be carefully examined and fine-tuned to meet the needs of tutees and the school's overall goals.

The programs at the center of Boes and Grubbs's (2009) study determined that more direct training and constant communication with parents as to their students' participation in the program would increase the long-term effectiveness of the program. Ultimately, its program's participants expressed that they were pleased with the academic outcomes.

### **ELs and the Challenges They Face in the Mathematics Classroom**

Research has shown that peer tutoring in general education classrooms can be beneficial for students, however, the dynamics of the English learner mathematics classroom are unique. The linguistic, social, and economic stressors that newcomer ELs bring into the classroom may strongly hinder their ability to follow along with typical mathematics classroom lessons. Many times, teachers unintentionally contribute to hindering the comprehensibility of the content they work to deliver to their EL's. Karen Thompson (2017) details her experiences observing various math classrooms where the instruction was clearly problematic for the English learners present. Thompson noted:

...communication largely flowed from teacher to student using abstract language with potentially confusing referents. At no point did the teacher

connect course content to students' lives or provide examples. This may have negatively impacted students' motivation by obscuring the utility value of learning the math content.

(Thompson, 2017, p. 786).

In order to minimize this type of damaging lesson delivery, Thompson encourages instructors to consider several factors that contribute to student success in mathematics classrooms beginning with individual and classroom rooted mindsets. These mindsets are rooted in the fact that individual students have a certain belief in themselves and a certain belief in their ability to perform academic tasks. These belief sets will often dictate the student's motivation to learn new material.

Further, Thompson notes that most instructional practices are either *didactic* (individual problem solving, focused on accuracy and memorization) or *dialogic* (discussion-based, collaborative problem-solving focused on creativity and multiple approaches to solutions) These delivery methods predict how well students will receive and retain instruction (Thompson, 2017). Thompson asserts that the dialogic mode of instruction is the most ideal for English learners in mathematics classrooms.

In their work, Campbell, Douglas, Smith, and Topping (2003) argue that “enhancing achievement in mathematics involves overcoming barriers regarding discontinuity between school and other life contexts, motivational and other affective aspects, and language factors” (Campbell et al., 2003, p. 287). Thus, success in the mathematics classroom is strongly connected to a student's social and language success.

Turner and Strawhun (2007) state that the problem-solving contexts teachers present must be authentic to students' lived experiences (life contexts) and that students should find the problem worth solving (motivation) in order to be effective. This is critical given that most students, not just ELs, will consider both their ability and desire to solve a math problem before deciding if they will expend the effort that it will take for them to do so.

Research shows that many newcomer ELs initially fail and therefore must repeat their first mathematics courses. When such courses are repeated, ELs either show no growth or a decrease in growth (Thompson, 2017). Peer tutoring in the newcomer mathematics classroom can interrupt this cycle of failure and change this negative educational outcome for this student population.

### **The Benefits of Peer Tutoring ELs in Mathematics Classrooms**

The collaboration that naturally occurs with peer tutoring is essential to a tutored student's academic achievement. Vygotsky's theory of cognitive development is based on a student's ability to use social constructs and interactions with peers to learn. In his research on Vygotsky's work and peer assisted learning, Peter Doolittle noted:

Through social interactions with more knowledgeable others, such as more advanced peers or adults, children eventually develop higher mental functions such as language, logic, problem-solving skills, moral reasoning, and memory schemas.

(Doolittle, 1997, p.82).

This development of logic and problem-solving skills could prove very beneficial in the mathematics classroom. Vygotsky's zone of proximal development demonstrates the fluidity of human learning. As a student grows cognitively, his or her "zone" moves allowing the student to eventually independently accomplish what he/she could only do previously with support.

Teachers can also make instruction in the mathematics classroom more comprehensible for English language learners by using familiar content and contexts, developing English vocabulary, using a student's native language to support content understanding, and promoting collaborative discourse (Driver, 2017).

Thompson (2017) suggests that school's responses to students' struggles in math often do not facilitate learning when tutoring can. She states:

...districts and schools might consider how to expand math tutoring opportunities for example. Given funding limitations, schools could potentially explore peer tutoring models or partner with local universities or non-profits to implement volunteer-based tutoring programs, targeting students beginning to show signs of struggle in math.

(Thompson, 2017, p.792).

Personalizing mathematics instruction has proven successful for many ELs and their teachers. Orosco, Swanson, O'Connor, and Lussier (2013) tested the effectiveness of an instructional strategy to improve word problem solving for ELs with math difficulties. The strategy (Dynamic Strategic Math) incorporated small group instruction, pre-teaching vocabulary, and using a flexible assessment approach to scaffold support.

In a separate study, Khisty and Chaval (2002) observed Mrs. Martinez, a successful math teacher of ELs and her use of discursive interactions. Rather than lecturing, Mrs. Martinez used guided questioning techniques with her students and challenged them to justify and defend both their independent and collaborative problem-solving processes.

Student discourse as occurs in reciprocal teaching has been shown to be positively connected to gains in academic achievement. Roth (2010) further discusses the importance of peer interaction in the classroom setting.

Peer interactions provide a rich and meaningful context for learning.

These interactions help students actively process information. They have the opportunity to elaborate on ideas and make connections with prior knowledge.

(Roth, 2010, p. 6).

Collaborative dialogue is dialogue in which speakers engage in problem-solving and knowledge building using the target language (Cardimona, 2018; Swain, 2000). As students collaborate, they engage in both language learning and language use (Cardimona, 2018).

Kimberly Cardimona (2018) focused on an established peer tutoring program and analyzed both productive and unproductive interactions between the tutors and tutees in a secondary mathematics classroom. In her study, Cardimona looked at the types of questions and amount of wait time tutors used that resulted in tutee's active participation,

independent problem solving, and use of academic vocabulary over a four-week timeframe. During the 30-minute tutoring sessions, Cardimona (2018) noted:

The most effective questions used by the tutors were guiding questions as they were used to effectively model a problem-solving process, access background knowledge, elicit a response, elaborate a response or focus tutee attention on the activity. Guiding questions allowed the tutee to actively participate in the problem-solving process and work within their zone of proximal development. These types of questions encouraged remediation and allowed the tutor to demonstrate proper techniques.

(Cardimona, 2018, p. 45).

Other notable effective tutoring techniques observed by Cardimona (2018) were a mixture of procedural, guiding, and reflecting questions, clear use of academic vocabulary, sufficient wait time, a review of the problem-solving process, and encouragement of process justification. Ineffective tutoring techniques also noted by Cardimona (2018) were a lack of problem-solving demonstration and not encouraging the tutor to “own” the math activity for themselves.

Cardimona concluded her study with encouraging classroom teachers to adopt some of the same effective tutoring techniques that she observed above with the whole class. When these things happen, it encourages students to form a community of learners who are invested in the problem-solving process, not only for themselves, but for their peers. “Assigning a tutor to a small group will enable students to work in more intimate



settings and reduce insecurities that deter ELs from participating in whole-group discussions” (Cardimona, 2018, p. 46).

### **Implementation of the Peer Tutoring Program**

In order for peer tutoring programs to work in any classroom setting, it is imperative that tutors fully understand his/her role in helping ELs become active participants of the problem-solving process and model the teacher’s existing instructional behaviors. (Cardimona 2018).

It can be assumed that peer tutoring programs like the ones previously mentioned here may not be feasible for all schools. Teachers and school administrators may be deterred by the preparation time that comes with such a program when they are already strapped for time during the typical school day.

The one downfall to using class wide peer tutoring is the amount of preparation that is needed. It is much more time consuming to make (answer) keys, train students, and monitor progress than to assign an independent practice assignment.

(Roth, 2010, p. 18).

In addition to additional planning times, peer tutoring programs also have material development demands, participating teacher and tutor training, ongoing consultation and mentoring program effects. Although the long-term benefits may be positive, the time invested in the initial implementation stages of such a program may be overwhelming for school personnel.

Greenwood (1995) states that the most effective peer tutoring methods are those that systematically train tutors in their teaching roles and then monitor the ongoing accuracy and effectiveness of their implementation. Also, when compared to teacher only led instruction, peer assisted learning has increased ethical and theoretical concerns as well as those concerning appropriateness and effectiveness.

If teachers fail to monitor active tutoring sessions, critical information may be omitted, incorrect or inappropriate responses from tutors may go undetected, classroom disruptions may occur, and student cheating may increase (Maheady, Gard 2010). These problems may cause teachers to feel that the attention they are required to give to tutor related concerns are more of an additional burden rather than a benefit. Tutor related problems must be addressed immediately and proactively by the teacher themselves.

Teachers must also be sensitive to students who may feel stigmatized by working with a tutor. Failing to prepare tutors for potentially negative social interactions, may result in feelings of rejection or overall negative reactions from not only classmates, but parents and school administration as well. Thus, students must be allowed the option of “opting out” of peer tutoring or go so far as to require parental consent before tutoring is initiated.

It should be noted that some research indicates that peer tutoring methods may not be effective for certain student populations like those of learning disabled, physically impaired, or special needs students (Cosden and Haring 1992, Tateyama-Sniezek 1990).

Prior to implementing a peer tutoring model, the following questions should be carefully considered:

1. Who will coordinate the logistics of the program?

2. Which peer tutoring method should be used?
3. Which student population will be targeted?
4. How will students be paired with a tutor?
5. When, where, and for how long should a particular tutoring approach be used?
6. How will the program be implemented, monitored, and evaluated?
7. What should be done if problems arise?

Not considering these questions could lead to a poorly planned program that could be detrimental to both staff and students. Without the proper consideration, implementation, staffing, and training for all involved, a peer tutoring program could do more damage than good to participating students, teachers, and school systems.

However, with sufficient planning, extensive tutor training, and ongoing evaluation, peer tutoring programs can be ideal for not only English learners but for many struggling learners (Arreaga-Mayer, Baldwin, Veerkamp, Bannister, Greenwood, Kamps, Tapia, and Utley 2008; Bond and Castagnera, 2006; Mastropieri, 2006; Moore, 2018). Some schools may determine that the academic and social payoffs are well worth the time, talent, and effort needed to properly launch such a program.

## CHAPTER THREE

### Overview

At my former high school, the intervention of peer tutoring was introduced as an intervention to support newcomer English learners as well as their teachers in the classroom setting. Many newcomer ELs at my south Texas high school were identified as non or limited English speaking and therefore, at the beginning level of English proficiency in all four language domains of listening, speaking, reading, and writing. Most of these students were native Spanish speakers primarily from Central American countries. Despite their English proficiency levels, all students enrolled in Algebra I classes were challenged with taking and passing the Algebra I *STAAR* assessment in English at the end of their first year in U.S. schools. This graduation requirement added a significant amount of pressure to the jobs of their classroom teachers, some of whom, were new to the teaching profession. An added pressure was the sheer size of the newcomer mathematics classrooms. Because of scheduling and staffing constraints, mathematics classes for newcomers could not be limited to 12-15 students as is ideal for an EL classroom setting. Thus, some teachers had as many as twice that number of students in one class at a time.

When working with beginning to intermediate English learners, native language support is recommended when it's available (Echevarria and Short, 2010). This support can come by way of bilingual dictionaries, resources available in the native language, or bilingual peer assistance. It is difficult for peers in the class who may be a bit more advanced in their English proficiency to be able to keep pace with their own studies and simultaneously support a peer who truly needs one-on-one guidance. For this reason, our

campus administration agreed that bilingual tutors from outside of the class be brought in to assist. This way, there was assistance for the students, and it did not take away from students who were enrolled in the class itself. Thus, tutors would be free to assist where needed in the classroom setting without detriment to his or her own learning.

Students who would serve as ideal peer tutors in newcomer classrooms had to be 1) students who had passed the Algebra I *STAAR* exam 2) students who demonstrated good attendance and 3) students who had availability in their schedule to add a peer tutoring course. It was helpful if the assigned tutors also spoke Spanish in this case, but it was not a requirement since English was the target language. Thus, students were selected by their counselors or the peer tutoring program coordinator to be enrolled in the peer tutoring course, trained by the program coordinator, and monitored throughout the semester by the same. Tutoring placement was for a minimum of one academic semester or 18 weeks, however, many tutors signed up to tutor for multiple semesters.

### **Sample and Setting**

The setting for this study was an urban high school in south Texas with a total student population of almost 2,000 students. As of the 2016-2017, a year prior to this current study, the student body was 76% economically disadvantaged or their family annual income deemed it necessary for these students to receive free or reduced lunch according to the Texas Tribune (2018). Racial demographics were 65% of Hispanic, 31% African-American, 1% White, 2% Asian, and 1% other. The English learner population made up 17% of the total student body. The classroom teacher to student ratio was 14:1 and the average teacher had ten years of experience.

The Algebra I and Geometry classrooms specific to this study totaled nearly 100 students assigned to three teachers over the course of four academic semesters – the fall of 2015, spring of 2016, spring of 2017, and spring of 2018. Many of the students were enrolled in these classes were male, Hispanic, and Spanish speakers. Three peer tutors (two in Algebra I and one in Geometry) were male, Hispanic, Spanish speakers. One peer tutor (in an Algebra I classroom) was female, Hispanic, and also Spanish-speaking. All but two tutees were of Hispanic/Latino ethnicity, native Spanish speakers, and identified as English language learners by their campus. Two students were of Asian origin, female, native Vietnamese speakers, and identified as English language learners by the campus. All students were classified as ninth or tenth graders. All tutees had been in U.S. schools for 2 years or less.

Participating teachers volunteered for inclusion in the peer tutoring program each semester. The mathematics teachers' classroom experience varied from first year teachers (Algebra I and Geometry) to one with over 20 years experience (Algebra I). Two other teachers, classified as ESL teachers, served as support for the newcomer students while in the mathematics classrooms. Feedback was also gathered from a mathematics instructional specialist who worked closely with all teachers. For use in this dissertation, all tutors and teachers were assigned pseudonyms by the researcher. See the tables below for reference.

<b>Pseudonym</b>	<b>Role</b>	<b>Classroom Assignment</b>	<b>Tutoring Experience</b>
Paul	Tutor	Algebra I	2 semesters
Luis	Tutor	Geometry	1 semester
Pedro	Tutor	Algebra I	2 semesters
Stephanie	Tutor	Algebra I	1 semester

**Table 1** *Peer Tutor Identifiers*

<b>Pseudonym</b>	<b>Role</b>	<b>Classroom Assignment</b>	<b>Classroom Experience</b>
Ms. Jones	Teacher	Algebra I	23 years
Mr. Smith	Teacher	Geometry	1 year
Mr. Peterson	Teacher	Algebra I	1 year
Mr. Chavez	Teacher	ESL	5 years
Ms. Jefferson	Teacher	ESL	1 year
Ms. Clark	Mathematics Instructional Specialist	N/A	16 years

**Table 2** *Teacher Identifiers*

Convenience sampling or nonprobability sampling was used for this study. In some cases, the selection of a sample is based on geographical proximity, easy accessibility, or a willingness to participate in a particular study (Etikan, 2016). In some cases where convenience sampling is employed, the study's participants may have not been applicable to the research problem. However, that is not the case in this study. The sampling method for this study was one of criterion convenience as the tutors and tutees were previously assigned to the participating teachers' and tutors' classes prior to the

initiation of this study. In this case, convenience sampling was appropriate for making generalizations for working with newcomer ELs in the mathematics classroom setting.

## **Program Recruitment and Tutor Selection, Training, and Placement**

### **Program Recruitment**

It was important to me that upperclassmen students (juniors or seniors) serve as peer tutors so that their near graduation classification could also serve as a source of inspiration for our newcomer tutees. In order to begin recruiting potential peer tutors, I spoke with the teachers of sophomores and juniors as they would have students who would qualify for the classification of junior or senior for the following school year. I asked if these teachers would mind if I spoke with their classes of students for ten minutes to explain the program and distribute applications (See Appendix D). I was able to visit roughly 10-15 classrooms to get the word out about our peer tutoring initiative. There seemed to be high interest for participation in the peer tutoring program among students. Even after I left a classroom, teachers continued to reach out for more applications as students caught wind of the new effort and wanted to serve as tutors.

Participating teachers were recruited by sharing the launch of the program at professional meetings and in writing via email. Teachers of all subject areas were asked to communicate their interest in tutors for the next school year. In that request, they also communicated if they had a language preference for their tutor(s). Many teachers requested students who were bilingual in English and Spanish. Also, teachers recommended students who they were familiar with to serve as peer tutors and then requested that these students be assigned to their classrooms.



I asked Ms. Clark if Pedro could come into my 3<sup>rd</sup> period for two reasons. First, he is very good at teaching. He teaches in my Algebra 2 class.

(Ms. Jones, personal communication, January 9, 2017)

## **Tutor Selection**

I was aware that I had to be very careful in the selection of our campus's new peer tutors. These students would serve as ambassadors for the school and the program as the program served to support our school climate and culture as well as the academic achievement of one of our most vulnerable student populations. In selecting tutors, I didn't solely look for the crème of the crop in student profiles. It was important to me to have tutors of diverse social and academic backgrounds. Certainly, students who were indeed the crème of the crop were considered, but also considered were those students who struggled their way to success, and those who fell in between. In fact, two of the students at the center of this study were current and former English learners themselves. I felt that they would be crucial role models for the students with whom they would work.

Secondly, but of equal importance, I wanted students who had the heart and willingness to serve others. Selected students communicated either to me or to their guidance counselor that they desired to help struggling students of possibly different cultural backgrounds. Additionally, prospective students also had to have good attendance, passing grades in all of their classes, no behavior issues, and must have demonstrated mastery on the state's Algebra I and English I state assessments. They also had to have the flexibility in their daily schedule for an additional 90-minute class every

other day. Guidance counselors checked to ensure that this was the case for all selected applicants. Selected students were notified of their status by a welcome letter from me. (See Appendix E).

### **Tutor Training**

Tutors met with me for a minimum of two weeks at the beginning of the semester for welcome, orientation, and training. Service to their peers and the school community was a focal point of my orientation for new tutors. Our sessions were 90 minutes each, 2-3 times per week. This time consisted of reviewing the purpose and vision for the program as well as practicing techniques tutors would be expected to employ with their tutees. Tutors understood that although the motivation behind the program was to service English learners, they were expected to serve all students they encountered when and if needed.

Tutors were given the same technique reference sheet that classroom teachers were given for working with beginning and intermediate English learners in mathematics classrooms (See Appendix F). Techniques such as slowing one's rate of speech and highlighting key words were important for tutors to employ when they worked with students. We role-played using the techniques with one another and offered feedback as needed. It was also emphasized that tutors would keep up with notes and assignments as if they were receiving a grade for the class themselves. This would also serve as a written reference for students who may be absent for days at a time and would need to catch up on class notes.

Behavior and individual performance were an important part of tutor training as well. Because they served as student role models first, they were expected to be on time for class and follow all classroom rules just as their tutees would. Tutors understood that they would be receiving grades from me and that these grades would be based largely on teacher feedback. The other grading point would be the completion of a written one-page reflection at the end of the semester. (See Appendix G).

Because the tutors were active students themselves and working with their peers, we discussed how different social interactions may arise and what their ideal response should be (See Appendix H). For example, how should the tutor respond if a student asked them to complete homework for them or were disrespectful toward them in some way?

Finally, I made sure that I communicated that the tutor's participation in the program was strictly voluntary and, if at any time they wanted to discontinue or change their assignment, they could share that with me or their guidance counselor and we would work together to find them an alternative class assignment as quickly as possible. In some very isolated cases where the tutor's schedule could not be changed, they would be assigned to work with me or another campus leader as needed.

### **Tutor Placement**

It was imperative that tutors were academically and socially suited for their assigned classroom. Thus, at least two days of the training window was designated for me and the group of tutors to engage in a tour of classrooms that matched their requested area of support as well as teacher requests. We visited classrooms for an average of

fifteen minutes each to get a sense of the teacher's style of teaching, the classroom environment, and to gauge whether there were any conflicts of interest in a particular classroom for the tutor (i.e. students or teachers they had prior issues with). It was important that core content area classrooms (science, math, English, and social studies) and classes with large groups of English learners had top placement priority. Once tutors chose the best fit for their semester experience, they were placed in the classroom for a one-week trial. If the tutors and teachers were happy with the placement after the trial period, they continued for the remainder of the semester with regular check-ins from me. If the tutor and/or teacher were not happy with their placement, we worked together to find a suitable alternative for the semester as quickly as possible. This change could often be remedied by simply choosing another class assignment that was left unfilled. In other cases, we had to work with guidance counselors to rearrange the tutor's schedule for the availability of a more suitable placement.

### **Strategies of Inquiry**

This research is presented as a qualitative case study. The qualitative method relies on "text and image data, have unique steps in data analysis, and draw on diverse designs" (Creswell, 2014, p.183). The qualitative approach is most appropriate for this study since all of the data collected and analyzed are in the form of text. For example, instruments such as journal data, tutor reflections, and teacher interviews were analyzed for all findings, conclusions, and recommendations.

In order to enhance this study's validity and check for bias, a third-party review of the data and findings was also conducted. The study's methodology and findings were

analyzed by a group of critical friends who checked for researcher bias. This system was conducted and no bias in the study's data or findings was found.

The case study research design is most appropriate because case studies develop an in-depth analysis of a "program, event, activity, process, or one or more individuals" (Creswell, 2014). These cases are based on collected data over a specified time period. In this study, a peer tutoring program was analyzed over an extended period of time with feedback and reflections collected throughout and after the program's implementation.

### **Data Collection**

Qualitative data collection techniques were used including participating teacher written surveys, emails, and interviews as well as written peer tutor self-reflections. I also included my own personal observation/journal notes gathered throughout the duration of planning and implementation of the program as I served as the peer tutoring program's sole coordinator.

Feedback was given both from all three classroom teachers (two male, Spanish-speakers, one female, non-Spanish speaker) and the tutors themselves as to their level of participation and perceived effectiveness in the tutoring class. Items such as the tutor's academic ability in the subject matter, attendance, and engagement with learners were shared with me by the classroom teachers. Teachers also communicated via email and in-person conferences with me during the tutoring period when questions or concerns arose.

In written reflections at the end of the semester, both tutors discussed their intrinsic motivation for working with their students, what they feel they contributed to

individual students and/or the class overall, and what they felt they gained from their tutoring experience. The only directive for completing the written reflections was “Describe your experience in your peer tutoring class.”

During and after the peer tutoring experience in the high school setting, responses were solicited from all participating teachers and students. Teachers regularly communicated electronically regarding their impressions of their assigned tutor’s work performance and their desire to continue in the peer tutoring program. I also solicited written responses from the mathematics instructional coach as well as English as Second Language teachers who worked closely with the two participating classrooms in order to garner their thoughts on the program’s implementation and effectiveness.

### **Data Analysis**

Creswell (2014) states that qualitative research data analysis answers the question, “What were the lessons learned?” (p. 200). The answers provided by the analysis of the qualitative data are open to the researcher’s personal interpretation. The researcher’s findings will either confirm past information, theories, or experiences or diverge from them (Creswell, 2014). The data analysis, literature, and study’s recommendations sought to discover how a peer tutoring program might serve newcomer English learners in their acquisition of mathematics in English.

The qualitative data specific to this study was manually coded using in vivo and holistic methods to identify emerging themes. In vivo coding looks at chunks of qualitative data such as interview transcripts and identifies key words or phrases taken directly from the actual participant’s communication. Holistic coding is used to assign

topics of content based on samples of the same type of qualitative data. Once coded, the accumulated data are considered to form theme categories. These theme categories are then further interpreted by the researcher to answer a study's research question(s).

This form of qualitative coding was deemed most appropriate for this study to ensure that the participating teacher and tutors' actual language was the primary information that guided the study's findings.

LeTendre and Lipka (2000) state: "A conclusion drawn from just one piece of evidence lacks credibility, whereas an inference deduced from several pieces of evidence carries more weight" (LeTendre and Lipka, 2000, p. 78). Thus, six qualitative data points collected as a result of this study were considered including 1) the researcher's journal notes 2) participating mathematics teacher feedback 3) EL teacher feedback 4) mathematics instructional coach feedback 5) participating tutor feedback and 6) critical friends' check for bias.

Participating teacher and tutor responses as well as feedback from critical friends were considered to be able to draw solid conclusions about the influence of the peer tutoring program at the focus of this study. The same qualitative data was used to inform recommendations and implications for further study.

## **Limitations**

Analyzing proposed interventions for English learners was part of the daily responsibilities that I held as an instructional specialist at the high school at the focus of this study. Therefore, the collection of student data and coordination of the program was not an unusual activity for me to engage in. Because of this, permission was not garnered

or needed for this study as the peer tutoring program was one that was fully authorized and scheduled by campus administration and part of the participating students' instructional schedule.

Qualitative data analysis methods of chunking and coding are open-ended and subject to the researcher's own interpretation (Saldana, 2016). This form of analysis can be vulnerable to researcher bias. However, in this study steps were taken to check for bias in the interpretation of data coding.

The criterion convenience sampling method may be considered as a limitation because of its haphazard nature and its vulnerability to severe hidden biases (Etikan, 2016). To address the propensity for bias, the critical friends' checkpoint was included as an additional point of data analysis.

The only anticipated ethical concern was the researcher's vested interest in seeing that the intervention was effective. However, the majority of the collected qualitative data came from those program participants exclusive of my reflections or inclinations. My journal notes only served as a reference point that supported findings that initially surfaced in the reflections of the study's participating teachers and tutors. Thus, my personal notes were not findings that participating teachers and tutors had not expressed separately and of their own accord. Also, because the study was initially launched to determine the peer tutoring program's effectiveness, every attempt was made by me to avoid bias as the program's utmost priority was to the success of the most important stakeholders – the newcomer students.



## CHAPTER FOUR

### Data Overview

This chapter discusses the findings of the singular case study of a peer tutoring program at an urban high school campus in South Texas. Although the peer tutoring program encompassed over four dozen classrooms with over 60 peer tutors, this study focuses on multiple academic semesters in three mathematics classrooms. Two of the classrooms were Algebra I classes designed exclusively for newcomer English learners and the third classroom was a Geometry classroom designed for the same student population.

A total of five classroom teachers and one mathematics instructional specialist worked with the three classrooms of newcomer English learners over academic semesters. In addition, a total of four peer tutors worked in the same three classrooms alongside the adults. Three of the four peer tutors provided written reflections of his or her time in the mathematics classrooms at the end of their assigned semester to the researcher who also served as the program's sole coordinator. Tutors were asked to submit a one-page essay reflecting on their experience in their assigned classrooms. Four of the six adults provided written feedback to the researcher before, during, and after the intervention period. This communication came in the form of direct email communications and written reflections in response to the following questions:

1. In your professional opinion, what do newcomer English learners need in order to master content in an Algebra I or Geometry classroom?
2. From your observation, what role did peer tutors play in supporting Algebra I and/or Geometry newcomer English learners in classes during the 2016-2017 and/or 2017-2018 school year?
3. Did your classroom have a peer tutor? If yes, what role did (peer tutor) play in supporting your Algebra I or Geometry English learners during the 2016-2017 and/or 2017-2018 school year?
4. If you answered “Yes” to question 4, what was your impression of (peer tutor’s) impact in working with your students during the school year?
5. What do you think needs to be done to ensure peer tutoring is successful in mathematics classrooms in other high schools?

The questions were designed to solicit responses that would speak to the educator’s opinions on the program without prompting from the researcher. Two of the six adults did not submit written reflections but shared email communications with the researcher during the intervention period. Finally, the researcher also included notes from her classroom observation journal maintained before, during, and after the academic semesters at the focus of this study. All written data was manually coded using a combination of in vivo and holistic coding methods to determine emerging themes. See the tables below for in vivo and holistic codes that emerged after analyzing all data from the study’s participating teachers and tutors.

<b>Participant</b>	<b>In Vivo Code (obtained from raw data)</b>	<b>Holistic Code</b>
Researcher	“Godsend” “reinforces” “match made in heaven”	INSTRUCTIONAL SUPPORT
Ms. Jones	“tutor helped a lot” “please don’t take away” “worked as a team” “partnership”	INSTRUCTIONAL SUPPORT
Mr. Smith	“helps me a lot”	SUPPORT
Mr. Peterson	“effective peer tutor”	SUPPORT
Mr. Chavez	“play as reinforcers”	INSTRUCTIONAL REINFORCERS
Ms. Jefferson	“pressure off of the teacher”	SUPPORT
Ms. Clark	“assisting teachers” “side by side with teachers”	INSTRUCTIONAL SUPPORT

**Table 3 Data Coding 1**

<b>Participant</b>	<b>In Vivo Code (obtained from raw data)</b>	<b>Holistic Code</b>
Researcher	“his smile and intent” “enthusiasm”	TUTOR ENTHUSIASM
Ms. Jones	“more approachable” “kindness when supporting students” “great example”	AFFECTIVE BENEFITS
Mr. Smith	<i>No data available</i>	<i>No data available</i>
Mr. Peterson	“willing”	TUTOR WILLINGNESS TO HELP
Mr. Chavez	<i>No data available</i>	<i>No data available</i>
Ms. Jefferson	“motivate students to learn”	TUTOR MOTIVATION
Ms. Clark	“trust” “belongingness” “non-threatening” “relaxed social setting” “more welcoming atmosphere”	AFFECTIVE BENEFITS
Paul	No data available	No data available
Luis	“I learned from them” “reminded me of when I first got here” “always wanted to help” “enjoy helping my peers” “look forward to having this class”	EMPATHY AFFECTIVE BENEFITS FOR TUTORS
Pedro	“taught me valuable teachings” “did not once doubt” “feel as though these were my first days”	AFFECTIVE BENEFITS FOR TUTORS
Stephanie	“share my passion and knowledge” “going to miss the students”	DESIRE TO HELP

**Table 4 Data Coding 2**

<b>Participant</b>	<b>In Vivo Code (obtained from raw data)</b>	<b>Holistic Code</b>
Researcher	“so much better than last year”	ACADEMIC IMPROVEMENT
Ms. Jones	“massive impact” “success with testing and mastery” “his skills in math” “good foundation for their next class” “huge part of that success” “pleased with how they did” “target language”	ACADEMIC SUPPORT
Mr. Smith	“very good support”	ACADEMIC SUPPORT
Mr. Peterson	“of great help” “overall effective”	ACADEMIC SUPPORT
Mr. Chavez	<i>No data available</i>	<i>No data available</i>
Ms. Jefferson	<i>No data available</i>	<i>No data available</i>
Ms. Clark	“academic language learning”	ACADEMIC SUPPORT
Paul	<i>No data available</i>	<i>No data available</i>
Luis	“able to use their calculator”	ACADEMIC SUPPORT
Pedro	“impressed me”	TUTEE IMPROVEMENT
Stephanie	“help them to the best of my ability” “glad that I was able to help them”	ACADEMIC SUPPORT

**Table 5 Data Coding 3**

After considering the commonalities among the holistic codes that emerged, three themes were identified. Those themes were 1) support for classroom teachers 2) affective support and 3) academic support. The themes along with supporting data and research are organized in the table below:

<b>Theme One: Support for Classroom Teachers</b>
Reflection: “I will be honest; this morning was tough...I can model but I can’t tell them why and they can only copy my movements which will not be sufficient. Your tutor helped a lot” (Ms. Jones, personal communication, August 28, 2015).
Research: Gandara, Maxwell-Jolly, Driscoll, 2005; Harper and Jong, 2004; Walker, Shafer, and Liams, 2005.
<b>Theme Two: Affective Support</b>
Reflection: “I also think that student peer-tutors are more approachable for struggling students than an adult. Pedro’s success was related to his skills in math and his kindness when supporting students” (Ms. Jones, personal communication, July 12, 2019).
Research: Krashen, 1981, 1982; Walter and Cohen, 2011; Yeager and Walton, 2011.
<b>Theme Three: Academic Support</b>
Reflection: “They could ask Paul to read the question in Spanish, but they could not ask for help...I was pleased with how they did” (Ms. Jones, personal communication, September 30, 2015).
Research: Echevarria and Short, 2010; Freeman and Crawford, 2008; Krashen, 1981, 1982; Oliveria, 2011; Vygotsky, 1978, 1987.

**Table 6 Theme Overview**

### **Theme One: Peer Tutoring and Support for Classroom Teachers**

Whether teachers are seasoned veterans or in the classroom for the first year, being assigned to work with a class exclusively of newcomer English learners can be

daunting. That feeling is heightened when the teacher doesn't share the native language of the students he or she will be teaching.

Often, teachers are assigned to work with newcomer English learners with little pedagogical or social training as to how to do so effectively. They may also not receive the level of support and resources they feel they should. Numerous studies show this to be the case in schools across the United States (Gandara, Maxwell-Jolly, and Driscoll, 2005; Harper and Jong, 2004; Walker, Shafer, and Liams, 2004). In school settings where teachers feel overwhelmed and not supported when working with their ELs, their feelings of anxiety can turn to feelings of resentment toward their students – a feeling that can be damaging to all parties.

Mrs. Jones, a veteran Algebra I teacher summed up frustrations that may be felt by teachers newly assigned to teach newcomer English learners in the secondary mathematics classroom:

I will be honest; this morning was tough. I am supposed to teach solving equations. I can model but I can't tell them "why" and they can only copy my movements which will not be sufficient. The ones that speak [English] helped the ones that don't but many of those don't know how to do the math. Your peer tutor helped a lot.

Second problem, there are three in the classroom that need more advanced math. I am going to have to give them different work but will struggle finding time for them with one-on-one with the others.

Signed, Struggling

(Personal communication, August 28,2015)

At the time of this communication Ms. Jones was, for the first time in her over 20-year teaching career, assigned to teaching newcomer ELs in her Algebra I classroom specifically because of her past proven success in working with struggling learners. By all regards identified as a highly qualified teacher, it was at this point that Ms. Jones began to doubt her ability to effectively reach her students. She was, as her above email signature indicated, *struggling*.

As a monolingual English teacher, Ms. Jones indicated to me on several occasions that the language barrier between she and her students was, initially, the most pressing problem she experienced in her new classroom. Trying to find time to work with learners of varying proficiency levels was another big concern for her. Being the thoroughly engaged educator that she was, Ms. Jones desperately wanted to give her time to meet the needs of all her students, yet she found herself struggling to do so. Her concerns were not unique.

Many monolingual English teachers expressed to me that they felt “their hands were tied” (Ms. Jefferson, personal communication, July 2019) when it came to communicating with students who did not speak English fluently or at all as was the case with some newcomers. I noted:

*It both frustrates and saddens me when I'm approached by teachers who feel lost about how to teach their ESL students. We've been providing professional learning for two years about how to do this and they, to this day, appear to be just as lost and confused on day one when*



*we first started to openly have the conversation. And I'm sure my "simple" solutions to how this can be done are not so simple to them. We have so much work to do!*

(Journal notes, October 15, 2014)

For this reason, teachers did not prefer or seek out opportunities to work with newcomer students – not because of the lack of desire to work with this population of students, but because they themselves felt ill-equipped to successfully teach them.

*If I hear "I can't teach them, I don't speak Spanish" one more time, I just might scream. My constant reminder is for them to make sure their input is all in English – simple, with supporting images, gestures, etc. Their input can be whatever it needs to be for them to understand from anyone/thing other than you whether that be peers, videos in the native language, dictionaries, illustrations, etc. I so desperately need them to see the potential impact they can have on student learning without ever uttering a word of Spanish.*

(Journal notes, August, 12, 2015)

Thus, otherwise high achieving teachers were, often against their will, assigned at least one newcomer class for the school year. Some embraced this assignment and sought out ways to work through the challenges they faced in their new assignment. Others did not and went so far as to refuse to work with newcomer students entirely. I

recalled a conversation I had with a substitute teacher who had been previously assigned to teach a newcomer class:

*Teacher: So what is your job exactly?*

*Me: I'm the ESL Specialist. I specifically support students who are learning English and their teachers.*

*Teacher: Oh. So, those immigrant students?*

*Me: Some are immigrants, yes.*

*Teacher: I tried working with them once. I will never do it again.*

*Me: I'm sure you have your reasons, but I'm sorry you feel that way. Because you do, that may be the best situation for both you and them.*

(Journal notes, May, 22, 2018)

Despite the language barrier, the need for cooperative dialogue (Cardimona 2018) in the newcomer mathematics EL classroom was recognized and expressed by Ms. Jones in the semester before the placement of her second peer tutor, Pedro.

When I assist a student (and they are having more than just a little trouble with the problem) I ask them to repeat the steps from the beginning of the problem. Also, if we have another student in the group that is struggling with the problem, I ask them to repeat the steps to them while I listen.

Talking needs to be a big part of what we do in here.

(Ms. Jones, personal communication, September 21, 2016)

Making dialogue a priority was hard to do for Ms. Jones because of the language barrier that she spoke often spoke about. She struggled with how to effectively incorporate meaningful discourse into her daily lessons when she and her students did not share a common language. It was also something that I asked her to reflect on during one of my prior visits to her classroom. I asked, “How might LEP students be encouraged to produce more oral language? How might students benefit from working with varied groupings?” (Ms. Phlegm, personal communication, September, 9, 2016). Ms. Jones and I would ultimately work together with the support of multiple peer tutors in order to engage her Algebra I students.

ESL teachers who were assigned at least 3 times per week to the mathematics classrooms of their English learners expressed the need for (and lack of) explicit vocabulary instruction when working with ELs. Both mathematics teachers of newcomer ELs as well as their ESL support teachers referenced this as mentioned below:

The most important aspect for language learners when facing math in high school is learning the English vocabulary that allows them to reach mastery. This seems odd since it is a math class but math is universal. If a teacher writes  $3 + 2$  for a language learner, they will get an answer of 5 with no language used. The algorithm is universal. However, secondary math is vocabulary based. If you cannot read or understand “factor, slope, rate, percentage, etc.” it will not matter if you can do the math that relates to these words. In my experience with learners in my classroom, they

knew how to perform the math if explained to them in their own language, but not what to do faced with oral or written instructions containing these words.

(Ms. Jones, personal communication, July 12, 2019)

I truly believe ELLs need to begin with a Pre-Algebra course just for vocabulary purposes only. Most of them have the math background, yet they lack the vocabulary. Some of them have not had the math background either so they really need to learn the basics before they attempt to learn such a critical core class in English.

(Ms. Jefferson, personal communication, July 10, 2019)

The separate mathematics specific language course suggested by Ms. Jefferson, a newcomer ESL teacher, was not possible for our campus during this time. Inadequate staffing and schedule inflexibility made implementing a course of this nature an obstacle for high school administrators.

Another obstacle that at least the male Algebra I newcomer teacher, Mr. Peterson encountered was how to best provide an environment with a low-affective filter as Krashen (1981, 1982) recommends when there was a higher than normal student to teacher ratio. Ms. Jefferson served as Mr. Peterson's ESL support and had this to say:

As a Language Support Co-Teacher in the ELL Algebra 1 classroom, my first observation was how large the classroom student size was. There

were over 25 students in one classroom, being taught Algebra 1 by 1 teacher.

(Ms. Jefferson, personal communication, July 10, 2019)

In a classroom with a larger than ideal teacher to student ratio, the affective filter is naturally heightened (for both the classroom teacher and students) simply due to the sheer number of students in the room. Multilingual curriculum experts in the district strongly recommended that newcomer classes be capped at 15 students.

*Today (ESL curriculum writer) said to our cohort of ESL teachers as well as our program director that she “cannot guarantee the results” of her program with more than 15 students in a class. I understand what she means – anything beyond that number is crowd control and that is neither teaching or learning.*

(Journal notes, November 6, 2014)

Knowing this information, attempts were made to reduce this particular classroom’s size before the semester ended; however, that change came about very slowly resulting in the class being divided into two sections. However, the attempt at lowering the class size created another unintended problem: at least one half of the students in the now reduced Algebra I classroom, who had grown accustomed to having a bilingual peer tutor, now no longer had one as the tutor could only follow the schedule of one half of the newly divided class.

In an effort to provide some level of teacher support, some mathematics classrooms that were not assigned a peer tutor were assigned a paraprofessional who spoke the native language of the newcomer ELs but did not know the mathematics content – they served as pure translators for students. Ms. Jones reflected on the stark difference between having a translator who was solely used for translation purposes versus having a tutor who was strong in mathematics as well as working with students in their native language.

Our students were able to be successful on many of the assessments and had a good foundation for their next class. Pedro was a huge part of that success. The team that Pedro and I were able to form had a massive impact on our students. We had success with testing and with mastery. The year before, my classroom had an adult interpreter with whom I also was able to set up the same partnership but only for one semester. The second semester was an interpreter without the math skills and the change was dramatic.

(Personal communication, July 12, 2019)

It was vital for the mathematics teacher in this case to have support for her students who not only were able to provide native language support but provide adequate academic support as well. She expressed that trained peer tutors provided that dual support for her classroom.

Multiple teachers expressed that despite the obstacles of language barriers and larger than ideal class sizes, peer tutors supported the teachers themselves as well as their students.

The participating Geometry teacher shared about his junior tutor:

I do not have but very good things to say about Luis. He helps me a lot during class.

(Mr. Smith, personal communication, March 8, 2018)

In summary, the feelings of anxiety that can be present in the newcomer mathematics classroom appear to be mutually shared between teachers and their students. Whereas newcomer English learners are anxious about their new setting and the great expectations that come along with it, their teachers are equally anxious about their abilities to effectively teach and grow their new student population. Despite the concerns of a clear language barrier in one classroom and larger than the ideal teacher to student ratio in another, multiple teachers in this study expressed that the integration of peer tutors into their classrooms was able to alleviate those concerns on some level.

## **Theme Two: Peer Tutoring and Affective Support**

Research shows that the emotional and social stressors newcomer English learners bring with them to the classroom can negatively impact their learning (Fry and Passel, 2009; Lopez, 2009; Patel, et al. 2016; Roosa, 2012). Adding an unfamiliar country,

culture, language, and school to the experiences of their home lives can be overwhelming. Immigrant students can wrestle with their identities and sense of belonging in their new school.

When people's sense of self is threatened, they may naturally experience high levels of stress. ...reminding people of diverse, positive aspects of themselves can lead people to see negative events and information as less threatening and reduce stress and thus help people function more effectively.

(Yeager and Walton, 2011, p. 280).

Secondary schools can allow newcomer English learners to be reminded of the positive aspects of themselves and their academic potential by providing peer tutors who not only speak their native language but are also constant models of the success they one day hope to achieve.

Yeager and Walton (2011) speak further to the socio-psychological benefits of ensuring that all students feel a sense of belonging and community in new educational settings. When a student doesn't feel valued or is unsure about his or her place in a particular academic setting, their academic achievement in that environment could suffer:

This feeling of uncertainty about belonging can cause students to perceive negative social events in school – such as feelings of loneliness or receiving criticism from an instructor – as evidence that they do not belong in the school in general, an influence that undermines motivation.



(Yeager and Walton, 2011, p. 280)

Research shows that language learners can thrive in academic environments where they have increased motivation, heightened self-confidence, and low anxiety (Krashen, 1981,1982; Walter and Cohen, 2011; Yeager and Walton, 2011). Thus, when attempts are made to affect those things, conditions are ideal for academic progress.

### **From the Perspective of the Classroom Teachers**

Providing empathetic and trained peer tutors in a newcomer mathematics classroom allows learners to flourish in surroundings where they feel they belong, are accepted, and motivated – a classroom with a low affective filter (Krashen, 1981,1982). Teachers and staff in this study expressed the importance of a low affective filter in the newcomer EL classroom setting as suggested in Krashen’s theories of optimal language acquisition:

They need mentoring support from peers who are bilingual and native English speakers. The two most crucial support that peers can provide are trust and belongingness, and a non-threatening immersion into the English language. These peer support groups can also provide academic language learning when they are given opportunities to interact in an academic setting such as in class tutoring or after school tutoring. Additionally, the support group and newcomers must also be given opportunities to interact in a more relaxed social setting to practice and improve expressing oneself

in spoken language. This offers some small wins for the newcomers to build up their confidence to orally practice the language more.

(Ms. Clark, personal communication, July 11, 2019)

Ms. Jones reflected on the interactions that her tutees had with their peer tutor, Pedro:

I also think that student peer-tutors are more approachable for struggling students than an adult. Pedro's success was related to his skills in math and his kindness when supporting students. I have also had regular student peer-tutors who had no empathy for a struggling student and the mastery goes down. When you think of it, we have teachers who lack the empathy for a struggling student, and mastery goes down.

(Personal communication, July 12, 2019)

Ms. Jones's words also speak to the importance of careful selection of tutors who are empathetic to the stresses newcomer English learners may face.

Also, in regard to Pedro's interaction with his tutees, I journaled:

*Pedro is an absolute Godsend! He is truly a blessing to his students and Ms. Jones. I wish I could bottle his enthusiasm when helping his students. He never waivers in his smile and intent. He and this program are a match made in heaven. I wish I could keep him around to work with tutors that will come after him. Amazing!*

(April 2, 2017)

Finally, creating both a classroom and school climate that was welcoming and supportive of newcomer ELs was central to the purpose and vision of this program. In support of Krashen's language acquisition theories, teachers and staff made note of the ability of the peer tutor's presence to help create a classroom with a low affective filter. Because the tutors were not only peers of the tutees but also shared a common language, their presence allowed for heightened impact in this area. The Algebra I teacher noted that her students felt more comfortable with making errors with the peer tutor than with her – something she embraced.

I would also write sentence stems that they needed to complete. They would be extremely repetitive, and Pedro would have them say them orally to get more comfortable with the language. I let him do this because they were more comfortable making errors in their speech with him than with me.

(Ms. Jones, personal communication, July 12, 2019)

While conducting classroom observations, the mathematics instructional specialist noticed that "Their (peer tutors' presence in the classroom gave a more welcoming atmosphere..." (Ms. Clark, personal communication, July 12, 2019).

Thus, participating teachers and the mathematics instructional specialist shared that the peer tutors that were assigned to their classrooms were effective in affectively supporting their newcomer ELs by allowing them to learn, make mistakes, and take part in a welcoming classroom environment.

### **From the Perspective of the Peer Tutors**

It was important that part of the training that peer tutors received included being patient with tutees and sensitive to nonverbal cues that tutees might give to open the door for assistance. The need to pay attention to these cues and repeatedly model practices if need be was equally important.

Two of the tutors discussed how they would typically help students during class either by modeling problem solving or showing them how to use the state required scientific calculator which most of them had no experience with prior to placement in the class. Stephanie discussed how she typically modeled problem solving with her tutees:

If I ever saw that they were staring at the paper I would offer to help explain the question better and teach them how to solve it step by step. I really liked the fact that whenever I was teaching them how to do something, they would pay close attention to the way I solved a problem.

(Personal communication, May 20, 2018)

Teachers expressed their surprise by how unfamiliar their newcomer ELs were with using a scientific calculator and how much time they would need to devote to simple calculations on the sophisticated device. Tutors were often tasked to work one-on-one with tutees to guide them through simply navigating and reading their calculator's input and output. Luis mentioned:

I enjoy helping my peers learn how to solve the problems in the calculator quickly, and also help some students use just their heart and head to learn.

(Luis, personal communication, May 30, 2018)

In his written reflection, Pedro shared that it was the positive attitudes of the tutees that inspired even him after he noticed an increase in their self-confidence:

Throughout this last semester, I have seen them confront the challenges that mathematics present, every day learning new things with enthusiasm and passion, always with the best attitudes.

(Pedro, personal communication, February 12, 2017)

Luis and Pedro, former English learners themselves, related to the experience of being a newcomer in a new school attempting to learn new material. Each of them reflected on how they felt when they first arrived in the U.S. and the newfound pride they felt in the service they were offering to students who sat in the same seats that they once occupied. Luis shared “Since I was helping students who didn’t know a lot of Geometry, it reminded me of when I first got here” (Personal communication, May 30, 2018).

Pedro shared a similar sentiment by sharing:

Since the very first time that I walked into the classroom and heard them participate as a group, I knew the potential that all of them had to offer. Even though adversities were going to come, I did not once doubt in their great intellect to overcome obstacles. Now that graduation is around the corner, there is nothing else to say but that they have snatched with gentility a piece of my heart, each of them making my heart feel as though these were my first days at school.

(Personal communication, February 12, 2017)

Peer tutors' reflections shared sentiments about how they had learned from their tutees just as much if not more than the tutees learned from them. In his reflection, Luis shared how he and his tutees supported each other in mastering English:

When I first became a peer tutor, I would struggle with English, but I learned that I still have the power to teach and explain it to them. Even though speaking English is sometimes difficult, the students teach me how to pronounce some words that may be difficult for me! I know that what is important is that they understand me, and I can still teach them with the little English I know.

(Personal communication, May 30, 2018)

In her written reflection, Stephanie expressed the biggest lesson she learned from her experience:

This opportunity helped me to share my passion and knowledge of Algebra with the students that needed help completing the work. I had a good overall experience as a peer tutor, I'm surely going to miss the students, and I'm glad that I was able to help them.

(Personal communication, May 20, 2018)

In summary, the placement of adequately trained and qualified tutors was critical to the outcomes reported as a result of the peer tutoring intervention. The participating teachers and mathematics instructional specialist shared that the tutors' impact on lowering the affective filter in their classrooms was evident when observing the peer

tutors in action with tutees. The tutors also shared that the growth they appeared to inspire in their tutees was reciprocated in other ways. All parties shared appreciation for one another's service and the opportunity to support the campus's newcomer ELs in this way.

### **Theme Three: Peer Tutoring and Academic Support**

When describing proper preparation for teachers who work with English learners, Oliveria (2011) strongly suggests that those persons fully understand at minimum “the importance of access to comprehensible input and the role of social interaction for the development of conversational and academic English” (Oliveira, 2011, p. 59). The importance of social interaction in academic settings harkens back to the theories of Vygotsky (1978, 1987) as do the importance of comprehensible input referenced by Krashen as “crucial” and “necessary” to language acquisition (Krashen, 1981, p.9). Thus, providing peer tutors who could provide comprehensible input in the form of native language support as well as support in the academic and conversational English that language learners need, proved beneficial to this study's tutees.

In their work, Echevarria and Short (2010) speak at great length about the benefit of native language support in the EL classroom when possible as it serves to facilitate students' learning. In their research surrounding providing support for English learners in the mathematics classroom, Freeman and Crawford (2008) also reference the benefit of infusing native language support in secondary classrooms. They also advocate for the use of summarizing content into a language learner's native language to help facilitate comprehension (Freeman and Crawford, 2008).

In this study, at least one teacher shared the immediate impact that she felt the inclusion of a peer tutor (Paul) and his use of native language support had on her students' performance pointing out that her newcomer class outperformed a similar Algebra I class with native English-speaking students. Regarding a recent assessment given to her newcomer Algebra I class, Ms. Jones immediately shared the following with me via email:

I thought you might like to see how they did. I gave the exact same test to my other (non-newcomer Algebra I) class. These students did better. They could ask Paul (peer tutor) to read the question in Spanish but they could not ask for help. I was pleased with how they did.

(Personal communication, September 30, 2015)

The following year, with another Algebra I peer tutor, Pedro, the same teacher shared how she and Pedro used the native Spanish of her students and English to co-teach:

Pedro and I worked as a team. I would explain a new concept, in English, and then he would interpret. I would explain again in English in a slightly different way and he would interpret this. I would have some students tell Pedro what they had learned in their own language. This began a dialog of questions. Pedro would answer in their language and then tell me, in English, what the discussion was about. I would respond in English with some additional support and he would interpret.

(Ms. Jones, personal communication, July 12, 2019)



Participating teachers also shared that while providing native language support was beneficial to their students, tutors also had to be careful to keep acquisition of the target language, English, at the forefront. Mr. Chavez shared:

A lot of the peer tutors do speak the ELs' primary language, which is fine, but they need to switch back to the target language after reinforcing the instructions.

(Personal communication, July 11, 2019)

Thus, although native language support was necessary many times to bolster newcomer comprehension, its use in isolation was not beneficial to further the long-term goals of English acquisition. This study's tutors were trained to embrace that belief. Ms. Jones shared:

They were allowed to teach each other in their own language but as I moved thru the room, they would then need to teach me a problem, in English, from their assignment. Pedro would also work the room looking for students who still needed more support in their own language. But it is, again, so important for English to be part of this process, so even as Pedro moved thru the room he knew I expected them to do some English with him as well.

(Personal communication, July 12, 2019).

In summary, the ability of peer tutors to provide native language support as needed, repeated modeling, and one-on-one assistance was critical to accomplishing the program's goals as noted in both the classroom teachers and researcher's observations.

However, because English is the target language of the EL classroom, tutors and teachers were mindful to provide native language support as needed while using it as a catalyst for academic English language acquisition.

## CHAPTER FIVE

### Overview

Chapter One of this study described the changing landscape of U.S. classrooms to include the rapid growth of students who are acquiring the English language. The researcher explored the newcomer segment of this growing English learner population and their unique needs. Because newcomer English learners often arrive with numerous emotional, social, financial, cultural, and linguistic stressors, schools would do well to purposefully prepare to serve these students through intervention programs that may relieve some of these most pressing concerns. If intervention programs are not put in place, these stressors could gravely impact the academic achievement of newcomer ELs in their first year in U.S. schools when their classroom teachers are under added pressure to adequately equip them to pass state-mandated Algebra I assessments. Thus, this study posed the research question *How might peer tutoring influence the academic achievement and affective stance of 9th and 10th grade newcomer English learners in a mathematics classroom?*

Chapter Two of this study explores literature surrounding the elements of peer tutoring programs in schools both locally and globally. Russian psychologist Lev Vygotsky and language acquisition expert Stephen Krashen's work support the theoretical framework for this study. Their work serves as the foundation for how components of peer tutoring initiatives can work together to support struggling learners who are also acquiring language. The encouragement of social interaction and dialogue with a more knowledgeable peer is at the cornerstone of Vygotsky's work while creating an optimal environment that supports the mental and emotional variables that make

language learning more possible is at the center of Krashen's work. The work of other researchers, many of whom draw upon the theories of Vygotsky and Krashen, is profiled.

Chapter Three delved into the methodology and data analysis that comprises this qualitative case study. Pseudonyms were used for the study's participants. Data collection included 1) the researcher's journal notes 2) participating mathematics teacher feedback 3) English learner teacher feedback 4) mathematics instructional coach feedback 5) participating tutor feedback and 6) critical friends' check for bias in the study's findings. There was no bias found in the collection or analysis of data. Data analysis was conducted in the form of in vivo and holistic coding.

Chapter Four's findings detail three themes that emerged after data analysis. Those themes were 1) support of classroom teachers 2) affective support provided by tutors and 3) academic support provided by tutors.

The researcher will share further program recommendations collected from participating teachers later in this chapter.

## **Perceptions**

The study's participants including the researcher, peer tutors, their assigned classroom teachers, ESL teachers who supported the mathematics classroom, as well as a mathematics instructional coach perceived that peer tutoring in the newcomer EL classroom performed in this study was successful. Data from each of the study's subjects supported the researcher's hypothesis as well as those of Vygotsky and Krashen when it pertained to the benefits of social interaction, a low anxiety environment, and the use of

comprehensible input to support the academic and affective stances of English learners who struggle to simultaneously acquire on grade-level content and language.

### **Future Research**

Supporting language teachers expressed some concern with one of the Algebra I teacher's lack of classroom management which may have attributed to some classroom misbehavior as shared by the study's sole female tutor. The combination of class size and poor classroom management may have hindered this tutor's effectiveness at times, but, regarding the tutor's performance, the classroom teacher expressed that she was "...overall an effective peer tutor. She has been of great help to one student in specific that struggles with conversational English. She knows the material being taught and if she needs a refresher she can quickly pick up" (Mr. Peterson, personal communication, March 8, 2018).

Secondly, because all tutors specific to this study were bilingual English and Spanish speakers, some teachers expressed concern about how to best serve their native Vietnamese speakers who were also English learners. Fortunately, in these cases, the native Vietnamese speakers in particular had higher English proficiency than the remainder of the class, so the tutors and teachers were typically able to communicate with them in English fairly well. These students also had the advantage of sophisticated English to Vietnamese electronic translators that were assigned to them by the school. They also had access to English to Vietnamese and Vietnamese to English dictionaries in the mathematics classroom. One student in particular also had private tutoring outside of school that was provided by her family.

Lastly, another limitation of this study was the lack of a control and sample group to further illustrate the benefits of peer tutoring from one classroom to the next. However, due to staffing and scheduling, there was only one classroom that fit the classification of newcomer for Algebra I and Geometry. The other Algebra I and Geometry classrooms were of general population students – those not identified as newcomer English learners. It is not known if other campuses throughout the district had newcomer English learners in classrooms similar to our campus.

### **Recommendations**

The study's participating teachers offered recommendations for the continued success of peer tutoring programs such as this one. They strongly suggest that 1) the peer tutor and classroom teacher work as a team in their efforts, 2) tutors be appropriately trained and placed, and 3) selected tutors have the heart and academic capacity for serving the newcomer EL student in the mathematics classroom. Finally, although native language support is encouraged and utilized, the target language of English must be held as the focal point in the mathematics classroom.

Ms. Jones (Algebra I ) spoke of the importance of the classroom teacher having a solid partnership with his/her assigned tutor:

First and foremost, the teacher must work as a team with a peer-tutor. It must be a partnership, not an additional support. Our students must hear English instruction with language support. If a tutor is just “in the room” for questions, you have not used them to

their potential. Both the teacher and the tutor need to be willing and accepting of this partnership.

(Ms. Jones, personal communication, July 12, 2019)

She went on to discuss the importance of the tutor having a strong foundation in mathematics, not just the native language, before volunteering to tutor:

Second, the tutor must be completely grounded in the subject being taught. That would apply to any aide in a classroom but is especially important with struggling students. The partnership is not effective if all a tutor is doing is interpreting language. The discussion in English that I talked about earlier is important and would require a tutor that understands the reason for the question not just an interpretation of the question.

(Ms. Jones, personal communication, July 12, 2019)

Ms. Jones also discussed the need for the tutors to utilize the tutee's native language when necessary to drive home a point, but to always keep the acquisition of English as the ultimate goal. The newcomer EL must receive support in the content as well as the language.

A tutor must understand that part of their task is to get the students to speak in English along with mastery in math. These students need to ask questions or they will not learn. These students need to

speak in English or they will not learn. A peer-tutor has to respect both of these needs. I suggest that this is a training that needs to be done. Pedro was a natural teacher. But most peer-tutors need some instruction/training in how to support students in the classroom. Debatable is who is doing this training, the teacher or the support staff.

(Ms. Jones, personal communication, July 12, 2019)

Mr. Chavez agreed by stating:

They (tutors) need to be reinforcers (more) than translators because ELLs will need to have a lot of contact with the target language.

(Mr. Chavez, personal communication, July 11, 2019)

In the Algebra I classroom, it was evident that at least one teacher felt it necessary that the tutors working with her students had a sincere interest in seeing the learner be successful and have a sense of empathy for their situation:

...the tutor must be empathic to the needs of a student that is struggling with math AND struggling with English. I have had tutors (and teachers) who lacked empathy for one or both of these situations. Pedro was a great example of a tutor who did respect that some students struggle with learning more than others. I have had tutors who “rolled their eyes” at a student who still did not understand after an explanation.



(Ms. Jones, personal communication, July 12, 2019)

Lastly, it cannot be reiterated enough that proper, ongoing tutor training and monitoring is critical in order for schools to see desired results with a peer tutoring program. The mathematics instructional specialist, Ms. Clark, suggests:

They (tutors) need to undergo a series of training so they can have more clarity on their role as a support person. The peer tutors are not the teachers. Thus, they need skills training in working side by side with teachers, such as, what to do, during teacher talk, what to do during student guided work, how to ask questions from the students or how to interact also with the teacher. They also need skills training in redirecting conversations that pulls them away from their role as peer tutors.

(Ms. Clark, personal communication, July 11, 2019)

## **Conclusion**

Rong and Brown (2002) perfectly sum up what can happen when educational efforts at the campus level are carefully designed to socially and academically empower and support their newcomer English learner population.

Schools and educators can serve as cultural bridges to help immigrant children establish links between their social institutional knowledge of their new world and the world they left behind.

Utilization of these resources may empower immigrant children and help teachers and administrators transform themselves and their schools.

(Rong and Brown, 2002, p. 130)

Classroom teachers should not feel helpless when working to serve newcomer English learners. Yes, this student population comes with many challenges, socially and academically, but it also comes with unlimited potential for growth. Simultaneously acquiring language, content, and confidence must be the core priorities of any curriculum that serves newcomer English learners. In this study, the peer tutoring program served as a conduit for these goals to be achieved.

Practically, peer tutors support classroom teachers by providing more one-on-one attention. If the tutors are bilingual and the teacher is not, peer tutors provide indispensable native language support. Further, tutors themselves benefit from the act of teaching as the act itself deepens one's own academic knowledge and provides them with a sense of service and community. Essentially, peer tutoring, implemented well, can be a win-win situation for all involved.

Personally, working with the teachers and tutors who worked tirelessly every day to support newcomer English learners was one of the highlights of my educational career. To this day, I stand in awe of their efforts and extension of empathy toward one of our country's most vulnerable yet promising student populations.

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## **Appendix A University IRB Approval**

# UNIVERSITY of HOUSTON

DIVISION OF RESEARCH  
Institutional Review Boards

## APPROVAL OF SUBMISSION

June 5, 2019

Denetria Phlegm

dsmith6@uh.edu

Dear Denetria Phlegm:

On June 5, 2019, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Peer Tutoring in the Newcomer English Learner Mathematics Classroom
Investigator:	Denetria Phlegm
IRB ID:	STUDY00001672
Funding/ Proposed Funding:	Name: Unfunded; Name: University of Houston
Award ID:	
Award Title:	
IND, IDE, or HDE:	None
Documents Reviewed:	<ul style="list-style-type: none"> <li>• IRB-HRP-503 Protocol-Updated 06.04.19, Category: IRB Protocol;</li> <li>• District Research Study Email Response , Category: Other;</li> <li>• Each One Teach One Application.pdf, Category: Recruitment Materials;</li> <li>• Each One, Teach One Proposal.pdf, Category: Recruitment Materials;</li> </ul>
Review Category:	Exempt
Committee Name:	Not Applicable
IRB Coordinator:	<a href="#">Sandra Arntz</a>

The IRB approved the study on June 5, 2019 ; recruitment and procedures detailed within the approved protocol may now be initiated.

As this study was approved under an exempt or expedited process, recently revised regulatory requirements do not require the submission of annual continuing review documentation. However, it is critical that the following submissions are made to the IRB to ensure continued compliance:

UNIVERSITY of  
**HOUSTON**

DIVISION OF RESEARCH  
Institutional Review Boards

- Modifications to the protocol prior to initiating any changes (for example, the addition of study personnel, updated recruitment materials, change in study design, requests for additional subjects)
- Reportable New Information/Unanticipated Problems Involving Risks to Subjects or Others
- Study Closure

Unless a waiver has been granted by the IRB, use the stamped consent form approved by the IRB to document consent. The approved version may be downloaded from the documents tab.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system.

Sincerely,

Research Integrity and Oversight (RIO) Office  
University of Houston, Division of Research  
713 743 9204  
cphs@central.uh.edu  
<http://www.uh.edu/research/compliance/irb-cphs/>

## **Appendix B University IRB Modification Approval**



DIVISION OF RESEARCH  
Institutional Review Boards

APPROVAL OF SUBMISSION

July 19, 2019

Denetria Phlegm

dlsmith6@uh.edu

Dear Denetria Phlegm:

On July 19, 2019, the IRB reviewed the following submission:

Type of Review:	Modification
Title of Study:	Peer Tutoring in the Newcomer English Learner Mathematics Classroom
Investigator:	Denetria Phlegm
IRB ID:	MOD00002152
Funding/ Proposed Funding:	Name: University of Houston; Name: Unfunded
Award ID:	None
Award Title:	
IND, IDE, or HDE:	None
Documents Reviewed:	<ul style="list-style-type: none"> <li>• District Approval, Category: Letters of Cooperation / Permission;</li> <li>• Phlegm-HRP-503 Protocol-Updated 07.18.19, Category: IRB Protocol;</li> </ul>
Review Category:	Exempt
Committee Name:	Not Applicable
IRB Coordinator:	<a href="#">Sandra Arntz</a>

The IRB approved the following revision on July 19, 2019.

Summary of approved modification(s):

1.1 Additional data (written reflections) will be acquired from at least an existing subject (anonymous retired teacher) and new subject (anonymous former teacher).

3.1 Students (tutees) who were assigned to the study's classrooms will no longer be included as participants. The study's only subjects are now 3 peer tutors and 3-5 teachers who all volunteered for participation in the peer tutoring program or were assigned to one of the three classrooms during the spring 2017 or spring 2018 semesters.



- Modifications to the protocol prior to initiating any changes (for example, the addition of study personnel, updated recruitment materials, change in study design, requests for additional subjects)
- Reportable New Information/Unanticipated Problems Involving Risks to Subjects or Others
- Study Closure

Unless a waiver has been granted by the IRB, use the stamped consent form approved by the IRB to document consent. The approved version may be downloaded from the documents tab.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system.

Sincerely,

Research Integrity and Oversight (RIO) Office  
University of Houston, Division of Research  
713 743 9204  
[cphs@central.uh.edu](mailto:cphs@central.uh.edu)  
<http://www.uh.edu/research/compliance/irb-cphs/>

### **Appendix C Researcher's Journal Notes – Sample Pages**

October 15, 2014

I'm both frustrated and saddened  
me when I'm approached by teachers  
who feel so lost about how to teach their  
ESL students. We've been providing  
professional learning for two years about  
how to do this and they, to this day, appear  
to be just as lost and confused on day one  
when we first started to openly have the  
conversation. And I'm sure my "simple"  
solutions to how this can be done are not  
so simple to them. We have so much work  
to do!



November 6, 2014

Today [REDACTED] said to our cohort of ESL teachers as well as our program director that she cannot guarantee the results of her program with more than 15 students in a class. Anything beyond that is mind control and that is not teaching or learning.



August 12<sup>th</sup>, 2015

If I hear "I can't teach them, I don't speak Spanish" one more time, I just might scream. My constant reminder is for them to make sure their output is all in English - simple with supporting images, gestures, etc. Their input can be whatever it needs to be for them to understand from anyone/thing other than you whether that be peers, videos in the native language, dictionaries, illustrations, etc. I so desperately need them to see the potential impact they can have on student learning without ever uttering a word of Spanish.



04.02.17.

[REDACTED] is an absolute Godsend!  
He is truly such a blessing to his  
students and [REDACTED]. I wish  
I could bottle his enthusiasm when  
helping his students. He never wavers  
in his smile and intent. He and this  
program are a match made in heaven.  
I wish I could keep him around to work  
with tutors that will come after him.  
Amazing!

	
<p>March 8, 2018</p> <p>Even though I know he's very sharp, I was a little concerned at first that [redacted] was taking Geometry at the same time that he's tutoring in the ESL Geometry classroom.</p>	
<p>[redacted] assured me today because he takes his Geometry class on A days and is such a quick learner that it works out perfectly when he works with his new comer students on B days because he's already familiar with the way that [redacted] teaches it and can reinforce that. It just makes sense now.</p>	

## **Appendix D Each One, Teach One Peer Tutoring Application**

Dear Prospective Student Leader:

Thank you very much for your interest in the [School Name] Peer Tutoring Program. The primary goal of this program is fairly simple: we strive to provide additional help in the classroom to those students who could use some reinforcement of the teaching concepts. Many times you will be asked to work with small groups of students to explain concepts. Other times you will simply help the teacher by providing an extra pair of eyes or hands as needed. Your willingness to provide this assistance is a valuable resource to your school and community.

This course requires a commitment from you to be available and willing to help. You will be receiving credit on your transcript, but the real reward for you will be the feeling that comes from truly helping someone who needs it.

There are certain requirements you must meet:

1. You must be a junior or senior student for the 2016-2017 school year.
2. You must have passed your Algebra I, Biology, English I or English 2 *STAAR* EOC (depending on the class you are assigned to assist in).
3. You must have good behavior and attendance.
4. You must be positive, patient, and willing to work with others.
5. You must be currently passing all of your classes.
6. You must fill out the application on the reverse side and return it to a teacher, counselor, or Mrs. Phlegm in room 15 by Friday, May 20, 2016.

Again, thank you for your interest in becoming a peer tutor. I look forward to reviewing your application.

Sincerely,

Mrs. Denetria Phlegm  
ESL Skills Specialist  
Student Leadership Coordinator  
Room 15

“EACH ONE, TEACH ONE”

APPLICATION FOR [HIGH SCHOOL] STUDENT LEADERSHIP PROGRAM  
“EACH ONE, TEACH ONE”

NAME: \_\_\_\_\_ ID# \_\_\_\_\_  
GRADE: \_\_\_\_\_ COUNSELOR \_\_\_\_\_

Did you pass all of your classes this school year? \_\_\_\_ Yes \_\_\_\_ No  
If no, please explain:

Have you received a discipline referral for any reason? \_\_\_\_ Yes \_\_\_\_ No  
If yes, please explain:

Did you NG any class this school year? \_\_\_\_ Yes \_\_\_\_ No  
If yes, please explain:

Are you bilingual/multilingual? \_\_ Yes \_\_ No  
If yes, what other language(s) do you speak in addition to English?

Which subject(s) would you like to assist with?

Tell me briefly why you are interested in being in this program:

***RETURN THIS COMPLETED APPLICATION TO YOUR ENGLISH TEACHER,  
YOUR COUNSELOR OR MRS. PHLEGM IN ROOM 15 BY  
MAY 20, 2016***

## **Appendix E Each One, Teach One Welcome Letter**



Congratulations!

You have just become a member of an elite group – the [School Name] Peer Tutoring Program – Each One, Teach One. This will be a very unique and, I hope, rewarding experience for you. You will be involved in improving the education of many students. That makes this group a powerful force at [School Name]!

Last year's tutors were the first to serve in this type of program and you have been hand-picked to fill their shoes. Not only will you serve as an academic resource for your students, but as a cultural resource as well. As some of your students work to master a new country, new school, new language, and new culture, you will be there to support and encourage them during their school day. I can't imagine how much that will mean to you and your student(s) by the end of this school year.

As mentors on this campus, you are expected to comply with all school policies and procedures; your attendance should be exemplary. I expect only the best from my tutors and I know that you will not disappoint.

Again, congratulations and I can't wait to work with you!

Sincerely,

Mrs. Denetria L. Phlegm  
ESL Skills Specialist  
Peer Tutoring Program Coordinator  
832.353.9052

*"Each One, Teach One"*

**Appendix F Teacher/Tutor Tips for Working with Beginning and Intermediate  
English Learners in the Mathematics Classroom**

## **Math Accommodations for Beginning & Intermediate**

### **English Language Learners**

- Explicitly teach content specific vocabulary
- Provide multiple opportunities for students to speak, read and write using academic vocabulary
- Use outlines and graphic organizers in lesson delivery
- Use visuals and technology to fill in background knowledge and vocabulary into lessons
- Allow the use of bilingual dictionaries and content-area glossaries
- Use hands on activities to reinforce comprehension
- Chunk longer text to allow time for processing
- Read assignment and test questions aloud to students
- Highlight cognates of key vocabulary and concepts
- Focus on specific skills
- Offer and model various ways to solve problems/reach conclusions
- Model think-alouds
- Play content specific games
- Allow students to work in pairs/small groups
- Repeat/paraphrase/emphasize key points using visuals, models, or posters with terminology
- Provide note-taking guides
- Include multiple step-by-step sample problems in interactive notebooks
- Use shorter, less complex sentences when speaking
- Provide only essential information when giving directions
- Close lesson by summarizing key points

- Allow L1 translation of technical content vocabulary and concepts
- Provide frequent opportunities for students to ask questions/clarify information
- Provide resources that students can access at home

## **Appendix G Program Grading Requirements**

[High School Name]  
Peer Tutor Grading

Each report card grade for this course will consist of at least 12 daily grades and 1 major grade. Daily grades will count for 40% of your overall average and major grades will count for 60%.

Areas subject to grading will include, but are not limited to:

- Attendance
- Performance (based on my observation and classroom teacher feedback)
- Essay **or** visual project for each 9 week cycle

***Major Grade Guidelines***

If you choose to write an essay, it will need to be a **one-page, double-spaced, typed** reflection of your experience in your classroom and with your students. You can email the essay to [school email] or drop it off in room 15.

If you choose to prepare a project, it will need to be a visualization of your experience in your classroom and with your students. It can take the form of a video, a poster, a booklet, a PowerPoint, a Prezi presentation, or a cartoon etc.

If you have any questions about how you will be graded for this course, please don't hesitate to ask me.

Thank you!

***~Mrs. Phlegm***

## **Appendix H Tutor Role Playing Scenarios**

# WWYD - What Would You Do?

Problem	Possible Solution(s)
A student refuses to accept your help	
A student says something inappropriate to you	
A teacher says something inappropriate to you	
A student asks you to complete their work for them	
There is a substitute teacher in the classroom for the day	
You are asked to watch a class while the teacher steps out for a few minutes	
You are asked to escort an unruly student to the office or SAC	
You don't know how to do the assignment/work in the class	



### **Appendix I Teacher Reflection Questions**

1. In your professional opinion, what do newcomer English learners need in order to master content in an Algebra I or Geometry classroom?
2. From your observation, what role did peer tutors play in supporting Algebra I and/or Geometry newcomer English learners in classes during the 2016-2017 and/or 2017-2018 school year?
3. Did your classroom have a peer tutor? If yes, what role did (peer tutor) play in supporting your Algebra I or Geometry English learners during the 2016-2017 and/or 2017-2018 school year?
4. If you answered “Yes” to question 4, what was your impression of (peer tutor’s) impact in working with your students during the school year?
5. What do you think needs to be done to ensure peer tutoring is successful in mathematics classrooms in other high schools?

## **Appendix J Program Proposal**

“Each One, Teach One”  
Peer Tutoring  
Program Proposal

**Goals**

1. to provide an opportunity for [High School Name’s] ESL students to receive native language assistance in their content area classes.
2. to improve TELPAS language acquisition scores as well as EOC assessment scores for Eisenhower’s ESL population.
3. to provide assistance to content area teachers in the classroom.
4. to give student tutors (coaches) the opportunity to help other students.
5. to provide positive role models for ESL students; to show how former ESL students have been successful.

**Rationale**

Presently, state mandates dictate that all ESL students enrolled in English I, English II, U.S. History, Algebra I, and Biology courses must take EOC exams regardless of their language acquisition level. ESL students are challenged with having to master a second language as well as high school level content in that second language within less than one year’s time. This challenge is daunting to many. No matter how hard some of these students work, they are unable to succeed on this measurement of academic skills without intense intervention.

Research has shown that if content instruction, cognitive skills, and test-taking strategies could be taught to ESL students in their native language, as they acquire English language skills, they could be more successful in their studies. In the past, we have seen proof that waiting until a student is proficient in English to teach him/her the skills necessary to master the EOC does not always work. Time simply runs out. Then, there are hard-working, conscientious students who can’t receive their high school diplomas because they received too little help, too late.

The use of peer tutors for this program could be beneficial for everyone involved. The student would receive much needed instructional support in his/her native language. The peer tutor would receive valuable experience that could help in receiving college acceptance or scholarships. Classroom teachers would receive much-needed classroom assistance that would enable them to work with small groups or individuals. [High School Name] would benefit from the increased number of senior ESL students reaching graduation. The community would be improved by the higher level of education achieved.

### **Implementation**

All interested students who meet the requirements will obtain an application from Ms. Smith. Applicants will be screened, and a list of approved students will be submitted to all counselors. Students accepted into the program will be notified and encouraged to see their counselor for second semester schedule adjustments. The course code will be Administrative Aide (5982) for seniors and Student Leadership (6322) for juniors for the spring semester.

Training will take place at the beginning of the second semester. Ms. Denetria Smith will be in charge of training and supplies used by the coaches for the semester.

Peer coaches will be graded on attitude, attendance, paperwork completion, journal completion, and periodic major assignments.

Ms. Smith will be responsible for attendance of each peer tutor and the monitoring of their work for the duration of the semester.

### **Timeline**

September/October	Verbal and written proposal of program to administration. Recruitment of interested Peer Coaches and teachers. Student applications disbursed.
November	Applications evaluated and submitted to counselors for scheduling.
December	Selected peer coaches notified and put through orientation with Ms. Denetria Smith.
January	New coaches trained by Ms. Smith for the first two weeks of the semester.

### **Guidelines for ESL Peer Tutor Applicants**

1. Student must be an upperclassman (junior or senior) who has passed their STAAR EOC for the subject they wish to tutor in.
2. Student must have good behavior and attendance as shown in school records.
3. Student must be willing to work with others.
4. Student must be passing all classes.

5. Student must be bilingual in English and Spanish or other languages as determined by need.

**Appendix K Tables**

**Table 1** *Peer Tutor Identifiers*

<b>Pseudonym</b>	<b>Role</b>	<b>Classroom Assignment</b>	<b>Tutoring Experience</b>
Paul	Tutor	Algebra I	2 semesters
Luis	Tutor	Geometry	1 semester
Pedro	Tutor	Algebra I	2 semesters
Stephanie	Tutor	Algebra I	1 semester

**Table 2** *Teacher Identifiers*

<b>Pseudonym</b>	<b>Role</b>	<b>Classroom Assignment</b>	<b>Classroom Experience</b>
Ms. Jones	Teacher	Algebra I	23 years
Mr. Smith	Teacher	Geometry	1 year
Mr. Peterson	Teacher	Algebra I	1 year
Mr. Chavez	Teacher	ESL	5 years
Ms. Jefferson	Teacher	ESL	1 year
Ms. Clark	Mathematics Instructional Specialist	N/A	16 years



**Table 3 Data Coding 1**

<b>Participant</b>	<b>In Vivo Code (obtained from raw data)</b>	<b>Holistic Code</b>
Researcher	“Godsend” “reinforces” “match made in heaven”	INSTRUCTIONAL SUPPORT
Ms. Jones	“tutor helped a lot” “please don’t take away” “worked as a team” “partnership”	INSTRUCTIONAL SUPPORT
Mr. Smith	“helps me a lot”	SUPPORT
Mr. Peterson	“effective peer tutor”	SUPPORT
Mr. Chavez	“play as reinforcers”	INSTRUCTIONAL REINFORCERS
Ms. Jefferson	“pressure off of the teacher”	SUPPORT
Ms. Clark	“assisting teachers” “side by side with teachers”	INSTRUCTIONAL SUPPORT

**Table 4 Data Coding 2**

<b>Participant</b>	<b>In Vivo Code (obtained from raw data)</b>	<b>Holistic Code</b>
Researcher	“smile and intent” “enthusiasm”	KINDNESS
Ms. Jones	“more approachable” “kindness when supporting students” “great example”	KINDNESS
Mr. Smith	N/A	N/A
Mr. Peterson	“willing”	
Mr. Chavez	N/A	N/A
Ms. Jefferson	“motivate students to learn”	MOTIVATION
Ms. Clark	“trust” “belongingness” “non-threatening” “relaxed social setting” “more welcoming atmosphere”	AFFECTIVE SUPPORT
Paul	N/A	N/A
Luis	“I learned from them” “reminded me of when I first got here” “always wanted to help” “enjoy helping my peers” “look forward to having this class”	EMPATHY
Pedro	“taught me valuable teachings” “did not once doubt” “feel as though these were my first days”	EMPATHY
Stephanie	“share my passion and knowledge” “going to miss the students”	COMPASSION

**Table 5 Data Coding 3**

<b>Participant</b>	<b>In Vivo Code (obtained from raw data)</b>	<b>Holistic Code</b>
Researcher	“so much better than last year”	IMPROVEMENT
Ms. Jones	“massive impact” “success with testing and mastery” “good foundation for their next class” “huge part of that success” “pleased with how they did” “target language”	ACADEMIC SUPPORT
Mr. Smith	“very good support”	ACADEMIC SUPPORT
Mr. Peterson	“of great help” “overall effective”	ACADEMIC SUPPORT
Mr. Chavez	N/A	N/A
Ms. Jefferson	N/A	N/A
Ms. Clark	“academic language learning”	ACADEMIC SUPPORT
Paul	N/A	N/A
Luis	“able to use their calculator”	ACADEMIC SUPPORT
Pedro	“impressed me”	IMPROVEMENT
Stephanie	“help them to the best of my ability” “glad that I was able to help them”	ACADEMIC SUPPORT

**Table 6** *Theme Overview*

<b>Theme One: Support for Classroom Teachers</b>
Reflection: “I will be honest, this morning was tough...I can model but I can’t tell them why and they can only copy my movements which will not be sufficient. Your tutor helped a lot” (Ms. Jones, personal communication, August 28, 2015).
Research: Gandara, Maxwell-Jolly, Driscoll,2005; Harper and Jong, 2004; Walker, Shafer, and Liams,2005.
<b>Theme Two: Affective Support</b>
Reflection: “I also think that student peer-tutors are more approachable for struggling students than an adult. Pedro’s success was related to his skills in math and his kindness when supporting students” (Ms. Jones, personal communication, July 12, 209).
Research: Krashen, 1981, 1982; Walter and Cohen, 2011; Yeager and Walton, 2011.
<b>Theme Three: Academic Support</b>
Reflection: “They could ask Paul to read the question in Spanish, but they could not ask for help...I was pleased with how they did” (Ms. Jones, personal communication, September 30, 2015).
Research: Echevarria and Short, 2010; Freeman and Crawford, 2008; Krashen, 1981, 1982; Oliveria, 2011; Vygotsky, 1978, 1987.