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A Mixed-Method Investigation of Teacher Fidelity, Implementation of Cooperative Learning, and Academic Achievement in a Midwest Public Elementary School Setting

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Elizabeth C. DuBray-Allen

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Dr. Jill Hutcheson, Committee Member	8-12-16 Date
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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work here at Lindenwood University and that I have not submitted it for any other college or university course or degree here or elsewhere.

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Abstract

In this mixed-methods study, the researcher investigated teacher fidelity of implementation with cooperative learning structures, according to the Kagan Framework, related to students' academic achievement and perceptions of cooperative learning. An analysis of the variations in teacher implementation of cooperative learning structures utilizing the Kagan Framework, based on the fidelity checklists, was completed during the study. In addition, the researcher examined the differences in mean achievement scores during baseline (i.e., traditional teaching practices) and intervention (i.e., cooperative learning structures) weeks, a correlation of relevant data points, and a discussion of teacher interviews, surveys, checklists, observations, and student surveys. To investigate teacher fidelity of implementation the researcher employed an A-B-A-B, single-case research design to examine the outcomes of the three Kagan structures (Flashcard Game, Quiz Quiz Trade, and Numbered Heads Together) on pupil performance measured by formative and summative assessments and students' self-assessments of their word knowledge. Three teachers (i.e., Teacher A, B, and C) with various levels of experience in using cooperative learning structures and 48 students served as participants. The findings indicated high student achievement with Teacher B's students, while student achievement in Teacher A or C's classrooms were inconsistent. Teacher B's implementation (98.4%) of cooperative learning structures, according to the Kagan Framework, resulted in statistically significant student achievement during intervention weeks. Furthermore, the researcher noted relationships between student confidence levels and student achievement scores for Teacher B's students for all baseline and intervention weeks. Teacher A's and Teacher C's implementation of

cooperative learning structures deviated frequently and resulted in inconsistent student achievement during intervention weeks. In addition, for students in Teacher A and C's classrooms, the relationships between student confidence levels and student achievement scores were inconsistent and students lacked confidence in their own knowledge and actual achievement. Qualitative data showed overall teachers perceived the cooperative learning structures as valuable instructional strategies that engaged and motivated students to learn. The researcher suggested school districts must ensure high teacher fidelity of implementation according to the defined components of strategies and programs to guarantee consistent academic achievement for students.

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Chapter One: Introduction

Educators in the 21st century noticed a decreasing sense of agency and urgency for teachers when teaching (Routman, 2014; Schmoker, 2011). Routman (2014) stated, "A sense of complacency is the air we breathe in too many schools" (p. 28). Given the understanding that teachers were "the major players in the education process," educators needed to be mindful of what content was taught and how content was taught (Hattie, 2012, p. 22). The introduction of No Child Left Behind (NCLB), in January of 2002, heightened accountability for student success and created a demand for higher student achievement on state assessments (Davenport & Jones, 2005; Haynes, 2011). As a result, school districts developed curriculum and pacing guides, and adopted a program that, research said, increased student achievement (Protheroe, 2008). Unfortunately, more often than not, poor implementation of instructional programs left school districts with a disparity in student achievement, and district leaders blamed the instructional program (Protheroe, 2008). Educational leaders must understand that "No program — no matter how sound it is — can have impact if its essential elements are not used" (Yap, Aldersebaes, Railsback, Shaughnessy, & Speth 2000, p. 19). This study focused on teacher fidelity of implementation and student achievement with cooperative learning, according to the Kagan Framework. Chapter One describes the purpose and rationale for the study, presents the research questions and hypotheses, explains the limitations, and defines the terminology used throughout this study.

Purpose of the Dissertation

The purpose of this study was to investigate teacher fidelity of implementation with cooperative learning structures according to the Kagan Framework, related to

students' academic achievement, and perceptions of cooperative learning in an elementary school setting. More specifically, the researcher compared existing teaching practice to the implementation of three specific Kagan cooperative learning structures: Flashcard Game, Quiz Quiz Trade, and Numbered Heads Together, related to pupil performance on Greek/Latin formative and summative assessments. Kagan Cooperative Learning Structures aligned to the Kagan Framework, which included four basic principles (PIES) to ensure active engagement for all students: (a) positive interdependence, (b) individual accountability, (c) equal participation, and (d) simultaneous interaction (Kagan, 2005). In addition, the researcher examined student confidence levels with student vocabulary knowledge in relationship to student actual academic performance under traditional and intervention (i.e., cooperative learning structures) conditions. Third, classroom observations occurred during 100% of the intervention sessions and 20% of the baseline sessions to measure Kagan Structures implementation fidelity and to ensure the absence of such practices during non-treatment (i.e., baseline) sessions. Finally, teachers and students completed a social validity survey, independently and anonymously, immediately after the last study session. The participants rated Kagan structures using a 5-point, Likert-type scale on the survey in terms of (a) importance of its goals, (b) acceptability of intervention procedures, and (c) satisfaction with intervention outcomes.

Rationale

Students must possess the skills of reading and writing to function in the world around them. However, successful students of the 21st century required more than just the basic literacy skills of reading and writing (Murnane, Sawhill, & Snow, 2012).

Success for students of the 21st century depended on the higher-level skills that demanded students "synthesize information from different sources, evaluate arguments, and learn new subjects" (Murnane et al., 2012, p. 3). In order to better equip students of the 21st-century, school systems needed high quality instruction to ensure student achievement and success.

In the *Nation's Report Card,* the National Assessment of Educational Progress (NAEP) quantified the stagnant and declining literacy rates across the nation (as cited in "Mathematics & Reading Assessments," 2015). In 2015, NAEP reported that nearly two-thirds of the nation's fourth graders (64%) read below the proficient level and approximately one quarter could not read at even the most basic level (as cited in "Mathematics & Reading Assessments," 2015, para. 3). In the same report, eighth grade scores declined as a nation in 2015, meaning the students who read far below the proficient level actually increased ("Mathematics & Reading Assessments," 2015). In addition to these statistics, reading scores of fourth graders in the U.S. changed little over the decade previous to the report, according to NAEP ("Summary of Major Findings," 2011). The same was true for the state of Missouri's fourth grade reading scores; that remained stagnant over the decade previous ("Summary of Major Findings," 2011). In the researcher's experience as an Elementary English Language Arts Curriculum Coordinator, literacy, as a content area, was an area of weakness for elementary teachers. Teacher preparation programs and school districts had not provided elementary teachers with the essential instructional practices supported by empirical data to help students develop necessary literacy skills ("Committee on the Study," 2010). The researcher observed, for example, that local teachers used traditional instructional practices, such as

requiring students to write words three times each, providing appropriate definitions, and using words in sentences to develop pupils' literacy skills. While these practices were of benefit to some students, no evidence existed of total engagement. Moreover, state and national data suggested that these practices were not working, particularly among the most challenging learners (i.e., those falling below grade expectations) ("Achievement Gap Elimination," n.d.; "Summary of Major Findings," 2011). Against a record of little or no empirical support, the researcher observed these practices used routinely with struggling learners. This study compared student academic outcomes of these traditional practices to the implementation of three Kagan structures, specifically aligned with students' abilities to acquire and retain new vocabulary terms.

The development of students' college and career ready skills required more than improved academic competence. Reported in a 2013 *Forbes* magazine article, employers noted the number one skill businesses looked for, when recruiting college graduates was an ability to work in a team, followed closely by an ability to communicate verbally with people inside and outside an organization (Adams, 2013). Educators faced the task of "considering which skills will be most practical for students entering a workforce where building relationships and productivity go hand-in hand" (Brady & Tsay, 2010, p. 78). Regrettably, teachers prepared students for a world students could barely imagine, due to the amount of information that doubled every few months (Kagan, 2004). According to Slavin (1991), "cooperative learning was suggested as the solution for an astonishing array of educational problems" (p. 71) and further suggested cooperative learning was used "as a way to prepare students for an increasingly collaborative work force" (p. 71). Collectively, this information suggested future success in school and life was dependent

upon both strong academic and interpersonal skills. The researcher concluded teachers needed instructional practices, which developed both skill sets simultaneously. That is, teaching arrangements that actively engaged students in meaningful academic endeavors and required students to use good collaborative learning skills at the same time, were needed.

This study built on prior research on cooperative learning strategies to improve students' academic and interpersonal skills (Brandt, 1989-1990; Johnson & Johnson, 1989; Slavin, 1991). One gap in the literature current at the time of this study, however, was how teachers decided to structure student-to-student interactions during small group instruction (Fleming & Mueller, 2001). While many researchers agreed that cooperative learning had positive outcomes on achievement (Johnson & Johnson, 1989; Kagan, 2004; Slavin, 1991), Slavin (1995) suggested the research "has moved beyond the question of whether cooperative learning is effective in accelerating student achievement to focus on the conditions under which it is optimally effective" (para. 33). The researcher believed that the use of structured interactions during small group work would promote equitable response opportunities and positive social interactions, which in turn would lead to an increase in student learning. Another gap in then-existing research involved teachers' abilities to create instructional environments that fostered meaningful conversations. Fisher and Frey (2011) noted, "The promotion of meaningful partner and group interactions requires that the tasks and their accompanying talk be structured so that academic language use is maximized" (p. 15). Again, the use of the Kagan Framework, made operational through three specific structures, maximized all students' use of academic language (Kagan, 2005). Previous research studies investigated other group

structures, such as group roles, goals, projects, and rewards (Brady & Tsay, 2010; Fleming & Mueller, 2001; Slavin, 1991, 1995).

As states throughout the U.S. continued to implement high stakes testing (Schaeffer, 2012) "one of the greatest challenges educators face[d] is determining the most effective teaching strategies for students" (Brady & Tsay, 2010, p. 78). Contemporary research highlighted the importance of active student engagement and meaningful talk in the classroom (Fisher & Frey, 2011). However, Kagan pointed out the "most common structure is for students to sit passively while teachers talk at them" (as cited in Brandt, 1989-1990, p. 8). This researcher believed teachers often limited students' response opportunities due to fear of loss of classroom control and that students would be off-task. If teachers were equipped with the knowledge of how to structure student interactions, then these potential fears may potentially dissipate. Johnson, Johnson, and Yager (1985) agreed deep learning of content and transfer of information into memory happened because of structured student interaction.

Structured student interactions during small group promoted students' self-confidence. Slavin (1991) noted, "One of the most important aspects of a child's personality is his or her self-esteem" (p. 80). Providing regular opportunities for structured student interactions allowed teachers to scaffold their understanding of important content while simultaneously fostering interdependence among students. In contrast, Kagan noted, "when a student makes a mistake in the traditional classroom — misses a question, for example — the other students are happy [because] they've got a second chance to be recognized" (as cited in Brandt, 1989-1990, p. 8). Educators must remember, however, "if students believe they cannot succeed on specific tasks (low self-

efficacy), they will superficially attempt them, give up quickly, or avoid or resist them" (Margolis & McCabe, 2006, p. 218). Finding instructional practices that improved literacy skills and at the same time provided opportunities for students to develop their social competence was key for educators and students.

If this proposed study revealed a predicted relationship between cooperative learning structures according to the Kagan Framework and pupil understanding of important vocabulary, then these findings could help school leaders make informed decisions about the implementation of instructional practices utilized in classrooms. If, for example, the Kagan structures improved pupil performance in literacy within the targeted school and district, then school personnel could replicate the implementation of specific cooperative learning structures, according to the Kagan Framework, across other similar populations and content material. The present study potentially added to the existing body of literature on cooperative learning and provided additional empirical support for the use of the three Kagan structures, in particular (Johnson & Johnson, 1989; Kagan, 2009; Marzano, 2007; Slavin, 1995).

Research Questions and Hypotheses

The researcher investigated the following research questions:

Research Question 1: How does the fidelity of implementation with cooperative learning structures, according to the Kagan Framework, descriptively increase, decrease, or maintain student performance outcomes with Greek/Latin vocabulary words?

Research Question 2: How do teachers perceive the goals and outcomes associated with the use of cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

Research Question 3: How do students perceive the use of the cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

The hypotheses tested for this mixed-methods study included:

Hypothesis 1: There is a difference in teacher fidelity of implementation of cooperative learning structures, according to the Kagan Framework, measured by the fidelity of implementation checklists during intervention weeks.

Hypothesis 2: There is a difference in students' achievement scores (i.e., formative and/or summative Greek/Latin assessments) during baseline versus intervention instruction.

Hypothesis 3: There is a relationship between student confidence levels and student achievement scores (i.e., summative Greek/Latin assessments) during baseline and intervention weeks.

Hypothesis 4: There is a relationship between student achievement scores during intervention weeks and social validity scores as measured by the social validity survey scores.

Limitations

This study was limited to one elementary school in the Midwest, identified as a Title I school where 50.7% of its student population were eligible for free and reduced lunch (Missouri Department of Elementary and Secondary Education, 2014, p. 2). The school was the lowest performing school in the researched school district. "Data: 2015 Missouri MAP Scores by School," 2015). Other setting limitations included the use of three grade levels (third, fourth, and fifth) within the building, because Greek/Latin

words were only taught at these grades. Similarly, only three teachers, one from each grade level, participated and had varying amounts of prior experience with cooperative learning. Two teachers had no previous Kagan Cooperative Learning trainings and one had five days of formal training. Had all three teachers had the same level of training, the researcher believes, study results might have been different.

Additionally, results might be skewed due to the fact that the primary researcher was also an employee in the school district and an associate trainer for Kagan Cooperative Learning. For this reason, the primary researcher removed herself, as much as possible, from data collection responsibilities. Two other adults (i.e., proctors) who attended five days of Kagan Cooperative Learning and Coaching training conducted the classroom observations, data collection, and assessment scoring during the study. Prior to the classroom observations, the researcher trained the two other adults to conduct (a) fidelity observations to ensure all interventions were implemented as intended and (b) inter-rater reliability on scored students' academic products.

Another limitation of the study was the researcher avoided differences in the nature of the content (i.e., Greek/Latin vocabulary words). The design was not set up in such a way that the level of difficulty for the words was parallel for baseline and intervention. For example, words assessed during the intervention could have been more challenging for students, compared to baseline. The focus of this study was on the development of knowledge and use of multiple strategies during each data collection period. For instance, during intervention the researcher looked at the compounding influence of cooperative learning on student achievement over time. During baseline instruction, teachers used different activities each day.

A final limitation of the study was the short intervention duration; a longer intervention duration with follow-up measures would have been ideal. This study was conducted during the course of one school year, and data was gathered during the Greek/Latin weeks of the district's curriculum, which totaled five weeks.

Definition of Terms

Academic achievement: For the purpose of this study academic achievement was represented by student academic scores on formative and summative assessments for the 3-5 Word Study Curriculum of the researched school district.

Active engagement "refers to how involved or interested students appear to be in their learning and how connected they are to their classes, their institutions, and each other" (Axelson & Flick, 2011, p. 38). For the purpose of this study, the researcher utilized Kagan's four basic principles of cooperative learning to define active engagement. All four PIES must be in place if students were actively engaged in their learning (Kagan, 2005). Those principles were (a) positive interdependence, (b) individual accountability, (c) equal participation, and (d) simultaneous interaction. These PIES are further defined in the vocabulary terms.

Baseline: For the purpose of this study the instructional conditions during which 'normal' or 'typical' teaching practices, such as requiring students to write words three times each, provide appropriate definitions and use words in sentences to develop pupils' literacy skills, were used and included teacher-led direct instruction and possibly some small group work. The researcher anticipated no formal structured interactions (i.e., Kagan structures) under baseline conditions.

Cooperative learning is the "instructional use of small groups so that students work together to maximize their own and each other's learning" (Johnson & Johnson, n.d., para. 5). Cooperative learning "usually supplements the teacher's instruction by giving students an opportunity to discuss information or practice skills originally presented by the teacher" (Slavin, 1991, p. 73). Johnson and Johnson (n.d.) identified five basic [principles] of cooperative learning: (a) positive interdependence, (b) individual and group accountability, (c) face-to-face interaction, (d) interpersonal skills, and (e) group processing. Kagan's research suggested that equal participation and simultaneous interaction were missing from the Johnson and Johnson model (Kagan, 2001a).

Existing teaching practices: For the purpose of this study, the instructional strategies that a teacher selected to use during guided practice of vocabulary instruction prior to the implementation of the intervention (i.e., Kagan Cooperative Learning Structures).

Free rider is "a student who fails to shoulder their part of the work load" (Dingel, Huq, & Wei, 2013, p. 46).

Greek/Latin formative assessments: For the purpose of this study, quick formative assessments that measured student understanding of six words containing Greek/Latin roots. The assessments measured student knowledge of word meanings and how different prefixes and suffixes could change those meanings. All assessments followed a standardized length and format prior to the start of the study and minimized the possibility of experimenter bias. Students experienced formative assessments at the end of each lesson, Monday through Thursday. The research used a combination of

selected response and constructed response questions. For example, for constructed response, look at the word destruction. A tornado can cause lots of destruction in a matter of minutes. The prefix, de-, means reversal or removal. Using what you know about the root word, 'struct,' what does the word destruction mean? For additional example, for selected response, Beth had to restrain herself from eating the entire chocolate cake! In this sentence, the word restrain means: (a) build knowledge, (b) push together, (c) pull apart, or (d) hold back.

Greek/Latin summative assessments: For the purpose of this study, end of instructional unit weekly assessments evaluated a student's understanding of the six words containing Greek/Latin roots studied throughout the week. A team of district curriculum writers created assessments and evaluated word meaning; specifically how prefixes and suffixes could change a word's meaning. The team of writers used a combination of selected response and constructed response questions in developing these assessments.

Group-to-individual transfer "occurs when students learning within a cooperative group demonstrate mastery of the material being studied on a subsequent test taken individually" (Johnson, Johnson & Yager, 1985, p. 61).

Group work: For the purpose of this study, were small-groups of four to five students engaged in unstructured interaction, given a topic related to the content by the teacher. Unstructured group work lacked positive interdependence, individual accountability, equal participation, and simultaneous interaction.

Intervention phase: For the purpose of this study, class time when Kagan Structures (i.e., Flashcard Game, Quiz Quiz Trade, Numbered Heads Together) were implemented during the guided practice of Greek/Latin vocabulary words.

Kagan Conceptual Framework – PIES: four basic principles upon which all Kagan Cooperative Learning Structures were built (Kagan, 2005). "Each principle ensures there is more active engagement for more students. The PIES principles reveal that students who otherwise might slip through the cracks become engaged when teachers use Kagan Structures [which incorporate PIES]" (Kagan, 2005, para. 3). The researcher utilized these four basic principles when analyzing structured versus unstructured interactions among students. The researcher used an observational checklist to observe the fidelity of the implementation for each teacher.

Positive interdependence exists when

> group members perceive they are linked with each other in a way that one cannot succeed unless everyone succeeds. It creates a commitment to other people's success as well as one's own and is the heart of cooperative learning. If there is no positive interdependence, there is no cooperation. (Johnson & Johnson, n.d., para. 24)

Individual accountability has "three critical components: the performance is done without help, someone witnesses the performance, and the performance is required" (Kagan, n.d., para. 4). The researcher used an observational checklist to observe who was responsible for sharing information with another student and what he or she were responsible for sharing. Ultimately, a student should not be able to hide during a lesson.

Equal participation happens when the teacher structured the interactions among students and created equal opportunities for students to contribute (Kagan, 2001a). For the purpose of this study, the researcher used an observational checklist to observe the amount of turns and/or time for student interactions. For this study, equal participation was measured as the time and turns that individual students are talking or writing during a lesson.

Simultaneous interaction was defined by Kagan (2001a) as "the percentage of learners overtly engaged at any one moment" (para. 16); recorded as the percentage of students overtly engaged at any one moment during a lesson.

Kagan Structures: Defined by Kagan as "content-free ways of organizing social interaction in the classroom. Structures usually involve a series of steps, with proscribed behavior at each step" (as cited in Brandt, 1989-1990, p. 12). The researcher utilized Kagan structures to organize student-to-student interactions during guided practice with vocabulary words. The researcher selected these structures because they helped students acquire facts and information, which was a part of the semantic memory system. In order for the brain to retain facts and information, knowledge develops through repetition. All three structures provided sufficient repetition and simultaneously incorporated a gradual release of student responsibility.

Flashcard Game: Partners (Tutor and Tutee) proceed through three rounds as they quiz each other with flashcards, master the content, and win their cards. Flashcard Game develops mastery through repetition and peer tutoring, students learn by quizzing and being quizzed and students receive immediate feedback (Kagan, 2009).

Quiz Quiz Trade: Students use cards with questions on one side and answers on the other side, to continually quiz each other over the specific content. Students work through the structure at their own pace and coach as needed (Kagan, 2009).

Numbered Heads Together: Teams include four or five students and the teacher poses a question to the class. The students individually answer the question on whiteboards. The teacher says, 'Heads together!' The students stand at their teams and share their responses with one another. Students discuss and reach consensus about the correct response, coaching if needed. Boards are erased and students sit down, signaling that they are ready to move on. The teacher calls on a random number and that number stands from each team to share their team's response (Kagan, 2009).

Self-efficacy is

> commonly defined as the belief in one's capabilities to achieve a goal or an outcome. Students with a strong sense of efficacy are more likely to challenge themselves with difficult tasks and be intrinsically motivated. These students will put forth a high degree of effort in order to meet their commitments, and attribute failure to things which are in their control, rather than blaming external factors. (Kirk, 2013, para. 1)

Social competence can be broken down into two main categories: social awareness and relationship to management. Social awareness is "the ability to control impulsive feelings and behaviors, manage your emotions in healthy ways, take initiative follow through on commitments, and adapt to changing circumstances" (Marchesi & Cook, 2012, p. 1). Relationship to management is "the ability to develop and maintain

good relationships, communicate clearly, inspire and influence others, work well in a team, and manage conflict" (Marchesi & Cook, 2012, p. 1).

Social validity "refers to the acceptability of and satisfaction with intervention procedures, usually assessed by soliciting opinions from the people who receive and implement them" (Luiselli & Reed, 2014, para. 2). Social validity includes how an individual perceives program goals (e.g., to do better on word study curriculum), acceptability of program components (e.g., how much did you like being in small groups, putting your heads together, having a number drawn randomly by the teacher), and how satisfied individuals are with program outcomes (e.g., how much did structured interactions improve your ability to do well on word study curriculum) (Lane et al., 2009). As the researcher carefully observed the behaviors of the participants (i.e., students and teachers) during the treatment sessions (i.e., use of Kagan structures) the acceptability and satisfaction of the treatment outcomes were assessed anonymously and independently utilizing a social validity survey.

Social validity score: For the purpose of this study, the score generated from the 5-point, Likert-type scale that measured participant acceptability of the program outcomes (i.e., students and teachers).

Solo work: For the purpose of this study, a structure in which students worked individually without peer interaction.

Structured interaction: An interaction among students, which incorporated all four basic principles of Cooperative Learning according to Kagan: positive interdependence, individual accountability, equal participation, and simultaneous interaction (PIES) (Kagan, 2005). Three Kagan structures, Flashcard Game, Quiz Quiz

Trade, and Numbered Heads Together were implemented as exemplars of structured interactions.

Structured conditions: For the purpose of this study, conditions under which Kagan structures were implemented and incorporated all four basic PIES of cooperative learning according to Kagan (Kagan, 2005).

Student confidence level: For the purpose of the study, the scale quotient of student knowledge. This measurement calculated each week to determine the students' perception of what they know regarding Greek/Latin words.

Traditional conditions: For the purpose of this study, conditions under which no structured interactions (i.e., Kagan structures) were used by the classroom teacher. The researcher anticipated the teacher would use instructional practices, such as requiring students to write words three times each, provide appropriate definitions, and use words in sentences to develop pupils' literacy skills.

Unstructured interaction: For the purpose of this study, interaction among students in which no identifiable structures were used with the students. Teachers' (i.e., participants) normal or typical instructional practice during baseline conditions lacked Kagan structures.

Word study is "a cohesive approach that addresses word recognition, vocabulary, and phonics as well as spelling" (as cited in Leipzig, 2000, para. 3). The researcher focused on every fifth week in the researched school district's Word Study curriculum in which Greek/Latin root words became the focus of instruction for grades three through five.

Summary

Chapter One discussed the data that depicted the nation's status in adolescent literacy. Fourth grade reading scores remained stagnant for the decade prior to this writing, and concerns mounted for the future success of our students ("Summary of Major Findings," 2011). This chapter emphasized the changing skill sets for the workplace, which demanded employees have strong collaborative and communication skills. In the experience of the researcher, educators became overwhelmed trying to understand which instructional practices would increase student learning while at the same time foster strong collaborative and communication skills (Fisher & Frey, 2011). The researcher stated the background of the research, the research questions and hypotheses, the limitations of the study, and the definitions of terms. The purpose of the study was to investigate teacher fidelity of implementation with cooperative learning structures according to the Kagan Framework related to pupils' academic performance during vocabulary instruction.

Chapter Two reviews the current literature as it related to the literacy crisis, data driven decision making, instructional strategies, cooperative learning, Kagan Cooperative Learning Structures, fidelity of implementation, and vocabulary instruction. Chapter Three presents the design of the research and details the methodology used in this study. Chapter Four presents the results and analysis of the data, and Chapter Five summarizes the study and discusses recommendations for future research.

Chapter Two: The Literature Review

Educators in the early 2000s struggled to ensure that all students became literate members of society. According to the U.S. Department of Education and the National Institute of Literacy, "32 million adults in the U.S. can't read" (as cited in "U.S. Illiteracy Rate," 2014, para. 2). Given these statistics, educational leaders reflected upon the instructional practices taking place in K-12 classrooms across the U.S. and observed students bored, unconnected, and passively listening in whole group lessons as teachers lectured (Pianta, Belsky, & Houts, 2007; Slade, 2014; Toppo, 2015). Teachers employed rigid, traditional instructional practices, such as 'calling on one' in classrooms, allowing little time for student academic conversations. Most of the observed instructional time in the classroom revealed teachers spent the majority of time on whole-class, direct instruction followed by individual seatwork (Pianta et al., 2007). Educational leaders saw the need for increased student engagement in classrooms to support the social context that students would experience after graduation from high school. In addition, educational leaders believed, with empirically-based instructional practices, student achievement would increase and turned to meta-analyses to learn more about the best instructional practices to implement in classrooms. Hattie (2012) and Marzano (2007) noted cooperative learning as one instructional practice that increased student achievement. Educational leaders and teachers sought different methods of cooperative learning with the hopes of increasing student achievement and engagement. While Marzano (2007) calculated an average percentile gain of 24 when teachers implemented cooperative learning, Marzano failed to note in the study under which conditions cooperative learning achieved its greatest gains. Marzano's (2007) research did not

include Kagan Cooperative Learning Structures as a method in his meta-analysis. While researchers stated that cooperative learning methods produced positive gains in achievement, there was little research specifically focused on Kagan Cooperative Learning Structures. Therefore, further research targeted on The Kagan Cooperative Learning Structures and student achievement was warranted.

Organization of the Literature Review

This literature review begins by describing the literacy crisis which spurred educators toward reform efforts aimed at improving learning for students of the 21st century. The review continues with an explanation on the use of data as educational leaders implemented changes in instructional practices grounded in empirical research. This explanation is followed by a comparison of cooperative learning methods, which highlighted the characteristics that set Kagan Cooperative Learning apart from the other methods. The review then incorporates a discussion of fidelity of implementation and teacher efficacy with programs and strategies. Finally, the review provides the gap in the literature surrounding cooperative learning.

Literacy Crisis

Many researchers reported the U.S. faced a serious literacy crisis, beginning in the 1980s (Davenport & Jones, 2005; Elson, 2013; Haynes, 2011; Levin, Catlin, & Elson, 2010; Wilkins, 2012). In the shadow of such a claim, educators engaged in conversations about reading and writing instruction and determined literacy skills as necessary for students to be “competitive in the world market” (Williams, 2007, p. 178) and/or be college and career ready. The literacy crisis spanned several decades and fueled pressure for school districts to seek reforms in literacy practices.

Reports, such as *A Nation at Risk*, began in the 1980s to claim that a connection existed between education, reading and writing skills, and the economy (as cited in Haynes, 2011). The connection revealed deficiencies in the literacy skills of students in the U.S. and promoted the first concerted efforts of literacy reform in education. Despite the early warning, reform efforts in the 1990s began to focus on content standards, "what students should know and be able to do as a result of attending school" (Hurst, Tan, Meek, & Sellers, 2003, p. 13). School districts faced difficult decisions regarding establishing content standards, measuring the progress of these standards, and ensuring the "fairness of accountability systems" (Hurst et al., 2003, p. 30). Additional pressure mounted for school districts when George W. Bush signed the federal legislation, No Child Left Behind (NCLB), in January of 2002, expanded the role of standardized testing of students and dramatically increased school districts' accountability for student success ("The New Rules," 2002). NCLB also propelled reform efforts, calling for a "back to basics" approach to literacy instruction (Davenport & Jones, 2005, p. 53).

To comply with increased accountability initiatives, school districts in the U.S. began a comprehensive reform movement to guarantee that all students reached high levels of achievement in literacy; educators closely examined resources and teacher effectiveness (Hurst, Tan, Meek, & Sellers, 2003). While evidence of the literacy crisis was widespread, state-level actions did not equate to improved success in reading and writing. State agencies created standards telling teachers what to teach and when to teach (Haynes, 2011). Consequently, state agencies created assessments aligned to the standards to hold school districts accountable for student learning. "Simply mandating standards and assessments will not guarantee success" (Haynes, 2011, p. 13). Educators

began looking for the literacy skills, instructional strategies, literacy programs, and standards that produced highly literate and successful students (Haynes, 2011). Teachers delivered instruction to students through the programs and strategies selected by state agencies and school districts. Consequently, school districts had to remember that "students learn more when they have expert teachers" (Routman, 2014, p. 142). Teachers had to be well-trained, with content standards and instructional strategies, to produce highly literate students. While standards and programs came and went, our best investment was in the training and long-term professional development of our teachers and school administrators (Routman, 2014). Davenport and Jones (2005) added, "Reform should continue along the lines of what scientific research shows best teaches children" (p. 57). To combat illiteracy across the U.S., educators worked to improve the quality of teaching in classrooms. Hattie (2012) asserted, "Teachers' beliefs and commitments are the greatest influences on student achievement over which we have some control" (p. 22). Districts had to ensure that teachers' beliefs and commitments were in line with current research about effective literacy practices, in addition to assuring that teacher knowledge of content was strong (Fisher, Frey, & Hattie, 2016). Ultimately, expert teachers provided the necessary instruction and strategies to produce literate students.

Students' opportunities for social and economic successes hinged on proficient literacy skills. "The 2013 National Assessment of Educational Progress (NAEP) results show that only 1 in 3 fourth grade students (35%) are reading proficiently" (Elson, 2013, para. 2). The 2013 NAEP data forced educators to question the programs implemented within their school districts. According to Wilkins (2012), data from the NAEP revealed

achievement gaps in the areas of reading and mathematics during the 1970s and supported the notion that the literacy crisis was not new. In addition to NAEP, NCLB stated, "Improving literacy is not just an educational goal or social need; it is essential if the United States is to compete in the new global economy" (Davenport & Jones, 2005, p. 46). Feeling the pressures from NAEP and NCLB, school districts reacted by spending inordinate amounts of time and resources working to implement the best programs and instructional strategies so students who graduated were not only literate, but college and career ready (Levin et al., 2010).

As the literacy crisis continued, educators were inundated with evidence suggesting today's students were growing up in a world where adapting and responding to multiple stimuli was second nature. Students of the 21st century desired to know the relevance of school to their daily lives; educators had to provide this connection (Duncan, 2013). Therefore, understanding this unique group of learners became crucial as educators decided how to overcome the literacy crisis.

21st-Century Learners

From one generation to the next there were concerns about the influence of popular culture on the academic lives of students. Williams (2007) outlined these apprehensions chronologically, beginning with the "sensationalist newspapers in the 1880s to movies in the 1930s, television in the 1970s, and video games and text messaging today" (p. 178). Williams (2007) further contended the literacy crisis was a generational concern that only existed in the eyes of the current generation. Furthermore, Williams (2007) stated past generations became successful innovative adults despite the generational concerns of a literacy crisis when they were younger. Teachers worked to

understand and teach students despite societal changes throughout generations, which influenced student characteristics and behaviors. Kagan (2004) asserted, "We have shifted from an agricultural to an industrial then from an industrial to an information-based economy" (para. 6). Educational demands placed on students shifted throughout generations, and teachers modified instructional practices to best meet the ever changing demands of the world around them. Unfortunately educators continued to instruct students in extensive curriculums year after year, and "collect[ed] and repackag[ed] series of facts" (Fontichiaro, 2009, p. 64) that remained obsolete for the 21st-century learner. Districts needed to ensure that students were "experienced collaborators with the skills needed to work in flexible teams to generate something new" (Fontichiaro, 2009, p. 64) to meet societal expectations.

An understanding of the 'what' (i.e., curriculum) and the 'how' (i.e., instructional strategies) became, perhaps, the greatest challenge for teachers who worked with the 21st-century learner. "Schools are now preparing students for a world of work that is hardly imagined because knowledge is doubling every few months" (Kagan, 2004, para. 8). Teachers and administrators faced the challenge of evaluating and implementing the most valuable and empirically proven resources for students. "[Educators] must consider which skills will be most practical for students entering a workforce where building relationships and productivity go hand-in-hand" (Brady & Tsay, 2010, p. 78). Teachers had to embrace two ideas: 1) a need for content-rich curriculum and 2) a need for classrooms that established individual students who were interdependent and able to adjust to the changing 21st-century world in a social context (Kagan, 2004; Schmoker, 2011).

Students had limited social skills and lacked understanding on how to work cooperatively, mainly because students were told to 'keep their eyes on their own paper' (Schultz, 1989-1990). Knowing students had limited social skills Johnson and Johnson (1999) further explained, "[Cooperative experiences] are a necessity for the healthy social and psychological development of individuals who can function independently" (p. 73). In fact, Fisher and Frey (2011) suggested, not only should educators be providing opportunities for our students, they should be increasing the frequency of these opportunities for students. A decline in students' self-concept occurred because teachers did not provide opportunities for student conversations, and as a result, students were unable to learn in the company of their peers (Fisher & Frey, 2011). Kagan (2004) explained social skills and academics could be addressed through the use of cooperative learning, and both were important for the 21st-century learner. Kagan further stated, if educators wanted students to work together in this ever-changing, interdependent world, teachers needed to teach students social skills just as purposefully as they taught academics (Kagan, 2004). The availability of student data shaped educators' perceptions of the 21st-century learner and allowed educators to make good decisions about instructional materials and instructional practices. Data usage in education allowed educators to see the invisible aspects of student learning, and data analysis changed educator perceptions about instructional practices, keeping central the idea that practices must be in the best interest of students (Hattie, 2012).

The Importance of Data in the 21st-Century World

For states to receive federal funding, there was an expectation that state agencies developed and administered state assessments to all students in specific grade levels

(Ravitch, 2010). NCLB created a shift and fascination with collecting large amounts of data used in comparing students, teachers, schools, districts, and states - the assumption was "that higher test scores on standardized tests of basic skills were synonymous with good education" (Ravitch, 2010, p. 29). Many educators argued NCLB and policy makers made invalid assumptions that led to damaging and unintended consequences. High-stakes testing became counterproductive for schools as teachers were charged with the daunting task of helping all students become proficient in the areas of mathematics and reading by 2014 (Ravitch, 2010). "Test scores became an obsession" (Ravitch, 2010, p. 29). Administrators and teachers spent more time on test-taking skills and strategies than they did teaching the curriculum (Ravitch, 2010).

The collection and analysis of data created a domino effect for school reform across the country, which led to the misuse of the data. Educators strayed from using data to guide curriculum and instruction in the classroom and from using best practices to improve student achievement and engagement. Sweeney (2011) stated, "Decisions were based on arbitrary ideas about what to teach and were often grounded more on personal philosophy than on student learning targets" (p. 63). Even with the availability of data from assessments, educators lacked the understanding of how to use the data to inform instruction and often missed the "true power of data" (Sweeney, 2011, p. 63). Sweeney (2011) referred to this disconnect between data and educators' abilities to effectively analyze data as the 'data gap.' Through her research, Sweeney attributed the "data gap" in education to "an overabundance of data, a lack of systems to analyze data, or limited experience among teachers in using data" (p. 64).

Teachers faced with the task of increasing student achievement also faced the challenge of analyzing large amounts of data. "Schools are collecting more data than ever on how children are doing" (Fleisher, 2014, para. 1). With the large amounts of student data available, educators needed to understand what data could and could not do; data collected did not answer why, or explain the cause of an event; it only answered the question of what. Through the collection and analysis of large amounts of data, educators looked for "patterns that might help predict future occurrences" (Cukier & Mayer-Schoenberger, 2013b, para. 6), and this helped make some improvements that increased student achievement. Unfortunately, teachers experienced drawbacks when analyzing data. For example, in the researcher's experience, teachers felt no ownership in the data process, due in large part to the fact that the teachers were not involved in the data decision process. District leaders told teachers what to test, when to test, and why to test; therefore, no ownership for teachers.

The trend for administering "high-stakes" assessments intensified after the introduction of NCLB (2001), and some teachers felt policymakers failed to remember the "goal of a comprehensive accountability system is not to punish or reward, but to improve the delivery of curricula and increase student learning" (as cited in West Ed., 2000, para. 12). Teachers, frustrated with the amount of test-preparation, were saddened by the way single state assessments "distorted and degraded the meaning and practice of education" (Ravitch, 2010, p. 29). Educators felt drawbacks to the extreme testing regiments across the country as, "(1) an increase in student retention and failure rates, (2) a narrowed focus of instruction and assessment, (3) inappropriate inferences about

student performance, (4) overburdened teachers and students" (West Ed., 2000, paras. 7-11).

While some educators felt drawbacks of testing, analyzing data continued to gain momentum as a way to make decisions that increased student achievement. "Data can help educators decide what action to take to improve instruction, change practice, or reform schools" (Scherer, 2003, para. 1). In thinking about the actions that educators take based on the data, important questions educators considered included: "How will we use the data? Where did the data come from? Where do we start? What do the data really say?" (Scherer, 2003, paras. 2, 5-7). These critical questions helped educators use more data effectively.

Without guidance or purpose, school districts could misuse student data resulting in 'finger-pointing' instead of improved instruction (Scherer, 2003). For example, school districts targeted low performing teachers or buildings where students underperformed at the expected levels and penalized the teacher or buildings instead of helping the teachers improve instruction (West Ed., 2000). The large-scale assessments school districts relied on to report district progress were typically a once-a-year occurrence; results were not given in a timely fashion and the data was usually used to rank districts and teachers. Guskey (2003) explained, "assessments designed for ranking are generally not good instruments for helping teachers improve their instruction or modify their approach to individual students" (para. 1). The assessments with the greatest opportunity to shape student learning were the assessments given on a regular basis in the classroom: quizzes, formative assessments, summative assessments, and writing assignments. Unfortunately, "Few teachers receive[d] much formal training in assessment design or analysis"

(Guskey, 2003, para. 3). Teachers, as a result, relied heavily on the assessments generated by book companies, or teachers created their own assessments with little attention to the alignment of questions to learning targets (Guskey, 2003). Educators missed the opportunity to measure student progress with the designated learning targets, which resulted in a misuse of data (Guskey, 2003). The results did not help inform or transform instructional practices.

Beliefs and Practices

School districts pulled teachers in multiple directions with data analysis in the hopes of raising student achievement. As a result, teachers lost sight of their own pedagogical beliefs and practices. Since the era of high stakes testing, which began shortly after the introduction of NCLB, teacher instruction fell short in literacy instruction, and teachers therefore resorted to a drill-and-kill approach in hopes of higher test scores (Schmoker, 2006). Test preparation became a regular routine for many teachers, as they fell victim to the illusion that this method of instruction produced higher achievement gains. As a result, educators ignored best instructional practices. Wilkins (2012) stated,

> We know from mounds of research, including a recent study conducted by the Chicago Consortium for School Research, that high quality, robust instruction delivered by well-supported teachers is the best way to achieve meaningful and lasting gains in student achievement - no test prep. (p. 42)

According to Routman (2014), the teacher was the most influential person for a student in his or her educational career, and through a teacher's carefully crafted, intentional, and purposeful instruction students achieved. While some educators believed the art of

teaching was diminished by the emphasis on standards, Marzano noted teachers must employ a vast repertoire of instructional strategies to improve student achievement (as cited in Scherer, 2001). Instructional strategies became tools that allowed teachers to differentiate their instruction based on the needs of students, and to instruct students, educators required a firm understanding of the standards, a repertoire of instructional strategies, and a balance of assessment methods to inform their instructional practices.

Instructional Strategies

Instruction makes a difference in student achievement. Schmoker (2006) claimed, "Instruction itself has the largest influence on achievement" (p. 10). Myriads of reform efforts targeted on instructional practices frustrated teachers and triggered the adoption of the 'wait and see' approach for educators. Educators hoped the latest and greatest ideas passed sooner, rather than later (Wolfe, 1987). Schmoker (2011-2012) stated, "No educational innovation, no new teaching tool, method, product, or 'proven' program holds a candle to the effect of traditional, reasonably well-executed lessons" (p. 70).

Educators failed to use, on a consistent basis, the basic fundamental elements of a good lesson, which educators knew about for more than 30 years. Hunter's Instructional Theory into Practice (ITIP) model, developed during the 1970s, became one of the most popular models to help teachers with basic lesson design (as cited in Stallings, Robbins, Presbrey, & Scott, 1986). Educators widely misunderstood Hunter's model and referred to the model as the "Seven-Step Lesson Plan", which included the following seven steps or components: "(1) anticipatory set, (2) objective, (3) input, (4) modeling, (5) checking for understanding, (6) guided practice, and (7) independent practice" (Wolfe, 1987, p. 70). As the model grew in popularity across the U.S., teachers believed the expectation

included incorporating all seven steps into every lesson (Wolfe, 1987). However, many teachers believed there were times when one or more of the steps did not fit into a given lesson. Wolfe (1987) stated, "Administrators who were newly trained in clinical supervision began to look for all seven 'steps' as they observed in classrooms, often faulting teachers if a step was missing" (p. 70). Instead of criticizing teachers, administrators needed to help teachers develop a deeper understanding of each of the seven elements and the understanding that "teaching is decision making" (Wolfe, 1987, p. 70). More developed lessons that incorporated "modeling, guided practice, and multiple 'checks for understanding' punctuated by frequent opportunities for additional instruction, clarification, and then more practice between each step" resulted in some of the greatest gains in educational research (Schmoker, 2011-2012, p. 71). Within Hunter's model, teachers should provide opportunities for students to process new information; however, Schmoker (2011-2012) observed no "opportunity for students to process new knowledge or practice with it - alone or in pairs" (p. 70). As the demands for curriculum coverage continued to climb, teachers left little instructional time for the processing of information with peers.

Student understanding of content hinged on teachers providing opportunities for academic conversations in the classroom (Schmoker, 2011). Dewey (1897) stated,

> I believe that the active side precedes the passive in the development of the child nature; neglect of this principle is the cause of a large part of the waste of time and strength in school work. The child is thrown into a passive, receptive, or absorbing attitude. The conditions are such that he is not permitted to follow the law of his nature; the result is friction and waste. (paras. 44-45)

Dewey found, over 100 years ago, learning was active and required the engagement of students to produce deep learning. Dewey (1897) also acknowledged the need for things that were difficult to measure with data, such as the fact that students needed to interact to allow for social and emotional development. Unfortunately, "American classrooms are dominated by individualistic learning" (Johnson et al., 1985, p. 65). As stated earlier in this dissertation, while society moved into the 21st century, school systems were slow to change, and as a result, students were not college and career ready when they graduated from high school. In schools, teachers expected students to complete individualized tasks with minimal interactions among peers (Johnson et al., 1985). "The lecture format has historically been the most popular teaching pedagogy utilized by [educators] in the United States" (Campisi & Finn, 2011, p. 38). While teachers began to acknowledge the need for an increase in academic conversations and evaluated the instructional strategies implemented in classrooms, shifting one's pedagogical beliefs required time, professional development, and willingness to want to change; and change was difficult. Students needed teachers who could identify high leverage strategies to increase their academic achievement (Hattie, 2012).

Marzano (2001) and researchers at Mid-continent Research for Education and Learning identified nine categories that "have a strong effect on student achievement for all students in all subject areas at all grade levels" (p. 7). Marzano (2001) completed a meta-analysis to analyze selected studies on instructional strategies used by teachers in K-12 classrooms. The use of a meta-analysis was important, because Marzano combined the results from many studies, which helped determine the average effect of an instructional strategy (Marzano, 2001). As a result of his research, Marzano identified

nine categories of instructional strategies, displayed in Table 1 that increased student achievement (Marzano, 2001).

Table 1

Categories of Instructional Strategies That Increase Student Achievement

1. Identifying similarities and differences
2. Summarizing and note taking
3. Reinforcing effort and providing recognition
4. Homework and practice
5. Nonlinguistic representations
6. Cooperative learning
7. Setting objectives and providing feedback
8. Generating and testing hypotheses
9. Questions, cues, and advance organizers

Note. Marzano, 2001, p. 7.

As teachers made instructional decisions when designing lessons, the difficulty lay in knowing which strategy to use, and when, during the lesson. Goodwin (2014) stated, "Different teaching strategies support different stages of the learning process - so when it comes to delivering instruction that sticks, the question isn't so much what to do, but when and why to do it" (para. 2). One of the nine teaching strategies identified by Marzano was cooperative learning. When teachers used cooperative learning in the classroom, students exhibited gains in academic achievement and social skills (Johnson & Johnson, 1989; Kagan, 2005; Marzano, 2007; Slavin, 1995; Zemelman, Daniels, & Hyde, 2012).

Cooperative learning. In the early days of education, educators expected students not to talk during class and often punished students for talking without permission. Flanders (1970) reported that "teachers of high-achieving students spent about 55 percent of the class time talking, compared with 80 percent for teachers of low-achieving students" (as cited in Fisher, Frey, & Rothenberg, 2008, para. 11). With the lack of equitable academic conversations among students, why the achievement gap continued to grow and the NAEP scores remained stagnant were understandable. McVee, Dunsmore, and Gavelek noted, "Group interaction not only facilitates knowledge development but also creates awareness that is difficult if not impossible without such interaction" (as cited in Marzano, 2007, p. 40). Many researchers stated the benefits to student conversations and deep meaningful learning could not happen without conversation among students (Fisher & Frey, 2011; Zemelman et al., 2012).

Awareness of the result conversations had on student learning was just a beginning point for teachers. Johnson and Johnson (n.d.) stated, "How teachers structure student-student interaction patterns has a lot to say about how well students learn, how they feel about school and the teacher, how they feel about each other, and how much self-esteem they have" (para. 2). Some educators, however, did not share the beliefs of Johnson and Johnson (n.d.) and felt cooperative learning would not equate to success in the workplace for students. The initial opposition to cooperative learning was based on the idea that students must be taught to survive in a world where people will do anything to be successful, even at the expense of others, but, educators shifted their thinking as jobs became more collaborative in nature. Educators had to consider the skills "that will be most practical for students entering a workforce where building relationships and

productivity go hand-in-hand" (Brady & Tsay, 2010, p. 78). Cooperative learning provided students opportunities to make sense of what they were learning, by allowing academic conversations among peers, resulting in improved academic achievement and social skills (Marzano, 2007; Slavin, 2014).

Cooperative learning was an instructional strategy that required students to interact in cooperative groups, work productively, support one another, and learn about the content (Marzano, 2007; Slavin, 2014). This instructional strategy had a great deal of empirical research supporting cooperative learning as a strategy for increasing academic achievement and improved social skills (Johnson & Johnson, 1989; Kagan, 2005; Slavin, 1995). Despite the research, some teachers abandoned cooperative learning in classrooms, due to the fear of losing control of the class, students' off-task behaviors, and a loss of valuable instructional time. In contrast, a national survey conducted by Puma, Jones, Rock, and Fernandez (1993) found that "79% of elementary teachers and 62% of middle school teachers reported making some sustained use of cooperative learning" (as cited in Slavin, 1995, para. 1). The educators who embraced cooperative learning understood what researchers like Johnson and Johnson (1989) discovered, that "humans do not have a choice. We have to cooperate" (p. 167). The ability to cooperate segues into interdependent relationships that people inevitably encountered professionally and personally. "The question is not whether we will cooperate, [but] 'How well will we do it?' " (Johnson & Johnson, 1989, p. 167). While Johnson and Johnson (1989) discussed the unavoidable cooperative experiences necessary for student success, Slavin (1995) raised questions about the conditions under which cooperative learning resulted in positive outcomes in student achievement. Slavin (1995) further stated, researchers often

worked in “isolation from one another, almost on parallel tracks,” (para. 3) some focused on the incentive structure while others chose to focus on the task structure. Even though the researcher found positive outcomes of cooperative learning, dated back to the 1970s, there was a need to further explore the optimal conditions under which cooperative learning worked to provide educators with a clearer picture of the power of this instructional strategy.

Researchers typically worked to study the learning outcomes of cooperative learning by comparing several alternative instructional methods, such as intergroup competition, individual competition, and the use of individual student tasks (Marzano, 2001). When comparing alternative instructional methods and cooperative learning, the researcher never articulated in the findings an understanding of the conditions under which cooperative learning led to student growth. Marzano (2007) detailed several studies, which first compared cooperative learning to an alternative instructional strategy, and then showed cooperative learning used by teachers in general. The data showed percentile gains when teachers used cooperative learning as an instructional strategy, but the researcher failed to explain details of the conditions used in the cooperative learning classrooms when cooperative learning led to positive learning outcomes (i.e., structure of the task, group rewards, positive interdependence).

Slavin (2014) stated, through the use of five strategies teachers obtained the greatest benefits from cooperative learning: “(1) form interdependent teams, (2) set group goals, (3) ensure individual accountability, (4) teach communication and problem-solving skills, and (5) integrate cooperative learning with other structures” (pp. 23-25). In addition, Slavin (2014) recognized a need to support and facilitate cooperative learning

so the “tremendous potential” of this strategy could be observed (p. 22). Even when compared to other instructional strategies educators undoubtedly recognized the benefits of cooperative learning; however, it was important to remember not to rely heavily on any one instructional strategy, including cooperative learning. Anderson, Reder, and Simon (1999) supported this idea by warning that a “huge number” of research articles failed to mention the difficulties with this instructional strategy including: failure to effectively structure tasks for cooperative groups and students doing the work for others in the group (p. 16). Educators desired higher student achievement when implementing an instructional strategy, but for these desired outcomes to exist required thoughtful “implementation and scripting of the learning situation” (Anderson, Reder, & Simon, (1999, p. 16).

While Johnson, Johnson, and Stanne (2000) maintained cooperative learning increased student achievement, when compared to competitive and individualistic learning; however, they cautioned that proper implementation was key. Moreover, student achievement hinged on which specific cooperative learning method the teacher chose and how the teacher implemented the chosen method. Johnson et al. (2000) concluded a need for further research of ‘new operationalization,’ methods, of cooperative learning. Researchers demonstrated that cooperative learning increased student achievement; however, only a few cooperative learning methods had large amounts of empirical support: Learning Together, Constructive Controversy, and the Jigsaw Procedure. A further finding of Johnson et al. (2000) noted little research existed about the differences of direct or conceptual methods of cooperative learning and student achievement. While the meta-analysis of Johnson et al. (2000) demonstrated that “the

more conceptual the method of cooperative learning, the greater its impact on student achievement" (para. 31), further research was needed to understand the implementation of such a method and student achievement.

Though Johnson et al. (2000) noted the importance of more controlled studies that closely monitored implementation, the researchers failed to note how to monitor or measure the implementation of a given method. Bilen and Tavil (2015) investigated student achievement using the Kagan Cooperative Learning Structures method and vocabulary skills of fourth grade students. Bilen and Tavil (2015) referred to the structures as activities, as opposed to instructional strategies and failed to mention the alignment of the structures to the Kagan conceptual framework (i.e., PIES), developed by Kagan & Kagan (2009-2015). Bilen and Tavil (2015) found that students taught using the Kagan structures scored significantly higher than students taught using traditional methods; however, Bilen and Tavil failed to mention or describe measurement instruments used for the fidelity of implementation. The researcher believed further study on the fidelity of implementation using the Kagan Cooperative Learning Structures according to the Kagan conceptual framework (i.e., PES) would add to the extant research about student achievement and cooperative learning.

Researcher, Kagan (2003), defined structures as "a content-free sequence of steps designed to structure interaction of students with each other" (para. 43) through his research as a graduate student at UCLA. Kagan (2003) developed a way to help teachers avoid the common pitfall, not knowing how to structure academic conversations with cooperative groups of students, when using cooperative learning as an instructional strategy. Kagan Cooperative Learning structures provided teachers with the how, when

implementing cooperative learning as an instructional strategy in the classroom and when to use the structures, depending on the content and desired learning target (Kagan, 2004).

Kagan Cooperative Learning. Researchers used the term, cooperative learning, to define a variety of instructional methods, which fostered students working together to accomplish a specific learning goal (Johnson & Johnson, n.d.). Kagan (2003) developed a cooperative learning method which used structures to produce desired outcomes of student achievement. Kagan Cooperative Learning differed in several ways from other methods of cooperative learning. Kagan (2009) stated seven key concepts must be present to assure maximum success with cooperative learning, including: 1) structures, 2) heterogeneous teams, 3) management, 4) classbuilding, 5) teambuilding, 6) social skills, and 7) basic principles (PIES).

Kagan (1989-1990) defined structures, the first of the seven keys, as "content-free ways of organizing social interaction in the classroom" (p. 12). According to Kagan (1989-1990), teachers used structures repeatedly for a wide-range of grade levels with any content before, during, or after a lesson. Slavin (2014) believed teachers needed to do more than simply set up cooperative learning structures in classrooms, yet Slavin provided teachers with little guidance on how to accomplish this, which resulted in frustration. In contrast teachers trained to use the Kagan Cooperative Learning method gained a vast repertoire of structures, and teachers used the structures several times throughout any given lesson or series of lessons (Kagan, 1989-1990). Conversely, with the Johnson and Johnson (n.d.) method the focus was on a single cooperative learning lesson, as opposed to a series of lessons (Johnson & Johnson, n.d.; Kagan, 2001a). The Kagan method also emphasized the need for teachers to understand "the domains of

usefulness" or academic functions of the structures (Kagan, 1989-1990, p. 13). Teachers trained in the Kagan method learned not only a vast repertoire of structures, but also the appropriate times to use the structures, depending on the content and desired learning target (Kagan, 1989-1990). The objective and learning target purposes varied between basic recall, processing, procedural, thinking (i.e., higher level and creative), and presenting of information.

Kagan and Kagan's (2009-2015) research stated the importance of heterogeneous or mixed teams, meaning teams mixed by student ability level, gender, and race. Additionally, Kagan (2001a) noted a distinction between the terms, groups and teams, in the Kagan method, described as a second key concept. The Johnson method used the term, groups, in contrast to the Kagan method, which used the term, teams (Kagan, 2001a). A group might be comprised of several strangers who had not formed relationships built on trust. In contrast, the Kagan method emphasized the need for students to engage in teambuilding activities, which helped students build the will to cooperate and function as a cooperative team (Kagan, 2001a). The size of a team also varied between the Johnson model and the Kagan method (Kagan, 2001a). "The Johnson model recommend[ed] groups consisting of two to five members; [while] the Kagan structures model placed heavy emphasis on the need to create teams of four as often as possible" (Kagan, 2001a, para. 17). Research by Lou et al. (1996) supported Kagan's method of keeping the group size to four students in order to maximize equal participation and simultaneous interaction among students (as cited in Marzano, 2007). In addition, teams according to the Kagan method should be heterogonous and of mixed ability level, as opposed to homogeneous and same ability level. While grouping by

ability (i.e., homogeneous) was a practice that resulted in positive student achievement, especially when compared to no grouping at all, it was important to compare same-ability grouping to mixed-ability grouping (Marzano, 2007). Therefore, when researchers compared heterogeneous grouping vs. homogeneous grouping and student achievement, homogeneous grouping provided achievement gains primarily for the medium ability students (Marzano, 2007). Low-ability students in the homogeneous grouping performed worse, and the high-ability students experienced only a slight improvement in achievement (Betts & Shkolnik, 1999).

In a Kagan (2009) cooperative learning classroom, teachers aligned instructional strategies with student needs; teachers encouraged movement and interaction among students, which therefore required different management skills, which was the third key concept according to Kagan. As stated earlier, teachers struggled to facilitate student conversations and often abandoned this instructional practice to control the classroom (Fisher & Frey, 2011). In a cooperative learning classroom students sat in teams and were encouraged to engage in conversations. Teachers needed specific cooperative management skills in order to facilitate student behaviors (Kagan & Kagan, 2009-2015). Some of these management skills included managing: attention, noise, time, materials, and energy (Kagan, 2009). "Through cooperative management, there is a shift: Students aren't passive and controlled by the teacher demands; they plan an active role in learning, and also in managing their own cooperative behaviors" (Kagan & Kagan, 2009-2015, p. 8.2).

The climate and environment of a classroom were important for student success. Classbuilding and teambuilding helped to foster a safe and brain-friendly climate.

"When there is any threat at all, our students have narrowed cognition and become less able to engage in calm reflection, creative thinking, and learning" (Kagan, 2014, p. 2.7). Classbuilding, when implemented in a classroom, created a supportive community that cared about one another and teambuilding. When combined, classbuilding and teambuilding provided safety for students, which fostered an atmosphere for productive learning (Kagan & Kagan, 2009-2015).

When students worked cooperatively on a team, social skills were another desirable trait needed to support Kagan's method. Kagan and Kagan (2009-2015) identified several key social skills necessary for cooperative learning and life, including "active listening, building on others' ideas, conflict resolution skills, consensus seeking, patience, and more" (p. 5.9). The cooperative learning structures according to the Kagan Framework embedded social skill practice seamlessly into daily instruction, protecting mandated curriculum while building crucial life skills. Students acquired the essential social skills through the Kagan cooperative learning structures during mathematics and science, etc.

The last of the seven key concepts, PIES, identified by Kagan and Kagan (2009-2015) set apart the Kagan method from other researched, cooperative learning methods. Kagan and Kagan (2009-2015) stated, "Research, theory, and years of implementation have led us to conclude that consistent success depends on four basic principles" (p. 12.1). An example of a commonly used traditional instructional strategy was the Whole-Class Question-Answer. "In this arrangement, students vie for the teacher's attention and praise, creating negative interdependence among them" (Kagan, 1989-1990, p. 12). In contrast to the traditional Whole-Class Question-Answer strategy, the Kagan Cooperative

Structures adhered to a framework, represented by the acronym PIES: (P) positive interdependence, (I) individual accountability, (E) equal participation, and (S) simultaneous interaction (Kagan & Kagan, 2009-2015). PIES set apart the Kagan Cooperative Learning method from other researched methods. Kagan (2005) stated that an absence of PIES resulted in group work, as opposed to cooperative learning and "Group work does not consistently produce active engagement by all, so the gains of cooperative learning are not assured" (Kagan, 2005, para. 2). While researchers long agreed on many of the principles outlined by Kagan, including individual accountability and positive interdependence, Kagan's Framework included equal participation and simultaneous interaction, which produced different results in classrooms (Johnson & Johnson, n.d.; Kagan, 2005; Slavin, 2014). Critical questions developed by Kagan supported teachers when analyzing their lessons for the presence of PIES (Table 2).

Table 2

Kagan's Framework

Kagan Framework	Critical Questions for Analyzing Lessons	Outcomes for Students
Positive Interdependence	Does one doing well help others? Does task completion depend on everyone doing their part?	Students feel like they are on the same side. Students feel like they cannot complete the task alone. They need each other.
Individual Accountability	Must everyone perform in front of someone?	Students are unable to hide or become "free-riders."
Equal Participation	Is participation approximately equal either through time or turn?	Students feel that their ideas matter, giving them a sense of importance.
Simultaneous Interaction	What percentage of students are engaged (i.e., talking or writing) at any given moment?	Students feel engaged.

Note. Kagan & Kagan, 2009-2015, pp. 12.2-12.26.

Kagan (2005) further explained the PIES principles to help educators understand why these four basic principles set Kagan Cooperative Learning apart from other models. In addition, Kagan and Kagan (2009-2015) identified student outcomes that resulted from a presence of PIES during lessons (Table 2).

When the PIES principles were in place, cooperative learning looked dramatically different, and the active engagement of students resulted in higher achievement and improved social skills (Bilen & Tavil, 2015). Teachers trained by Kagan Professional Development developed purposeful lessons across all content areas that engaged all students with the cooperative learning structures, according to the Kagan Framework (Kagan, 1989-1990). Kagan and Kagan (2009-2015) stressed positive student achievement, and success was dependent on the proper implementation of the four basic principles. The researcher believed the fidelity of implementation with the Kagan Framework was key to ensure all students maximized the true potential of the Kagan Structures.

Fidelity of Implementation

Fidelity of implementation (FOI) referred to when educators delivered instruction as intended by a program or defined approach (Protheroe, 2008). During the era of NCLB, educational leaders clearly defined for teachers what to teach and when to teach, but often failed to define how to teach (Protheroe, 2008). Educational leaders lacked the understanding that programs or instructional methods implemented in school systems hinged on the fidelity of implementation, as intended by developers (Wallace, Blasé, Fixsen, & Naoom, 2008). The teacher in the classroom delivered the intervention and his or her actions needed to deliver the essential elements, as defined by the instructional

approach. "A program or approach that is effective in other settings can be ineffective in yours if the way it is being implemented takes it far away from its original design" (Protheroe, 2008, p. 40). Missett and Foster (2015) stated in addition to observation, the development of prescribed, well-defined fidelity instruments helped measure FOI to determine which essential components of the instructional method teachers implemented with fidelity. In addition, Wallace, Blase, Fixsen, and Naoom (2008) identified the importance of supporting the instruction of teachers by adding a coach to assist teachers as they learned new methods and skills. Consequently, Kagan (2006) recognized that FOI was crucial to student success and developed the Kagan Coaching Model to support implementation of cooperative learning structures, according to the Kagan Framework (PIES). According to Kagan (2006), the Kagan Coaching Model developed well-defined fidelity instruments to provide immediate feedback to teachers, and trainers (i.e., coaches) supported teachers as educators worked to implement the cooperative learning structures according to the Kagan Framework (Appendix A).

Gap in the Literature

The research of Johnson and Johnson (1989) concluded, "Cooperation promoted higher individual achievement and greater group productivity than did competition or individualistic efforts" (p. 170). Teachers used cooperative learning in a variety of ways, specifically 10 methods: Learning Together & Alone; Teams-Games-Tournaments; Group Investigation; Constructive Controversy; Jigsaw Procedure; Student Teams Achievement Divisions; Complex Instruction; Team Accelerated Instruction; Cooperative Learning Structures; and Cooperative Integrated Reading and Composition (Johnson et al., 2000). While cooperative learning improved academic achievement for

students, Johnson et al. (2000) stated these results did not mean all methods of cooperative learning "[would] be effective or equally effective in maximizing achievement" (p. 4).

According to Johnson et al. (2000) no studies compared the use of Cooperative Learning Structures (i.e., Kagan Structures) and academic achievement. However, Kagan (2014) published a study completed by a research team at State University of New York (SUNY) which examined the average effect size of the Kagan Cooperative Learning Structures, as related to student achievement at different grade-levels (i.e., third through eighth). Kagan (2014) indicated, "The average positive effect size for Kagan Structures was .92, an average gain from the 50th to the 82nd percentile" (pp. 3.34-3.35). While the SUNY study provided educators with evidence supporting previous research on cooperative learning, which supported achievement gains, it narrowed the focus to one structure (i.e., Numbered Heads Together). The narrow focus of the SUNY study led the researcher to conclude that further study to discover how the compounding use of multiple structures implemented in the classroom during an instructional period was necessary. Moreover, the researcher sought to better understand how teacher fidelity of implementation with cooperative learning structures according to the Kagan Framework (i.e., PIES) was related to student achievement, specifically vocabulary instruction at the elementary level. Through this examination, school districts could learn how the fidelity of implementation with cooperative learning structures according to the Kagan Framework as an instructional strategy translated to student achievement. As a result, the researcher believed, districts could then make informed decisions for precise implementation of instructional methods or programs.

Summary

For educators to engage and transform the 21st-century student, individuals who work in the field of teaching and learning must stop talking and provide opportunities for students to engage in well-structured, systematic academic conversations throughout the lesson (Campisi & Finn, 2011; Fisher & Frey, 2011; Pianta et al., 2007). These academic conversations allowed for responsive teaching and teachers provided meaningful feedback that met the individual needs of students. Research substantiated that the U.S. not only faced a Literacy Crisis, but also struggled to meet the needs of the 21st-century learner (Duncan, 2013; Zhao, 2015). Data and federal policy (i.e., NCLB) challenged educators to reflect on the instructional programs and practices implemented in districts to increase student achievement, and as students moved into the 21st century and lacked the necessary skills for the careers around them, educators realized that understanding the what (i.e., curriculum) and the how (i.e., instructional strategies) would become their greatest challenge (Zhao, 2015). While Common Core State Standards identified the what, or standards that all students should be taught, the how, or instructional strategies was more difficult for educators to decipher. However, researchers (Protheroe, 2008; Wallace et al., 2008) cautioned educators that while the what (i.e., standards) was clearly defined for educators, the teacher delivered the instruction using instructional strategies (i.e., how). The success of a program or instructional method hinged on the delivery of instruction that included the essential components of the program or instructional method.

Through the meta-analyses of Hattie (2012) and Marzano (2007), educators were able to make more informed decisions about which instructional strategies to implement, based on evidence shown to increase student achievement. Cooperative learning was an

instructional strategy supported through empirical research and proven to increase student achievement (Hattie, 2012; Marzano, 2007). One specific method of cooperative learning not previously researched was Kagan Cooperative Learning structures; thus the purpose of this study. This study investigated teacher fidelity of implementation with cooperative learning structures, according to the Kagan Framework related to pupils' academic performance during vocabulary instruction in an elementary school setting.

Chapter Three presents the data collection and analysis process, the design of the research, and details of the methodology used in this study. Chapter Four presents the results and analysis of the data, and Chapter Five summarizes the study and discusses recommendations for future research.

Chapter Three: Methodology

The purpose of this mixed-methods study was to investigate teacher fidelity of implementation with cooperative learning structures, according to the components of the Kagan Framework related to students' academic achievement and perceptions of cooperative learning in an elementary school setting. Fraenkel, Wallen, and Hyun (2012) stated a mixed-methods study allowed for a more thorough examination of the research questions, as opposed to the use of either a quantitative or a qualitative method alone. The quantitative facet allowed the researcher to compare the implementation of cooperative learning structures according to the Kagan Framework by three different teachers. Furthermore, the researcher compared student academic outcomes of traditional instructional practices (i.e., baseline) to the implementation of three Kagan cooperative learning structures (i.e., intervention) specifically aligned with students' abilities to acquire and retain new vocabulary terms. This type of study enabled the researcher to compare the student confidence levels and achievement scores to investigate if a possible relationship existed. Moreover, the researcher compared students' social validity scores and their achievement scores to investigate the possibility of a relationship. Furthermore, the qualitative facet allowed the researcher to examine teacher and student social acceptability of the Kagan structures in terms of: (a) the importance of its goals; (b) acceptability of its procedures; and (c) satisfaction with its outcomes. In Chapter Three, the researcher describes the setting and participants, instructional approach, data sources, data analysis, limitations of data analysis, and a summary of the chapter.

Research Questions and Null Hypotheses

The researcher investigated the following research questions:

Research Question 1: How does the fidelity of implementation with cooperative learning structures, according to the Kagan Framework, descriptively increase, decrease, or maintain student performance outcomes with Greek/Latin vocabulary words?

Research Question 2: How do teachers perceive the goals and outcomes associated with the use of cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

Research Question 3: How do students perceive the use of the cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

The null hypotheses tested for this mixed-methods study included:

Null Hypothesis 1: There is no difference in teacher fidelity of implementation of cooperative learning structures according to the Kagan Framework, measured by the fidelity of implementation checklists during intervention weeks.

Null Hypothesis 2: There is no difference in students' achievement scores (i.e., formative and/or summative Greek/Latin assessments) during baseline versus intervention instruction.

Null Hypothesis 3: There is no relationship between student confidence levels and student achievement scores (i.e., summative Greek/Latin assessments) during baseline and intervention weeks.

Null Hypothesis 4: There is no relationship between student achievement scores during intervention weeks and social validity scores, as measured by the social validity survey scores.

Participants and Settings

The researcher served as the Elementary English Language Arts (ELA) Curriculum Coordinator for the researched school district. The professional responsibilities of an ELA curriculum coordinator included the assurance of: (a) a viable ELA curriculum, (b) an implementation of the curriculum with fidelity, and (c) close monitoring of ELA instruction on pupil performance. As such, this study was highly compatible with the researcher's specific roles and responsibilities. To protect the integrity of the research, however, two proctors trained in Kagan's Framework assisted with data collection. The proctors (a) conducted classroom observations to measure the fidelity (i.e., accuracy) with which the cooperative learning structures according to the Kagan Framework were implemented, (b) conducted inter-scorer reliability checks on pupils' academic performance, and (c) administered social validity surveys. Prior to the study, the researcher and proctors observed all three teachers using each one of the cooperative learning structures referred to as fidelity checklists, as a calibration check (Appendix A). The researcher modified Kagan Coaching Checklists to monitor the fidelity of implementation of the Kagan Framework for each classroom teacher (S. Kagan, personal communication, 2014). After each observation, the researcher and the proctors discussed their observations and checklists, to increase the proctor's inter-scorer reliability.

For this study, the researcher chose the researched building based on socioeconomic status and academic performance. Data collection was conducted in one elementary school in the Midwest; identified as a Title I school where 50.7% of its student population were eligible for free and reduced lunch ("October 2014 Free &

Reduced," 2014, p, 1). The school was selected because it "ranked last among 13 ranked elementary schools" in the researched school district (School Digger, 2016, para. 1).

For the purpose of this study, three teachers and 48 students served as participants. The participating classrooms included three grade levels (third, fourth, and fifth) within the researched building because Greek/Latin words were only taught at these grade levels, in accordance with the district's word study curriculum ("English Language Arts Curriculum," 2013). The researcher recruited teachers with various levels of experience in using the cooperative learning structures, according to the Kagan Framework. The researcher identified three teachers from the district's lowest performing building as possible candidates for the study, emails were sent to each teacher requesting participation in the study. All three teachers agreed to participate and had varying amounts of prior experience with the cooperative learning structures, according to the Kagan Framework. Two teachers had no previous Kagan Cooperative Learning training, and one had attended five days of formal Kagan Cooperative Learning training. Each classroom contained a unique set of students with varied levels of academic achievement and socioeconomic status.

Instructional Approach

An A-B-A-B, single-case research design was used to examine the outcomes of the three Kagan structures, Flashcard Game, Quiz Quiz Trade, and Numbered Heads Together, on pupil performance, measured by formative and summative assessments and students' self-assessments of their word knowledge. Table 3 details the A-B-A-B research design of this study. Researchers described single-case research designs as rigorous methods for evaluating experimental effects, identifying evidence-based

practices, and monitoring the effectiveness of instructional practices (Horner et al., 2005; Kennedy, 2005; Kratochwill et al., 2010). Although designs described by these researchers varied, most required repeated, systematic measurement of pupil outcomes before, during, and after the provision of instructional practices (Kazdin, 2009). Single-case designs provided a strong basis for causal relationships and were widely used in applied and clinical settings in psychology and education (Kazdin, 2009). A single case design can be used with one pupil, a few, and/or an entire class or school "whose performance generates a single score per measurement period" (Horner et al., 2005, p. 166).

Baseline. In the study the researcher referred to the first experimental condition (A) as 'baseline,' which consisted of teachers using their normal or typical teaching practices to improve students' vocabulary skills. Target classrooms consisted of teachers who introduced the vocabulary words using the district provided Microsoft Power Point Presentation that provided both the definition of the words and used the words in context. The students were required to write the words three times each in cursive, write the definition of each word, and also construct sentences that demonstrated the meaning of each word (E. Allen, personal communication, 2014).

Baseline data served three important purposes. First, they described student performance under typical teaching conditions and informed the teacher if an academic problem existed (Fraenkel et al., 2012). Moreover, the nature of learning difficulties could be determined by noting how far the student fell below their peers' and whether problems were getting better, worse, or staying the same. Second, baseline data predicted future performance and whether existing teaching practices should continue (Fraenkel et

al., 2012). That is, if a student failed three consecutive vocabulary assessments, the prediction would be that he/she would fail a fourth quiz, if the same teaching practices were used. Finally, baseline data were compared to student performance under other teaching conditions (e.g., Kagan structures) to see if differences emerged, and if so, the nature of those differences (e.g, changes in magnitude, trend, and overlap) (Fraenkel et al., 2012; Horner et al., 2005). At the end of each baseline class, students participated in an independent formative assessment.

During the second baseline phase, teachers returned to their typical teaching practices. During each lesson the teachers introduced the vocabulary words using the district provided Microsoft Power Point Presentation that provided the definition of the words and also used the words in context. The students wrote words three times each in cursive, wrote the definition of each word, and constructed sentences that demonstrated the meaning of each word. The teachers did not place students into small heterogeneous learning groups and did not use any Kagan structures. Students did, however, take formative assessments independently after each baseline session. The second baseline phase mirrored the first baseline phase, no differences occurred.

Intervention. Prior to intervention, the researcher trained all teacher participants to use the three Kagan structures, according to the components of the Kagan Framework, during a brief (i.e., 60 minute) training session. Teachers, in turn, then prepared their students to use each Kagan structure as intended. The researcher modeled, provided guided practice opportunities for teachers and students, and provided positive and corrective feedback. In addition, the researcher observed and coached each teacher during the implementation of each Kagan structure, with their students prior to

intervention, to ensure students applied the procedures appropriately. The researcher provided teachers and students with positive and corrective feedback on their initial implementation prior to the study.

During intervention, all normal teacher-led instruction and student practice remained in place. Teacher-led instruction occurred for 15 minutes, and then students practiced their vocabulary for the final 15 minutes. However, instead of completing vocabulary work independently, students used one of the three Kagan Structures three-out-of-the-five days of instruction. At the end of each intervention session, students again completed their formative assessments independently.

Table 3

ABAB Research Design for Baseline and Intervention Weeks

	A - Baseline	B - Intervention	A - Baseline	B - Intervention
Monday	● Power Point to introduce words ● formative assessment 1	● Power Point to introduce words ● formative assessment 1	● Power Point to introduce words ● formative assessment 1	● Power Point to introduce words ● formative assessment 1
Tuesday	● formative assessment 2	● Flashcard Game ● formative assessment 2	● formative assessment 2	● Flashcard Game ● formative assessment 2
Wednesday	● formative assessment 3	● Quiz Quiz Trade ● formative assessment 3	● formative assessment 3	● Quiz Quiz Trade ● formative assessment 3
Thursday	● formative assessment 4	● Numbered Heads ● formative assessment 4	● formative assessment 4	● Numbered Heads ● formative assessment 4
Friday	● student confidence scale ● summative assessment	● student confidence scale ● summative assessment	● student confidence scale ● summative assessment	● student confidence scale ● summative assessment

During the final experimental phase, the teacher reintroduced the Kagan structures to students. Again, all normal teacher-led instruction and student practice remained in place, except students worked in small learning groups and used Kagan structures. Table 3 details the A-B-A-B research design.

Kagan Cooperative Learning Structures. The intervention weeks included three specific Kagan structures, Flashcard Game, Quiz Quiz Trade, and Numbered Heads Together, and provided students with structured interaction during guided practice of vocabulary. According to Kagan and Kagan (2009-2015) all three structures used in this study helped students acquire and retain facts and information (e.g., word meanings), or in other words, knowledge-building structures. These structures provided sufficient repetitions for the semantic memory system to acquire different word meanings (Davoudi & Mahinpo, 2012; Kagan, 2001b). In addition, all three structures tapped into different social skills, such as turn-taking, praising, coaching, showing patience, and active listening (Kagan, 2001b). As noted, all three Kagan structures used in this study were based on the Kagan Framework, which included four principles: (a) positive interdependence, (b) individual accountability, (c) equal participation, and (d) simultaneous interaction.

Flashcard Game. Students played the Flashcard Game in three rounds to improve the likelihood of success through repetition and corrective feedback (Kagan, 2009). Students utilized teacher-created flashcards with a question and/or picture on one side and the answer on the back. In pairs, students proceeded through three rounds in an attempt to successfully master the content. One student was designated the tutor, and the other student was designated the tutee. As the rounds progressed, the level of support

from partners decreased. Round 1 included the maximum cues from the tutor: (1) showing and reading the question, (2) showing and reading the answer, and (3) re-asking the question, requiring the tutee to answer the question from memory. Next, round 2 included few cues from the tutor: (1) showing the question and (2) asking the tutee to answer the question from memory. Finally, round 3 included no cues, the tutor simply asked the tutee each question without showing the flashcards, and the tutee had to answer the question from memory. Flashcard Game's approach was multimodal in that it provided not only the visual stimuli, but also auditory stimuli. Immediate feedback from the tutor provided the tutee the opportunity to revise thinking about content immediately. Typically, in classrooms where worksheets were the primary way to assess a student's understanding of content, teachers delayed feedback to the student, resulting in potential misconceptions of content.

Quiz Quiz Trade. Quiz Quiz Trade (QQT) offered students an opportunity to repeatedly quiz a partner, be quizzed by a partner, and then trade cards. To begin with, the teacher prepared a set of cards with a question on one side and the answer on the back. The teacher then directed students to 'stand up, put a hand up, and pair up' with a partner (Kagan, 2014). Next, students quizzed each other using the cards. If students were unsure about the answer or needed support, partners coached each other. Since students worked in pairs and did not have to respond in front of the whole class, the potential for embarrassment lessened (Kagan, 2014). In addition, the major muscle movement of QQT provided nourishment to the brain as students moved around the classroom (Kagan, 2014). QQT, like Flashcard Game, was a multimodal structure that

provided visual and auditory stimuli resulting in immediate feedback to support mastery of specified curriculum standards.

Numbered Heads Together. Numbered Heads Together (NHT) had four primary components: (a) small heterogeneous learning teams; (b) structured roles within teams; (c) interdependent group contingencies; and (d) recognition for collective student effort. Initially, teachers placed students in small heterogeneous learning teams, preferably with four members, specifically by gender, ethnicity, and achievement (Kagan & Kagan, 2009-2015). Each team included at least one high, average, and lower performing student who sat in desk clusters during teacher-led instruction. Within teams, students followed structured roles. First, teachers assigned numbers from one to four. Next, teachers provided all students with dry erase boards (i.e., white boards), markers, and a cleaning cloth. When teachers directed questions to the class (e.g., what is the meaning of the root word nav?), students wrote individual responses and 'belly upped' their boards (i.e., held them close to their stomach). When all students had written responses, students turned over their boards, stood up and put their 'heads together' (i.e., share information, tutoring if necessary), and agreed on the best team response. Students also ensured that all team members knew the answer(s) and then sat down and erased their boards.

Teachers randomly called a number from one to four (e.g., spins a spinner) and all those numbered students stood and wrote their answers on the white boards. The teacher asked the standing students to show their white boards and provided positive and/or corrective feedback, followed by students who gave team cheers for responses (Kagan & Kagan, 2009-2015). Students wiped their boards clean until another question was asked

and the same process was repeated. Teachers asked students to use information to solve problems, compare and contrast ideas, provide applications, and/or analyze and summarize knowledge. For this study, teachers used the Kagan NHT Software to support teachers' implementation of the steps of the structure.

Data Sources and Analysis

Fidelity checklists. The researcher used a modified Kagan Coaching Checklist to measure the fidelity of implementation for each classroom teacher during intervention weeks (S. Kagan, personal communication, 2014). The checklists outlined the procedural steps necessary for each of the three cooperative learning structures and aligned to the Kagan Framework. When observing, proctors checked boxes next to each item on the checklist when observed during instruction during intervention weeks, and left empty if not observed. During intervention weeks, proctors observed 100% of the sessions and completed fidelity of implementation checklists during each observation. Each checklist had a pre-determined number of items on the checklist. After all observations were completed, the researcher calculated the percentage of observed implementation for each session by dividing the number of checked items on the checklist by the number of total possible items. This yielded a percentage of observed implementation score for each teacher during each session. To further analyze this data the researcher used an analysis of variance (ANOVA) to compare the means of the three teachers' implementation of fidelity simultaneously (Bluman, 2013). The ANOVA was completed by representing an observed/checked item as a 1 and an item not observed/not checked as a 0. The *p*-value, or probability value, showed the strength of the evidence and was a number between 0 and 1 (Bluman, 2013). A small p-value ≤ 0.05 indicated strong evidence to reject the null

hypothesis (Bluman, 2013). In this test, the researcher used a 95% confidence level for the statistical analysis.

Content achievement. Formative and summative assessments measured content achievement. The researcher developed quick formative assessments that measured student understanding of six words containing Greek/Latin roots. The researcher chose Greek/Latin roots as a valid measure of content achievement, because research showed Greek/Latin roots were an important component of vocabulary knowledge (Invernizzi & Palmer, 2015). Invernizzi and Palmer (2015) stated understanding of how the Latin and Greek roots, prefixes, and suffixes combined to make new and related words increased students' vocabulary and reading comprehension. Moreover, Invernizzi (2015) concluded students with an awareness of Greek and Latin roots were more able to make connections between pronunciations, spellings, and meanings of new words (as cited in Padak, Newton, Rasinski, & Newton, 2008).

The assessments measured student knowledge of word meanings and how different prefixes and suffixes could change those meanings. All assessments followed a standardized length and format, and the researcher created the assessments prior to the start of the study. This minimized the possibility of experimenter bias. Classroom teachers administered formative assessments to students at the end of each lesson on Monday through Thursday. The researcher used selected response questions on the formative assessments (e.g., Selected Response — Beth had to restrain herself from eating the entire chocolate cake! In this sentence the word restrain means (a) build knowledge (b) push together (c) pull apart or (d) hold back).

The researcher also used weekly summative assessments to evaluate a student's understanding of the six words containing Greek/Latin roots that students studied throughout the week. A team of district curriculum writers created assessments and evaluated word meaning and how prefixes and suffixes could change a word's meaning. Summative Assessments were administered to students at the end of each week on Friday, which followed four days of instruction. A combination of selected response and constructed response questions (e.g., Constructed Response — Look at the word destruction. A tornado can cause lots of destruction in a matter of minutes. The prefix de- means reversal or removal. Using what you know about the root word 'struct,' what does the word destruction mean?) were used in developing these assessments.

At the end of each experimental session, students completed a 10-item vocabulary quiz independently. Students' written responses were scored as either correct or incorrect, and a daily percentage correct was calculated by dividing the number of correctly defined vocabulary words by the total number of correct and incorrect, times 100. This yielded a percentage correct score for individual students, and the researcher aggregated the data into daily class mean scores. This data was displayed using simple line graphs with the dependent variable (i.e., percent correct) plotted on the vertical axis, and study sessions were recorded on the horizontal axis (Fraenkel et al., 2012).

The researcher plotted student data by experimental phase (e.g., baseline/non-treatment and intervention/treatment) and analyzed using specific rules of visual analysis (Horner et al., 2005). More specifically, the researcher analyzed students' performance differences in terms of changes in (a) level, (b) trend, and (c) variability (Horner et al., 2005). In addition, immediacy of performance changes were noted from phase-to-phase

(Horner et al., 2005). The researcher anticipated that students would increase their use of vocabulary terms while working with Kagan structures during typical teacher-led instruction. Moreover, the researcher predicted student academic performance would change when, and only when, the intervention was introduced and/or withdrawn, would occur immediately, or with minimal overlap in student academic performance across adjacent experimental conditions (Horner et al., 2005). In addition to the visual analysis of the student achievement scores, the researcher used the summative scores to complete a *t*-test comparison of two dependent samples. "Samples are considered to be dependent samples when the subjects are paired or matched in some way" (Bluman, 2013, p. 488). The summative scores summarized the full week of learning for students; therefore, the researcher felt compelled to ignore the formative scores for this statistical analysis. The researcher paired the summative scores of students to compare baseline and intervention summative scores. The researcher predicted during intervention weeks the mean of the summative assessment scores would be higher when compared to baseline weeks.

Student confidence. Students participated in confidence measures targeted at evaluating their perceptions of knowledge of specific terminology. The confidence level survey was modified from Marzano and Pickering (2005) and asked students to rank their perceptions of knowledge on a 4 point scale: "4 = I understand even more about the term than I thought; 3 = I understand the term and I'm not confused about any part of what it means.; 2 = I am a little uncertain about what the term means, but I have a general idea.; 1 = I am very uncertain about the term. I really don't know what it means" (p. 32).

To conduct the analysis the researcher contrasted students' self-assessments across experimental conditions. The researcher compared student perceptions of word

knowledge to the overall achievement with the vocabulary words using a Pearson Product Moment Correlation Coefficient (PPMCC) analysis (ρ correlation coefficient). The researcher used a PPMCC for analyzing the data points during baseline and intervention weeks for Teachers A, B, and C. Bluman (2013) stated, "If there is a strong positive linear relationship between the variables the *r*-value will be close to +1, and if there is a strong negative linear relationship between the variables the *r*-value will be close to -1" (p. 533). The researcher expected student confidence levels to indicate strong relationships with their academic performance during baseline and intervention weeks (Appendix B).

Student social validity measure. The researcher developed and used a modified social validity survey (L. Maheady, personal communication, 2014). The acceptability and satisfaction of the treatment outcomes were assessed anonymously and independently using the social validity survey. Immediately after the final study session, students completed an 8-item, 5-point, Likert-type survey that rated the intervention in terms of (a) the importance of its goals; (b) acceptability of its procedures; and (c) satisfaction with its outcomes (Appendix C). Student ratings were aggregated and presented in tabular fashion as the percentage of responses to individual items. The researcher compared student perceptions of cooperative learning structures obtained from the surveys to their overall achievement with the vocabulary words using a PPMCC. Moreover, the researcher utilized open coding to find themes from the responses by students. The researcher anticipated students would find Kagan structures to be socially acceptable and fun.

Teacher social validity measure. The researcher developed and used a modified social validity survey (L. Maheady, personal communication, 2014). The acceptability and satisfaction of the treatment outcomes were assessed anonymously and independently using the social validity survey. Immediately after the final study session, teachers completed an 8-item, 5-point, Likert-type survey that rated the intervention in terms of (a) the importance of its goals; (b) acceptability of its procedures; and (c) satisfaction with its outcomes (Appendix C). The researcher aggregated and presented teacher ratings in tabular fashion as the percentage of responses to individual items.

To examine teacher perceptions of the cooperative learning structures according to the Kagan Framework, the researcher created exit interviews (Appendix D), conducted by one of the proctors. Moreover, the researcher utilized open coding to find themes from the surveys and exit interviews. The researcher anticipated teachers would find Kagan structures to be socially acceptable and help increase student achievement. Table 4 summarizes the research design of the study, including the research questions, hypotheses, independent variable, dependent variable, data source, and data analysis.

Table 4

Summary of Research Design

Research Question	Null Hypothesis	Independent Variables	Dependent Variables	Quantitative Qualitative	Data Source & Data Analysis
RQ1	$H_0$1	Teacher practice of cooperative learning structures	Teacher fidelity percentages	Quantitative	Fidelity Checklists ANOVA
RQ1	$H_0$2	Intervention versus Baseline	Student achievement scores	Quantitative	Vocabulary Assessment Line graphs T-test
RQ1	$H_0$3	Student Achievement Scores	Student Confidence Levels	Quantitative	Student Confidence Scores and Vocabulary Assessments PPMCC
RQ1	$H_0$4	Student Achievement Scores	Student Social Validity Scores	Quantitative	Vocabulary Assessments and Student Surveys PPMCC
RQ2				Qualitative	Teacher Surveys and Exit Interviews Open Coding
RQ3				Qualitative	Student Surveys Open Coding

Summary

Researchers believed that cooperative learning increased student achievement (Johnson & Johnson, 1989; Kagan, 2005; Slavin, 1995). However, the researcher believed additional research on cooperative learning structures, according to the Kagan Framework, could add to the extant research on cooperative learning. The researcher implemented cooperative learning structures according to the Kagan Framework in three different classrooms during vocabulary instruction. All three classroom teachers received training on the cooperative learning structures according to the Kagan Framework, and proctors observed all three teachers, paying close attention to the fidelity of implementation, by way of checklists. The researcher used the research design in this study to investigate teacher fidelity of implementation with cooperative learning structures, according to the Kagan Framework, related to students' academic achievement and perceptions of cooperative learning during vocabulary instruction in an elementary school setting.

The researcher used a mixed-methods approach to obtain student achievement scores, as well as feedback from students and teachers about the social validity of cooperative learning structures. Table 4 details the research design used for this study. Chapter Four discusses the results acquired from this mixed-methods study. Chapter Five summarizes the study and discusses recommendations for future research.

Chapter Four: Results

The purpose of this study was to investigate teacher fidelity of implementation with cooperative learning structures, according to the Kagan Framework related, to students' academic achievement and perceptions of cooperative learning. This study employed a mixed-method approach incorporating both quantitative and qualitative data. Analysis began with a description of variations in implementation of cooperative learning, based on the fidelity checklists completed during the observations. In addition, the researcher included an explanation of the differences in mean achievement scores during baseline and intervention weeks, a correlation of relevant data points, and a discussion of teacher interviews, surveys, checklists, observations, and student surveys. The researcher presented quantitative findings, according to the null hypotheses, followed by the qualitative findings presented by the research questions.

Results: Research Questions and Null Hypotheses

Research Question 1: How does the fidelity of implementation with cooperative learning structures, according to the Kagan Framework, descriptively increase, decrease, or maintain student performance outcomes with Greek/Latin vocabulary words?

Null Hypothesis 1. There is no difference in teacher fidelity of implementation of cooperative learning structures according to the Kagan Framework, measured by the fidelity of implementation checklists during intervention weeks.

The researcher compared Teachers A, B, and C, according to the fidelity checklists. The fidelity checklists indicated whether teachers' classroom practice reflected implementation of cooperative learning structures in accordance with the Kagan Framework. The researcher used both descriptive and inferential tests to determine

potential differences in teachers' implementation of cooperative learning. The data in Table 5 show the number of attributes each teacher included, out of the total possible components of the Kagan Framework (represented as a percentage), while implementing cooperative structures.

Table 5

Analysis of Fidelity Checklists for Teachers A, B, and C

Cooperative Strategy	Time of Implementation	Teacher A	Teacher B	Teacher C
Flashcard Game	Week 10	91.7%	100%	66.7%
Quiz Quiz Trade	Week 10	83.3%	100%	75%
Numbered Heads Together	Week 10	75%	87.5%	87.5%
Flashcard Game	Week 20	41.7%	100%	91.7%
Quiz Quiz Trade	Week 20	83.3%	100%	91.7%
Numbered Heads Together	Week 20	75%	100%	87.5%
Total Fidelity of Implementation Percentage	Overall	75%	98.4%	82.8%

As shown in Table 5, observable differences existed in the fidelity of implementation, according to the components of the Kagan Framework, in Teacher A, B, and C's classrooms. Teacher B was more consistent when implementing the procedures of the Kagan Framework, while Teachers A and C had inconsistent implementation of the Kagan Framework. Teacher B nearly always implemented cooperative learning structures according to the components of the Kagan Framework. For example, five out of the six sessions, Teacher B implemented a structure with 100% fidelity (Table 5, Column 4). The only time Teacher B did not implement a structure with complete fidelity, observation indicated he/she used cooperative approaches closely aligned with the Kagan Framework (87.5%).

Teachers A and C did not implement cooperative learning structures according to the Kagan Framework. Moreover, both teachers were inconsistent in their inclusion of the necessary components of the Kagan Framework in their approach to cooperative learning. Teacher C varied from 66.7% to 91.7% in ability to implement cooperative learning according to the Kagan Framework (Table 5, Column 5). Teacher A was more inconsistent and deviated from the Kagan Framework. For example, during Week 20 when he/she used the Flashcard Game, he/she included less than half (41.7%) of the essential elements of the Kagan Framework (Table 5, Column 3). On two occasions, Numbered Heads Together, he/she was only able to implement cooperative learning with 75% fidelity. Only one occurrence out of the six weeks did he/she include nearly all of the vital elements of the Kagan Framework (91.7%).

The researcher used the ANOVA to investigate Null Hypothesis 1 and compared whether the number of components of the Kagan Framework each teacher included in their approaches to cooperative learning varied from a statistically important perspective. Table 6 displays the differences in Teacher A, B, and C's fidelity of implementing cooperative learning structures, according to the Kagan Framework. The differences observed between Teacher A, B, and C's means of implementation, according to the fidelity checklists, were statistically significant (Table 6, Row 1 and Column 6).

Table 6

ANOVA Test Teachers A, B, and C Fidelity of Implementation

Source of Variation	*SS*	*df*	*MS*	*F*	*p-value*	*F crit*
Between Teachers	1.8229	2	0.9115	7.797	0.0006	3.044
Within Teachers	22.0937	189	0.1169			
Total	23.9166	191				

Note: *P <0.05.

As stated in Chapter Three, a small *p*-value ≤ 0.05 indicated strong evidence to against the null hypothesis (Bluman, 2013). The researcher noted a *p*-value of 0.006, less than 0.05, and confirmed a rejection of Null Hypothesis 1.

The researcher conducted a post hoc analysis that examined the difference of means between each teacher, using the Scheffé test.

Table 7

Scheffé Test: Teachers A, B, and C Fidelity of Implementation

Teachers	F_s	F_{crit}	Statistical Significance
Teacher A vs. Teacher B	15.0371	6.087	Yes
Teacher A vs. Teacher C	1.6707	6.087	No
Teacher B vs. Teacher C	6.6831	6.087	Yes

Note. *P <0.05.

As shown in Table 7, the Scheffé test revealed a statistically significant difference between the fidelity of implementation for Teachers B and A and between Teachers B and C. There was no significant difference in mean scores between Teachers A and C.

Null Hypothesis 2. There is no difference in students' achievement scores (i.e., formative and/or summative Greek/Latin assessments) during baseline versus intervention instruction.

To test Null Hypothesis 2 to measure whether differences in approaches to cooperative learning influenced student achievement during baseline and intervention weeks, the researcher conducted a *t*-test to determine if statistically significant differences occurred overall for the summative assessments.

Table 8 shows the findings for the *t*-test comparing the baseline weeks (5 and 15) to the intervention weeks (10 and 20). Differences existed in the means and standard deviations when comparing the baseline and intervention weeks (M = 77.36 vs. M =

82.29, respectively). The difference between the baseline and intervention weeks was statistically significant (*t* [48] = -2.188, p = 0.0168), thus, the researcher rejected Null Hypothesis 2. Students' overall achievement was higher during intervention weeks compared to the baseline weeks.

Table 8

Comparison of Achievement Scores--Baseline Versus Intervention Weeks

Instructional Approach	M	SD	T-Test, Cohen's d effect size
Baseline	77.36	14.85	- t (48) = -2.188, p < 0.05, d = 0.322
Intervention	82.29	15.74	

Note: *P <0.05

Post-Hoc Analysis. To explore differences in approaches to cooperative learning and student achievement during baseline and intervention weeks, the researcher compared summative student scores among the three teachers. The researcher compared Teachers A, B, and C to determine whether statistically significant differences existed in student scores on the summative assessments. Table 9 shows the means and standard deviations for the students' scores for each teacher during baseline and intervention weeks. Differences existed in student scores during baseline and intervention weeks. As shown in Table 9, students in Teacher B's class scored significantly better during intervention compared to baseline weeks. Students in Teacher B's class scored higher when learning using the intervention versus the baseline approach during both instructional time periods (14 points and 15 points higher achievement, respectively) (Table 9, Rows 3 and 4, Column 4).

In both Teacher A and Teacher C's classes, the results were inconsistent. For example, in Teacher A's classroom for comparison of Week 5 to 10 students performed 16 points higher on the baseline weeks as opposed to intervention weeks (Table 9, Row

1, Column 3). For comparison of Week 15 to 20 the students in Teacher A's classroom performed 5 points higher on the intervention as opposed to baseline weeks (Table 9, Row 2, Column 3). There was not a generalizable pattern in student performance when comparing intervention and baseline weeks. Similarly, Teacher C's class performance for baseline and intervention weeks also lacked consistency. For example, in Teacher C's classroom students performed 6 points higher on the intervention weeks as opposed to baseline weeks for comparison of Week 5 to 10 (Table 9, Row 5, Column 3). For comparison of Week 15 to 20 the students in Teacher C's classroom performed 3 points higher on the baseline as compared to intervention weeks, demonstrating no reliable pattern of student achievement (Table 9, Row 6, Column 3).

Table 9

Post Hoc Analysis of Student Achievement in Teacher A, B, and C's Classrooms

Teacher	Comparison	M (SD)	T-test, Cohen's d effect size
A	B_5 vs. I_{10}	84.1 (18.9) vs. 68.2 (26.3)	t (17) = 2.833, p = 0.994, d = 0.694
	B_{15} vs. I_{20}	72.04 (9.63) vs. 77.51 (14.39)	-t (14) = -1.894, p < 0.05, d = 0.45*
B	B_5 vs. I_{10}	73 (17.54) vs. 86.74 (15.71)	-t (20) = -3.469, p < 0.05, d = 0.83*
	B_{15} vs. I_{20}	68.48 (23.33) vs. 87.39 (15.57)	-t (17) = -4.602, p < 0.05, d = 0.953*
C	B_5 vs. I_{10}	81.2 (16.59) vs. 87.6 (15.18)	-t (20) = -1.735, p = 0.0495, d = 0.402*
	B_{15} vs. I_{20}	81.43 (13.51) vs. 78.54 (18.37)	t (20) = 0.851, p = 0.7974, d = 0.179

* *Note:* B = Baseline $_{Week}$ and I = Intervention $_{Week}$, *p < 0.05.

To gain greater insight, the researcher used a visual analysis to explore the differences in student achievement during the period of instruction (1 week). Figures 1

through 3 graphically show trends in student achievement during the period of instruction for each teacher (i.e., A, B, and C).

Figure 1 displays the results of Teacher B. The initial baseline, when using traditional teaching practices, resulted in a mean score of 77%. When the intervention of cooperative learning structures was introduced a slight decrease in student achievement scores (M= 73%) occurred. A reversal to baseline conditions resulted in decreasing the initial baseline (M = 72%). Subsequent introduction of the intervention of cooperative learning structures produced an increase in student achievement (M = 75%).

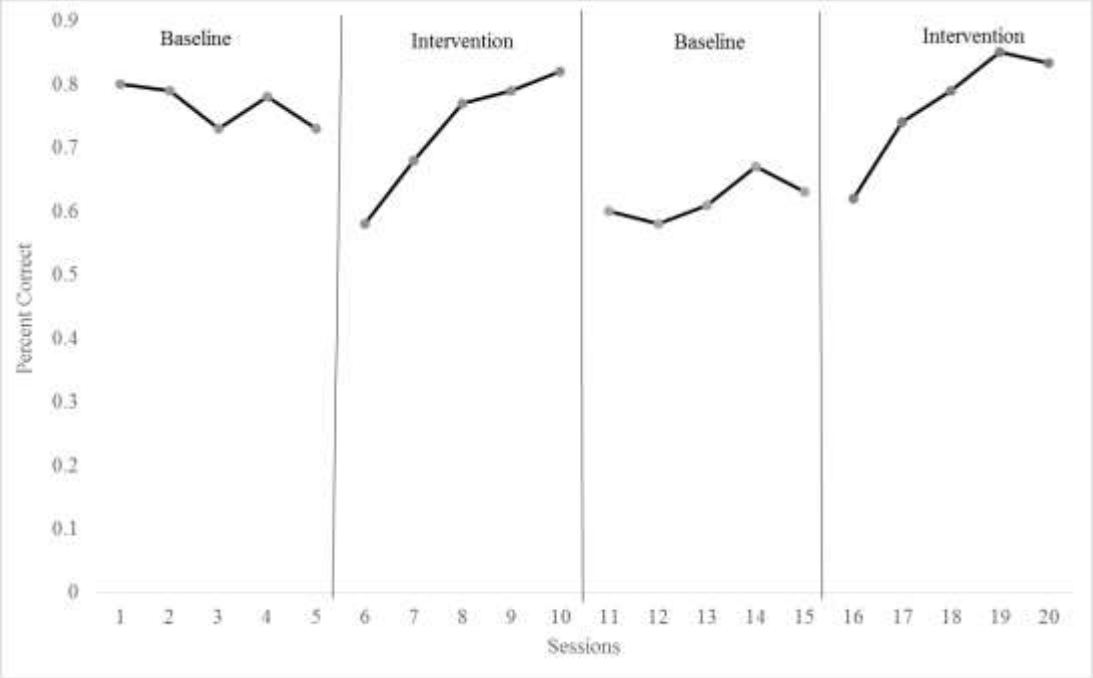

Figure 1. Baseline vs. intervention for Teacher B.

Figure 2 displays the results of Teacher A. The initial baseline (M = 84%) was higher prior to the introduction of the intervention of cooperative learning structures (M = 63%). A reversal to baseline conditions resulted in decreasing the initial baseline (M = 71%). Subsequent introduction of the intervention of cooperative learning structures produced another decrease in student achievement (M = 66%).

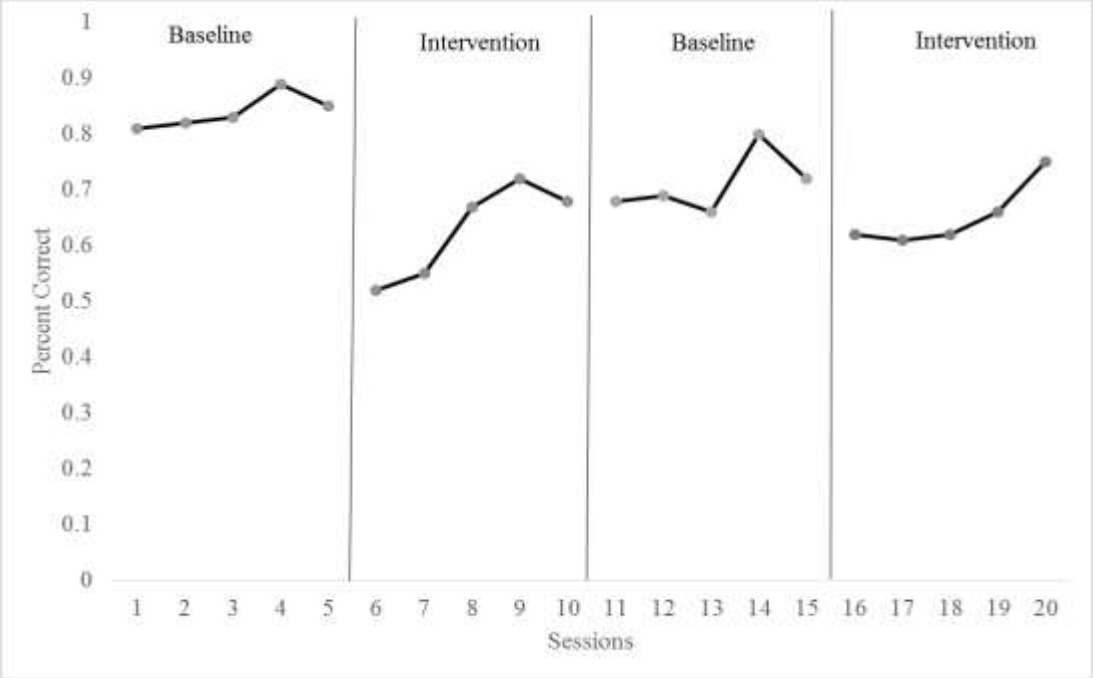

Figure 2. Baseline vs. intervention for Teacher A.

Figure 3 shows the results for Teacher C. The initial baseline (M = 71%) was lower prior to the introduction of the intervention of cooperative learning structures (M = 74%). A reversal to baseline conditions resulted in increasing the initial baseline (M = 83%). Subsequent introduction of the intervention of cooperative learning structures produced similar results in student achievement (M = 83%).

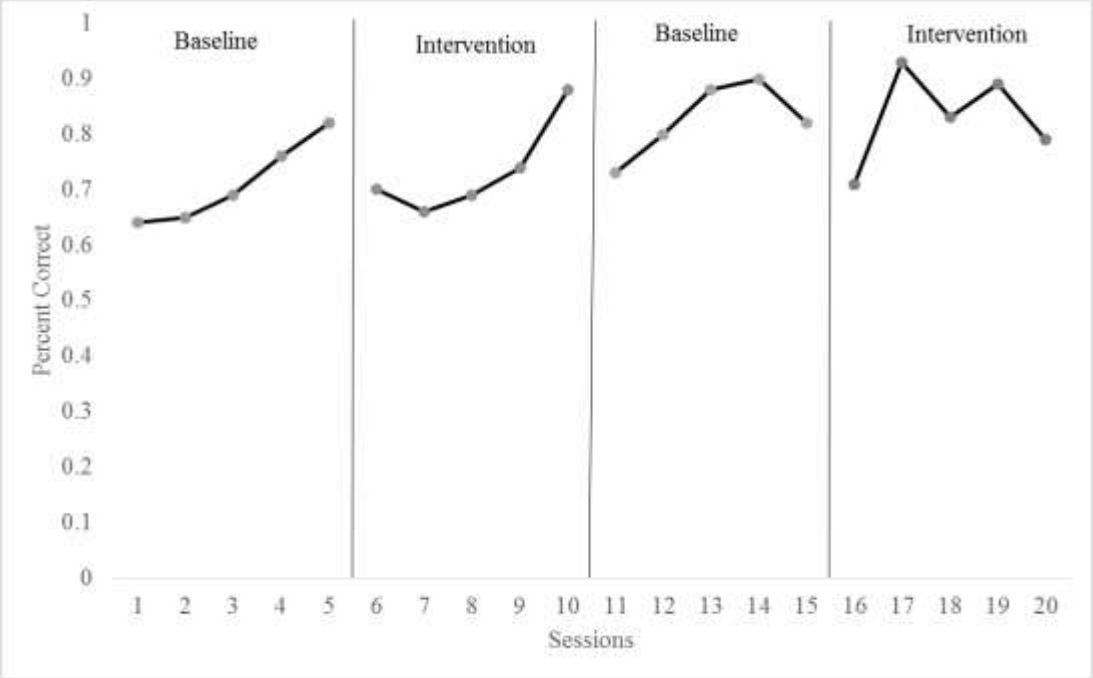

Figure 3. Baseline vs. intervention for Teacher C.

Null Hypothesis 3. There is no relationship between student confidence levels and student achievement scores (i.e., summative Greek/Latin assessments) during baseline and intervention weeks.

The researcher measured student confidence levels and achievement scores on summative assessments using a PPMCC to analyze for a possible relationship between the two variables. The data in Table 10 show the correlations between student confidence level and achievement by teacher. Table 10 reports results for each of the three teachers during baseline and intervention weeks.

As shown in Table 10, the correlation between students' levels confidence levels and their achievement varied from teacher to teacher and for the instructional approach and week. In Teacher B's classroom, students' confidence in their knowledge closely correlated to achievement. Regardless on the instructional approach implemented (e.g. baseline and intervention), students confidence was correlated to their achievement. In

other words, there was strong agreement between what students thought they knew and their actual achievement.

Table 10

Correlations Between Student Confidence Level and Achievement by Teacher

Teacher	Comparison	PPMCC ρ Correlation Coefficient
A	B_5	r(15)=0.622, p < 0.05*
	I_{10}	r(14)=0.513, p < 0.05*
	B_{15}	r(11)=0.258, p = 0.3947
	I_{20}	r(11)=0.095, p = 0.7575
B	B_5	r(18)=0.680, p < 0.05*
	I_{10}	r(14)=0.562, p < 0.05*
	B_{15}	r(15)=0.752, p < 0.05*
	I_{20}	r(13)=0.0285, p < 0.05*
C	B_5	r(18)=0.231, p = 0.3271
	I_{10}	r(18)=0.098, p = 0.6810
	B_{15}	r(17)=0.181, p = 0.4584
	I_{20}	r(17)=0.565, p < 0.05*

* *Note.* B = Baseline $_{Week}$ and I = Intervention $_{Week}$, *p < 0.05.

For the teachers A and C, less generalizable patterns emerged considering student confidence levels and their academic achievement. In other words, students did not have accurate estimates of their knowledge (confidence) and their actual content achievement, regardless of the instructional approach. In Teachers A's class, student confidence and achievement was correlated for the baseline (week 5) and intervention (week 10), but not during the baseline (15) or intervention (week 20). In Teacher C's class, student confidence and achievement was only correlated on one occasion, when the teacher used the intervention approach on week 20 (Table 10, column 3, row 12).

The researcher used a PPMCC for analyzing the data points during baseline and intervention weeks for Teachers A, B, and C. The researcher visually displayed the

relationship between the independent variable (i.e., student confidence levels) and the dependent variable (i.e., student achievement scores) using scatter plots for each of the baseline and intervention weeks for Teacher A, B, and C. Figures 4 through 7 display the results from Teacher B's scatter plots. The researcher observed a strong correlation between student confidence levels and student achievement scores for all baseline and intervention weeks.

Figure 4 displays the results of Week 5-Baseline for Teacher B. The scatter plot reveals a visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and $r = 0.680$ indicated a strong correlation (*c.v.* = 0.444).

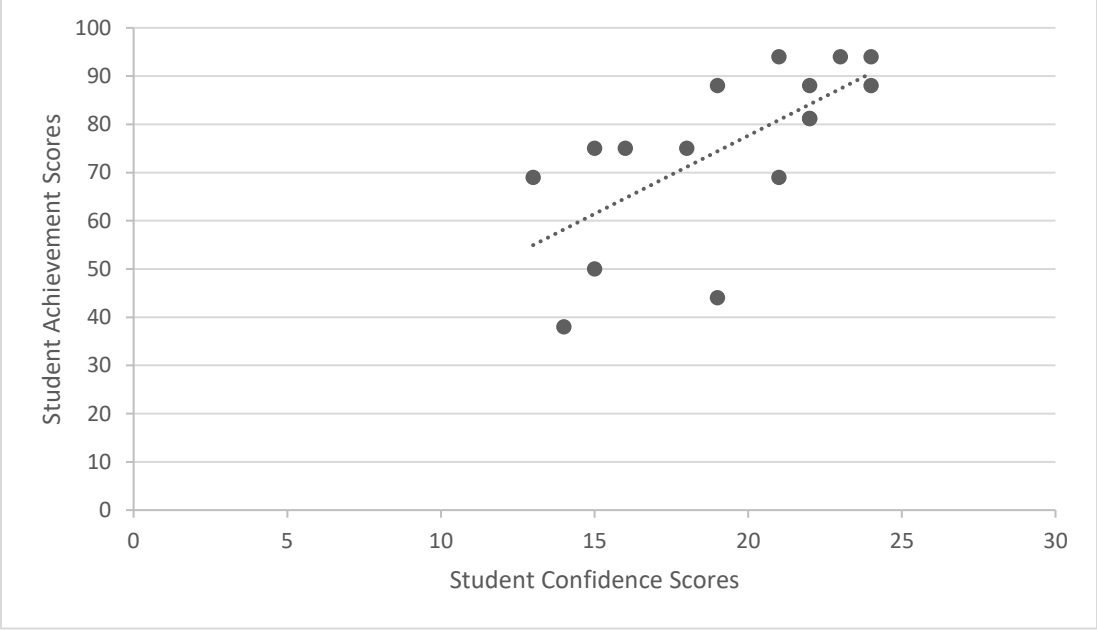

Figure 4. Week 5 for Teacher B. PPMCC for student achievement scores and student confidence sores. $N = 20$; $r = 0.680$; $p<.0001$

Therefore, the null hypothesis was rejected and there was evidence to support a significant relationship between student confidence levels and student achievement scores during week 5 of baseline instruction for Teacher B.

Figure 5 displays the results of Week 10-Intervention for Teacher B. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and $r = 0.562$ indicated a strong correlation (*c.v.* = 0.468). Therefore, the null hypothesis was rejected and there was evidence to support a significant relationship between student confidence levels and student achievement scores during week 10 of intervention instruction for Teacher B.

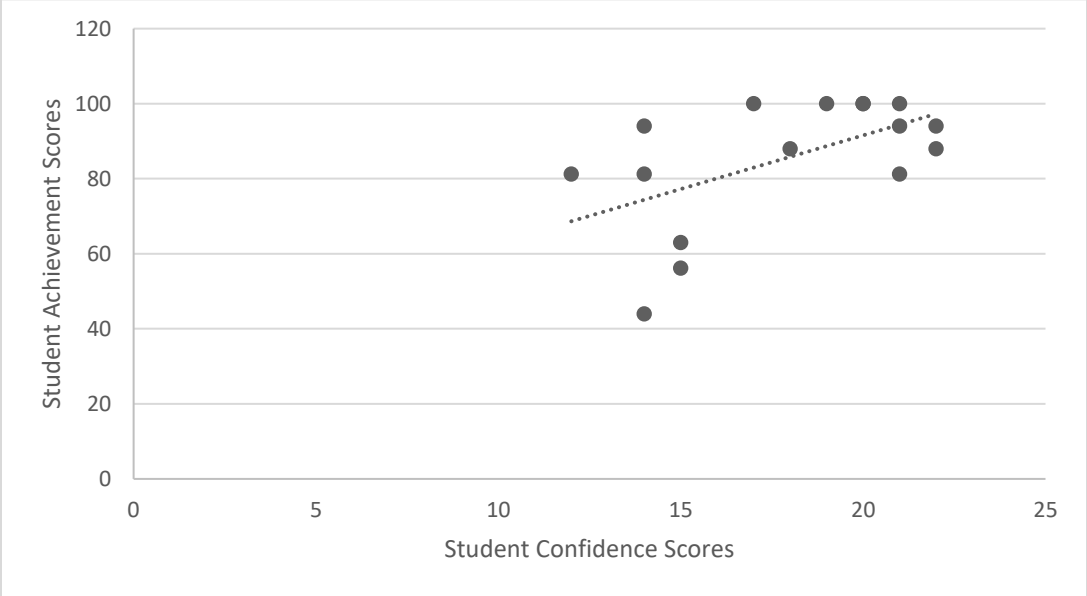

Figure 5. Week 10 for Teacher B. PPMCC for student achievement scores and student confidence sores. $N = 16$; $r = 0.562$; $p = 0.024$

Figure 6 displays the results of Week 15-Baseline for Teacher B. The scatter plot reveals the visual relationship between student confidence levels and student achievement

scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and $r = 0.752$ indicated a strong correlation (*c.v.* = 0.456). Therefore, the null hypothesis was rejected and there was evidence to support a significant relationship between student confidence levels and student achievement scores during Week 15 of baseline instruction for Teacher B.

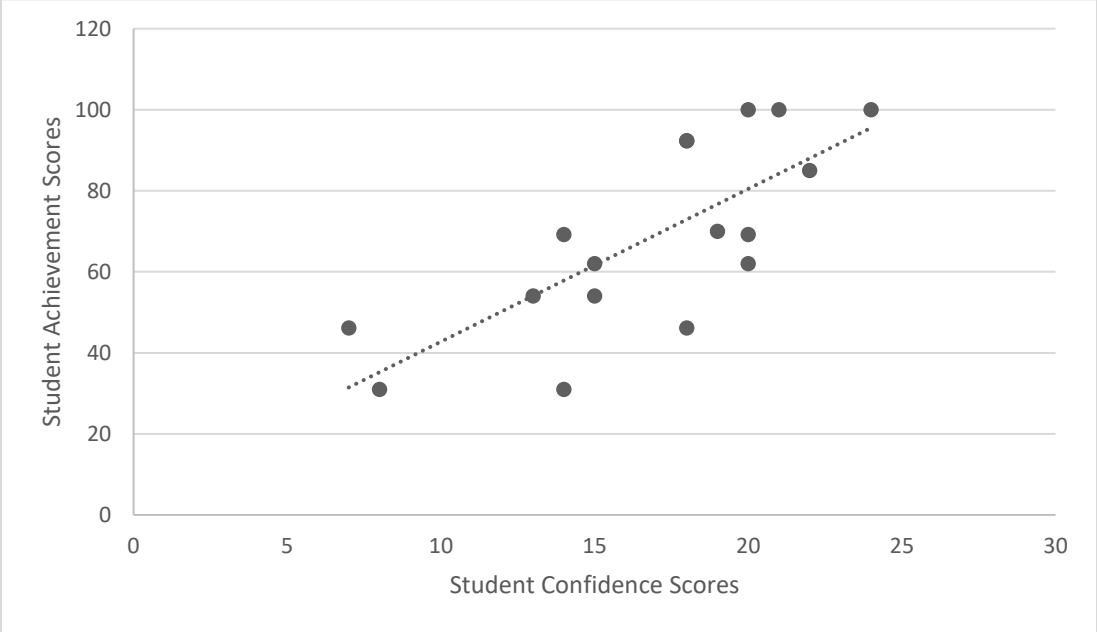

Figure 6. Week 15 for Teacher B. PPMCC for student achievement scores and student confidence sores. $N = 17$; $r = 0.752$; $p = 0.0005$

Figure 7 displays the results of Week 20-Intervention for Teacher B. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and $r = 0.564$ indicated a strong correlation (*c.v.* = 0.482). Therefore, the null hypothesis was rejected and there was evidence to support a

significant relationship between student confidence levels and student achievement scores during Week 20 of intervention instruction for Teacher B.

While the researcher observed a strong correlation between student confidence levels and student achievement scores with Teacher B, Teachers A and C displayed inconsistent results throughout the baseline and intervention weeks.

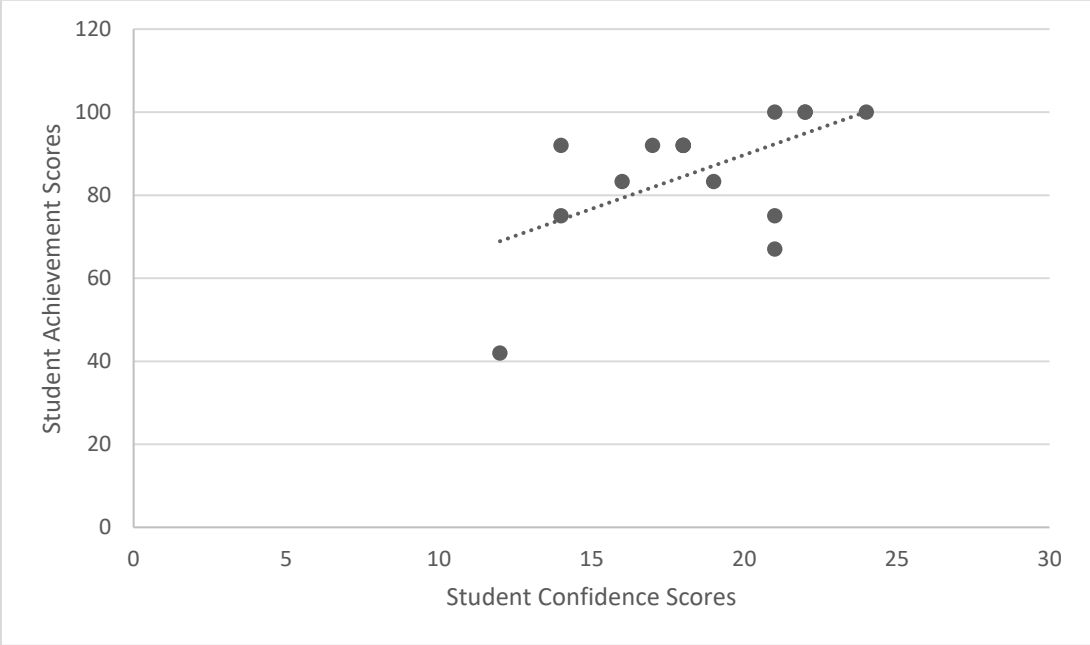

Figure 7. Week 20 for Teacher B. PPMCC for student achievement scores and student confidence sores. $N = 15$; $r = 0.564$; $p = 0.0285$

Figures 8 through 11 display the results from Teacher A during baseline and intervention weeks.

Figure 8 displays the results of Week 5-Baseline for Teacher A. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and $r = 0.622$ indicated a strong correlation (*c.v.* = 0.456).

Therefore, the null hypothesis was rejected and there was evidence to support a significant relationship between student confidence levels and student achievement scores during Week 5 of baseline instruction for Teacher A.

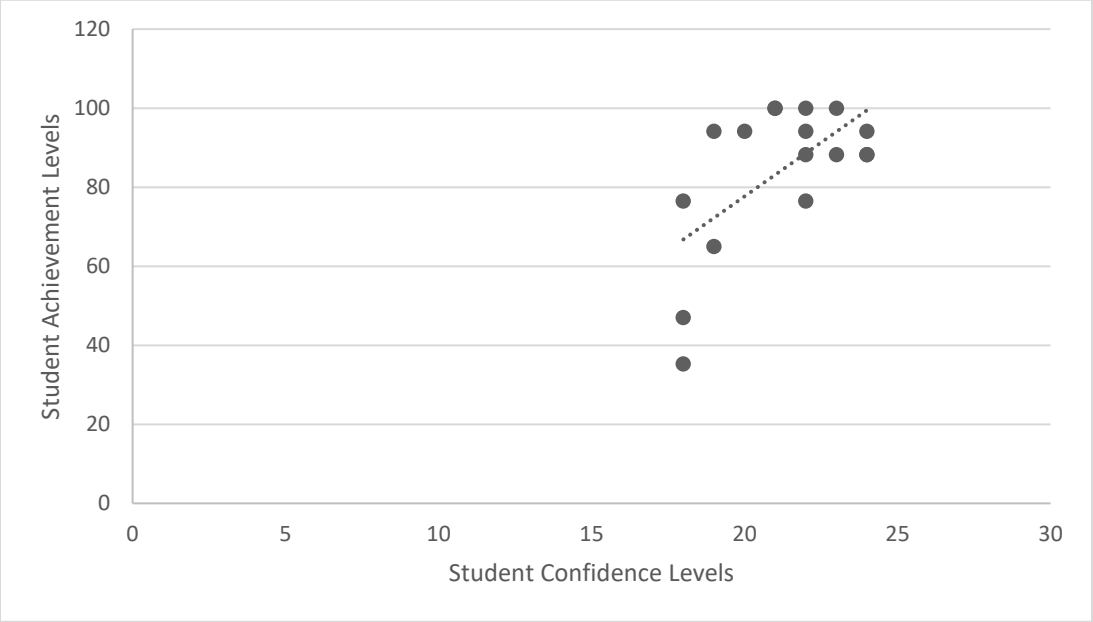

Figure 8. Week 5 for Teacher A. PPMCC for student achievement scores and student confidence sores. $N = 17$; $r = 0.622$; $p = 0.0077$

Figure 9 displays the results of Week 10-Intervention for Teacher A. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and $r = 0.513$ indicated a strong correlation (*c.v.* = 0.468). Therefore, the null hypothesis was rejected and there was evidence to support a significant relationship between student confidence levels and student achievement scores during Week 10 of intervention instruction for Teacher A.

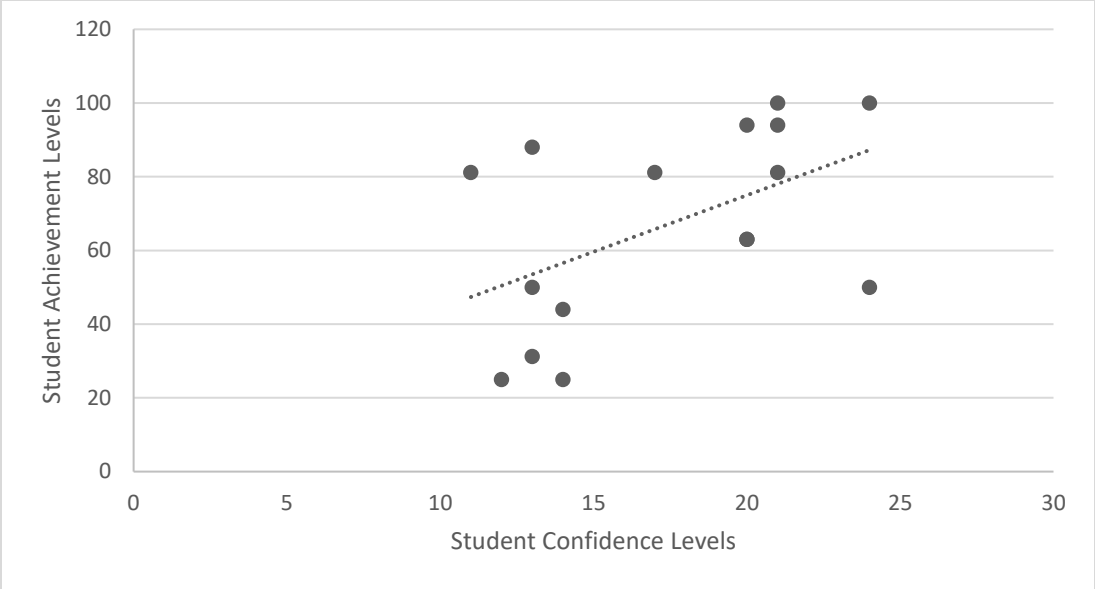

Figure 9. Week 10 for Teacher A. PPMCC for student achievement scores and student confidence sores. $N = 16$; $r = 0.513$; $p = 0.0421$

Figure 10 displays the results of Week 15-Baseline for Teacher A. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores.

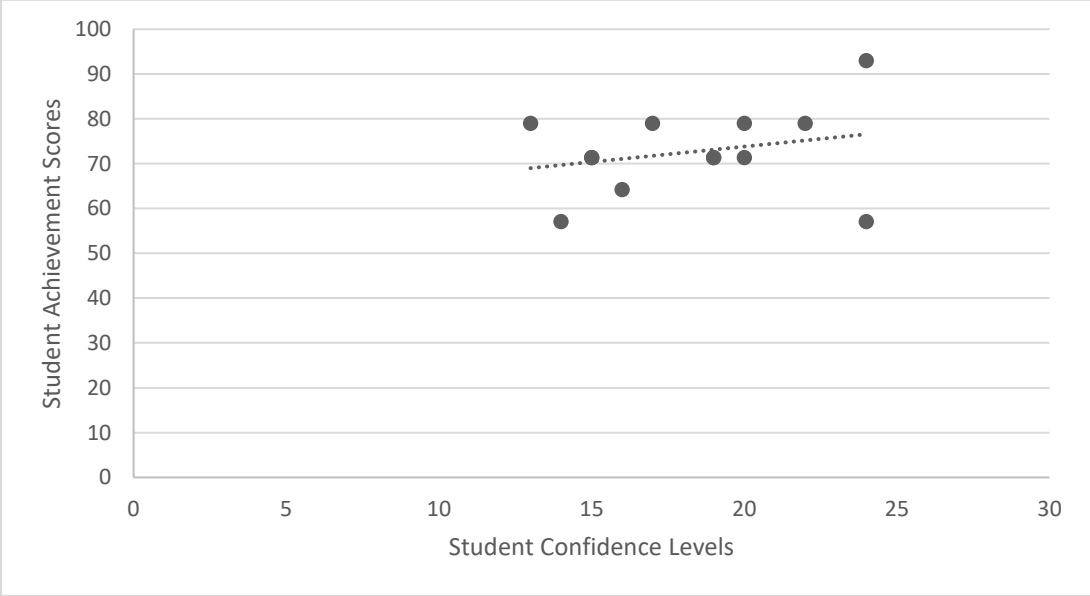

Figure 10. Week 15 for Teacher A. PPMCC for student achievement scores and student confidence sores. $N = 13$; $r = 0.258$; $p = 0.3947$

If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in various points on the graph, and $r = 0.258$ indicated no relationship (*c.v.* = 0.514). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between student confidence levels and student achievement scores during Week 15 of baseline instruction for Teacher A.

Figure 11 displays the results of Week 20-Intervention for Teacher A. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in various points on the graph, and $r = 0.095$ indicated no relationship (*c.v.* = 0.514).

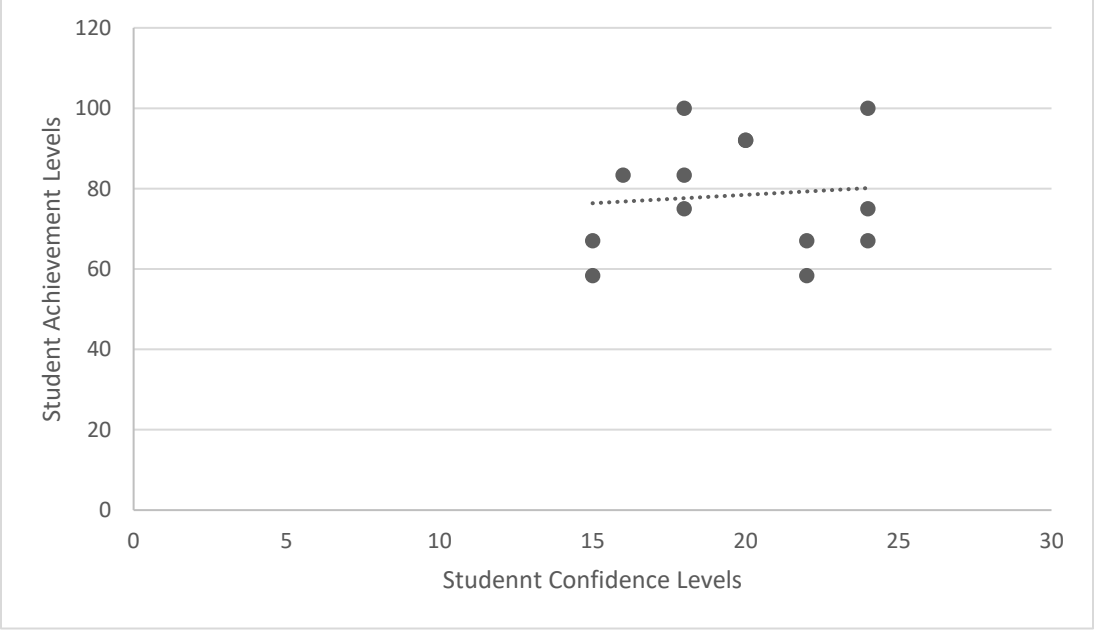

Figure 11. Week 20 for Teacher A. PPMCC for student achievement scores and student confidence sores. $N = 13$; $r = 0.095$; $p = 0.7575$

Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between student confidence levels and student achievement scores during Week 20 of intervention instruction for Teacher A.

Figure 12 displays the results of Week 5-Baseline for Teacher C. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in various points on the graph, and r = 0.231 indicated no relationship (*c.v.* = 0.423). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between student confidence levels and student achievement scores during Week 5 of baseline instruction for Teacher C.

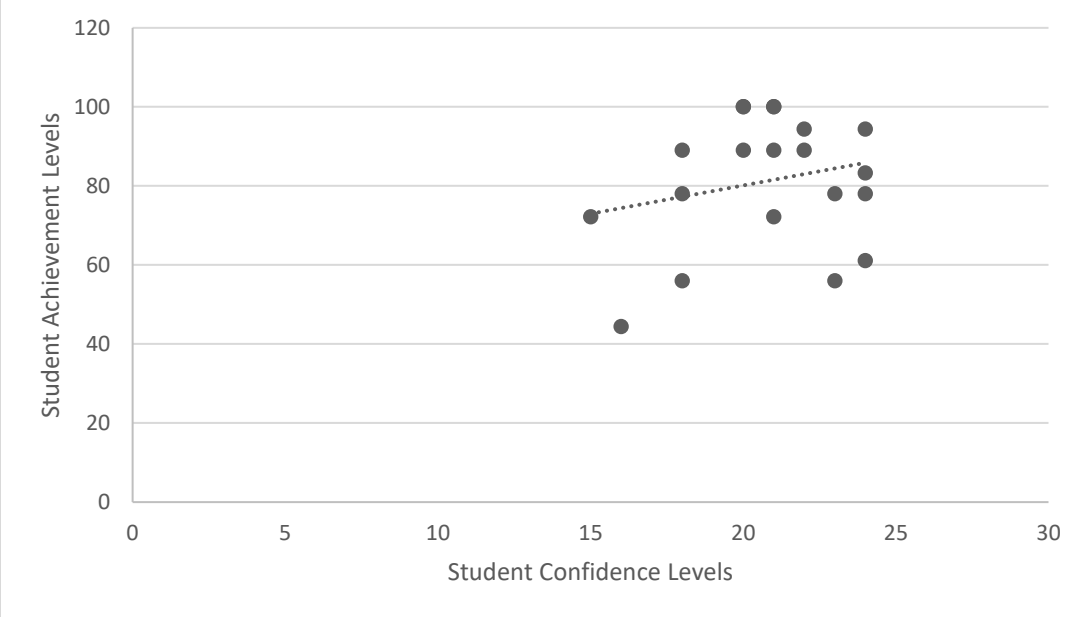

Figure 12. Week 5 for Teacher C. PPMCC for student achievement scores and student confidence sores. $N = 20$; $r = 0.231$; $p = 0.3271$

Figure 13 displays the results of Week 10-Intervention for Teacher C. The scatter plot reveals the visual relationship between student confidence levels and student

achievement scores. If the plots gathered around the regression line, this indicated that students' confidence levels mirrored their achievement scores; here, many of the plots were in various points on the graph, and $r = 0.098$ indicated no relationship (*c.v.* = 0.423). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between student confidence levels and student achievement scores during Week 5 of intervention instruction for Teacher C.

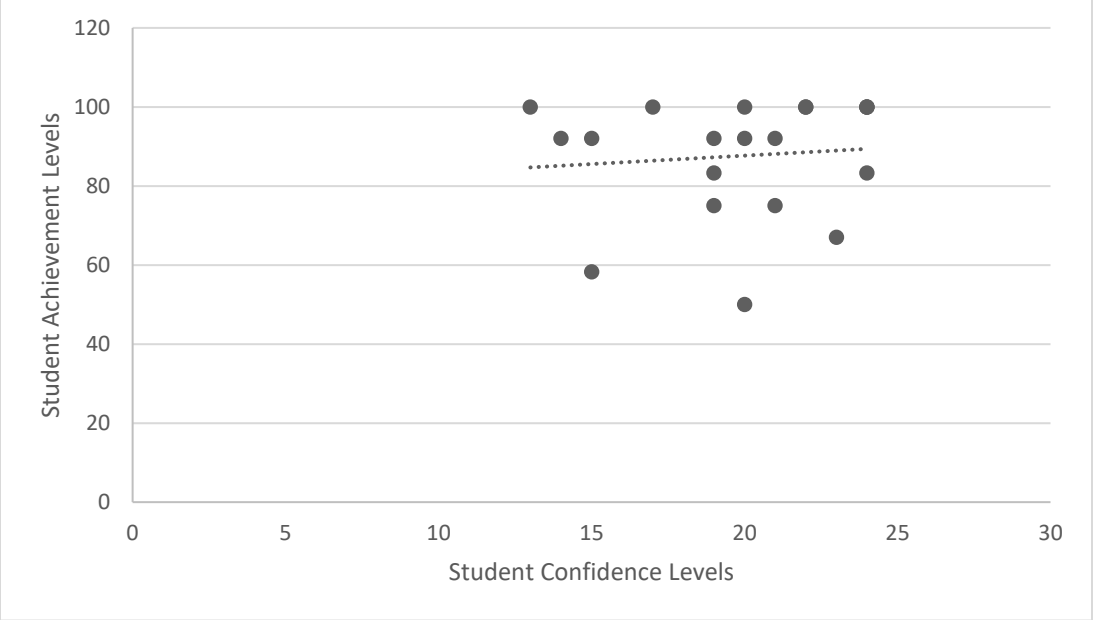

Figure 13. Week 10 for Teacher C. PPMCC for student achievement scores and student confidence sores. $N = 20$; $r = 0.098$; $p = 0.6810$

Figure 14 displays the results of Week 15-Baseline for Teacher C. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in various points on the graph, and r = 0.181 indicated no relationship (*c.v.* = 0.433). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to

support a significant relationship between student confidence levels and student achievement scores during Week 15 of baseline instruction for Teacher C.

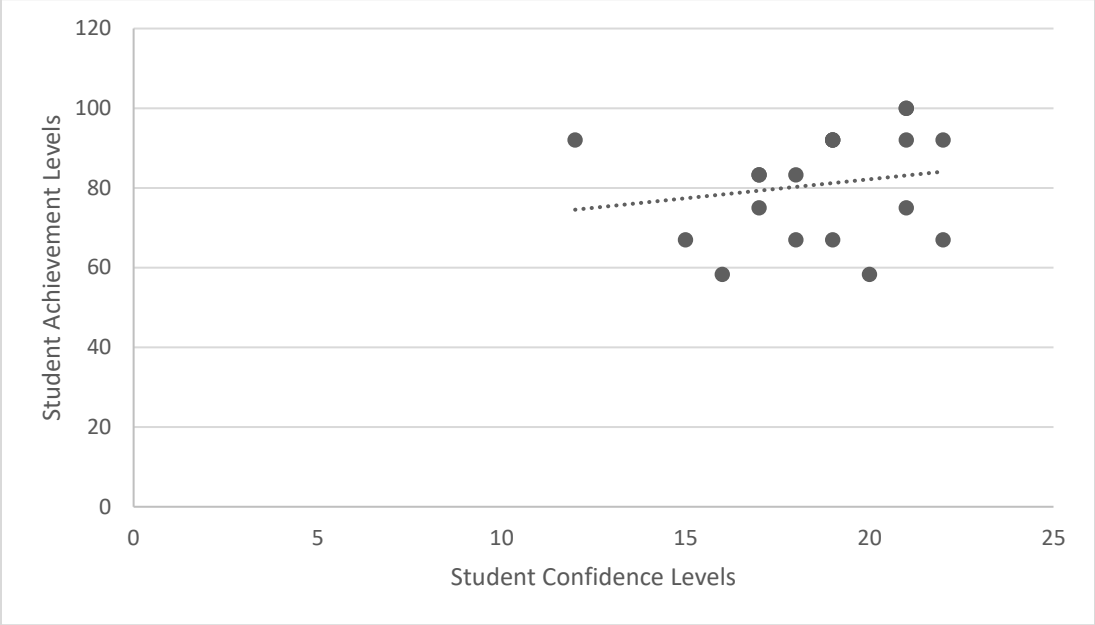

Figure 14. Week 15 for Teacher C. PPMCC for student achievement scores and student confidence sores. $N = 19$; $r = 0.181$; $p = 0.4584$

Figure 15 displays the results of Week 20-Intervention for Teacher C. The scatter plot reveals the visual relationship between student confidence levels and student achievement scores. If the plots gathered around the regression line, this indicated students' confidence levels mirrored their achievement scores; many of the plots were in similar points on the graph, and r = 0.565 signified a strong correlation (*c.v.* = 0.433). Therefore, the null hypothesis was rejected and evidence existed to support a significant relationship between student confidence levels and student achievement scores during Week 20 of intervention instruction for Teacher C.

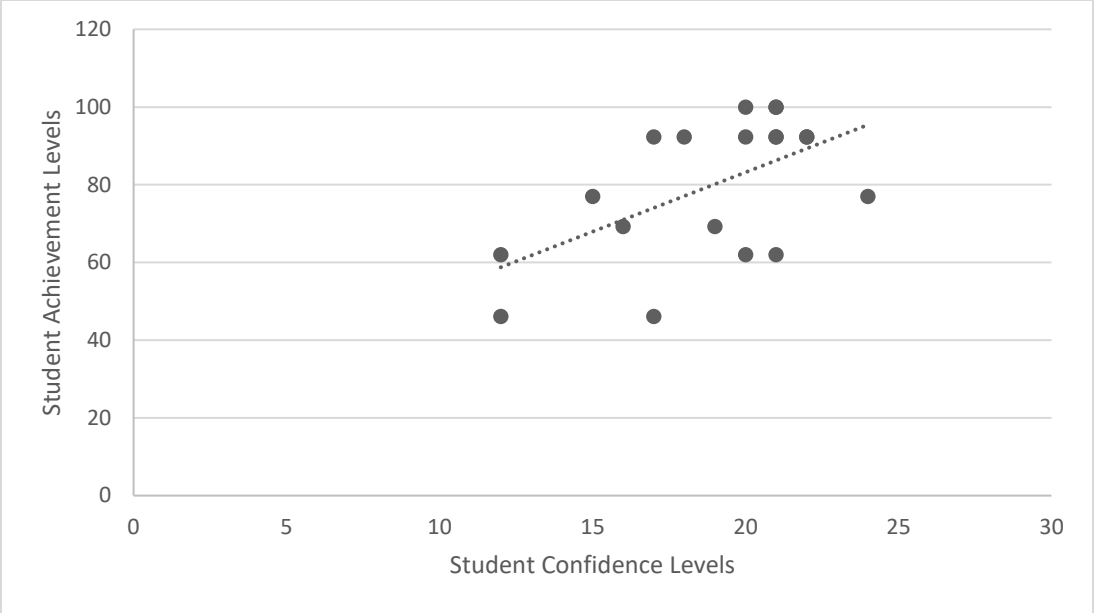

Figure 15. Week 20 for Teacher C. PPMCC for student achievement scores and student confidence sores. $N = 19$; $r = 0.565$; $p = 0.0117$

Null Hypothesis 4. There is no relationship between student achievement scores during intervention weeks and social validity scores, as measured by the social validity survey scores.

To investigate a possible relationship between student achievement scores and student perceptions of the Kagan structures the researcher used a PPMCC for analyzing the data points.

Table 11 reports correlation coefficients for student confident levels and achievement scores for each of the three teachers during intervention weeks. As shown in Table 11, a non-significant weak correlation existed between students' perceptions of the Kagan structures and student achievement ($r = 0.174, 0.326, -0.303$; *c.v.* = 0.0.553, 0.532, and 0.444, respectively. There was little to no agreement between what students perceived about the Kagan structures and their actual achievement during intervention weeks.

Table 11

Correlations Between Student Social Validity Scores and Student Achievement Scores by Teacher

Teacher	Comparison	PPMCC ρ Correlation Coefficient
A	SVS vs. SAS	r(11)=0.174, p = 0.5697
B	SVS vs. SAS	r(12)=0.326, p = 0.2553
C	SVS vs. SAS	r(18)= -0.303, p = 0.1941

Note. SVS = Social Validity Scores and SAS =Student Achievement Scores, *p < 0.05.

The researcher visually displayed the relationship between the independent variable (i.e., student social validity scores) and the dependent variable (i.e., student achievement scores) by displaying a scatter plot for the intervention weeks for Teachers A, B, and C. Figures 16 through 18 display the results from Teacher A, B, and C's scatter plots. The researcher observed a weak correlation between student social validity scores and student achievement scores during intervention weeks with all three teachers.

Figure 16 displays the results of the intervention weeks for Teacher B. The scatter plot reveals the visual relationship between student social validity scores and student achievement scores. If the plots gathered around the regression line, this indicated students' social validity scores mirrored their achievement scores; however, many of the plots were in various points on the graph, and $r = 0.326$ indicated no relationship (*c.v.* = 0.532). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between students' social validity scores and their achievement scores on the vocabulary assessments during intervention weeks for Teacher B.

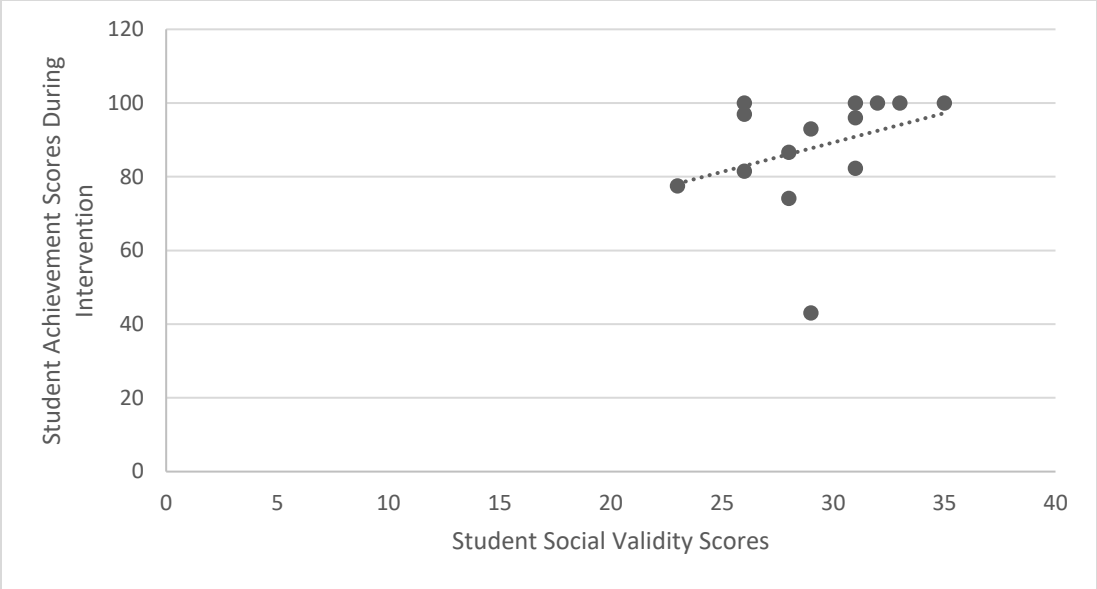

Figure 16. Teacher B--Student social validity scores and student achievement scores. PPMCC for student achievement scores and student achievement scores. $N = 14$; $r = 0.326$; $p = 0.2553$

Figure 17 displays the results of the intervention weeks for Teacher A. The scatter plot reveals the visual relationship between student social validity scores and student achievement scores. If the plots gathered around the regression line, this indicated students' social validity scores mirrored their achievement scores; however, many of the plots were in various points on the graph, and $r = 0.174$ indicated no relationship (*c.v.* = 0.553). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between students' social validity scores and their achievement scores on the vocabulary assessments during intervention weeks for Teacher A.

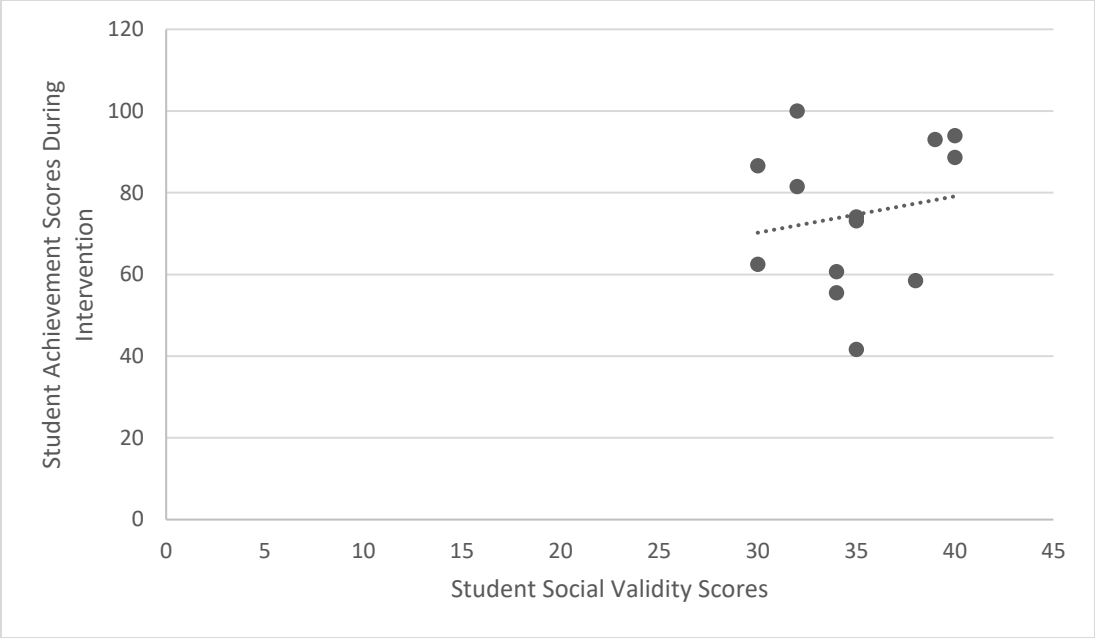

Figure 17. Teacher A--Student social validity scores and student achievement scores. PPMCC for student achievement scores and student achievement scores. $N = 13$; $r = 0.174$; $p = 0.5697$

Figure 18 displays the results of the intervention weeks for Teacher C. The scatter plot reveals the visual relationship between student social validity scores and student achievement scores. If the plots gathered around the regression line, this indicated students' social validity scores mirrored their achievement scores; however, many of the plots were in various points on the graph, and $r = -0.303$ indicated no relationship (*c.v.* = 0.444). Therefore, the researcher failed to reject the null hypothesis due to a lack of evidence to support a significant relationship between students' social validity scores and their achievement scores on the vocabulary assessments during intervention weeks for Teacher C.

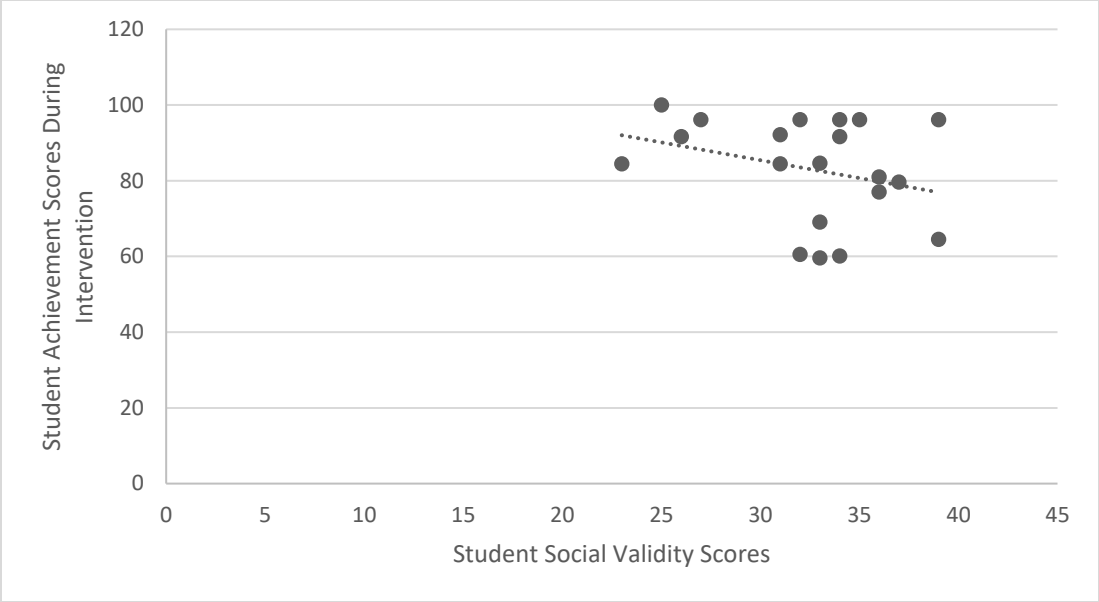

Figure 18. Teacher C-Student social validity scores and student achievement scores. PPMCC for student achievement scores and student achievement scores. $N = 20$; $r = -0.303$; $p = 0.1941$

Research Question 2: How do teachers perceive the goals and outcomes associated with the use of cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

Overall, Teachers A, B, and C regarded the cooperative learning structures (i.e., intervention), according to the Kagan Framework, as a benefit to students in comparison to traditional teaching practices (i.e., baseline). Teachers were asked to complete the social validity survey which used a 5-point, Likert-type scale ranging from 1 to 5 representing lowest to highest, to gather data about their perceptions of the cooperative learning structures. Table 12 displays the results from the social validity survey about teacher perceptions of the cooperative learning structures used during intervention weeks.

Table 12

Teacher Perceptions of Cooperative Learning Structures According to the Kagan Framework

Social Validity Survey Item	Mean Score
1. How important is it for your students to do well with vocabulary?	5.0
2. How important is it for all students to participate in class?	5.0
3. How much did you like using the structures during word study?	4.67
4. How often did you observe students receive help from a teammate?	4.33
5. How often did you observe students sharing information with other team members?	4.33
6. How much did the structures help your students to learn their vocabulary?	5.0
7. Do the structures seem like something that should be done in school?	5.0
8. Overall, what did you think of the Kagan Structures?	5.0

As seen in Table 12 items 1, 2, 6, 7, and 8 were rated the highest (5.0, 5.0, 5.0, 5.0, and 5.0, respectively). Teachers overall enjoyed using the cooperative learning structures when analyzing the data from the Likert-type survey.

Teachers, immediately following the final session, completed an exit interview with one of the proctors (Appendix D). All three teachers noted students were more engaged and motivated to learn their vocabulary words during intervention. One stated ‘they were more engaged’ while another noted that ‘they seemed happier and were motived to learn.’ The teachers thought students not only enjoyed the structures and had ‘more positive attitudes,’ but also ‘looked forward to and asked about’ when they would be using the cooperative learning structures. In contrast, during the baseline weeks

teachers felt ‘students seemed to get bored’ and the instruction was very ‘cut and dry,’ meaning mainly traditional, direct instruction lecture style, with no student interaction or processing time. Students ‘did not look forward to word study’ and their ‘heart was not in it,’ meaning they lacked motivation to complete the given task or assignment. All three teachers recognized the engagement during baseline instruction was far less than intervention weeks.

The teachers also commented on the interactions of students, noting the support and conversation that took place during the intervention weeks. One teacher stated, ‘students were learning from each other, helping each other out, and working on their social skills.’ Another teacher continued to point out the ‘dependence on each other for help or guidance’ improved and strengthened students’ social skills and relationships. In contrast, during the baseline weeks teachers reported doing more of the talking and described students as ‘not as involved.’ One teacher stated students ‘talked off topic’ and ‘it was like pulling teeth,’ meaning when not using the cooperative learning structures to support student conversation students failed to show interest in completing the given assignment or task.

Teachers also mentioned they believed achievement to be higher during intervention weeks. One teacher stated students ‘recalled information better’ during intervention weeks adding ‘everyone had an opportunity to learn and experience the words.’ The teachers expressed by integrating the cooperative learning structures into other content areas, students achieved at higher levels. In contrast, during the baseline weeks the teachers felt achievement was lower. One teacher believed the lower achievement was triggered by ‘less student interactions.’

The teachers also felt behavior concerns diminished during intervention weeks, as several noted, 'I can see that [cooperative learning structures] cut down on behaviors' and another felt that there were 'less behavior problems because of a more specific task to complete.' Teachers also saw the benefit of including movement during the structures noting that students 'liked moving around.' In contrast, teachers felt that, due to less student-to-student interaction and engagement, behaviors were not optimal for learning.

Finally, Teachers A, B, and C expressed the implementation of the cooperative learning structures was 'very easy and easy to follow, once learned.' One teacher stated when implementing the cooperative learning structures it 'took some preparation,' meaning the cards for Flashcard Game and Quiz Quiz Trade had to be created prior to implementing these structures. In contrast, during baseline weeks teachers incorporated traditional teaching practices that relied on low student interaction and feedback from the teacher.

Research Question 3: How do students perceive the use of cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

As a group, students from Teacher A, B, and C's classrooms perceived the cooperative learning structures according to the Kagan Framework positively. Students were asked to complete the social validity survey, which used a 5-point, Likert-type scale ranging from 1 to 5 representing lowest to highest, to gather data about their perceptions of the cooperative learning structures. Table 13 displays the results from the social validity survey on student perceptions of the cooperative learning structures used during intervention weeks. Over 84% of students liked the Kagan cooperative learning structures 'a lot.'

Table 13

Student Perceptions of Cooperative Learning Structures According to the Kagan Framework

Social Validity Survey Item	Mean Score
1. How important is it for you to do well with vocabulary?	4.22
2. How important is it for all students to participate in class?	4.58
3. How much did you like using the structures during word study?	4.12
4. How often did you receive help from a teammate?	2.99
5. How much did you like sharing information with other team members?	3.67
6. How much did the structures help you to learn your vocabulary?	4.06
7. Do the structures seem like something that should be done in school?	4.25
8. Overall, what did you think of the Kagan Structures?	4.22

As seen in Table 13, items 1, 2, 7, and 8 were rated the highest (4.22, 4.58, 4.25, and 4.22, respectively). Students overall enjoyed using the cooperative learning structures. One student stated, 'I liked a lot of everything we've done,' and another noted, 'I love Kagan structures they teach you a lot.' In addition, students liked working as a team, especially when using the cooperative learning structure Numbered Heads Together. Students also felt, 'other schools should do [cooperative learning structures]' because 'they'll love them a lot.' The cooperative learning structures were noted by students as being 'fun ways to learn' and 'helpful,' when working with their word study vocabulary words.

Summary

The findings showed that poor implementation of cooperative learning structures, according to the components of the Kagan Framework, produced inconsistent results in

student achievement. Differences existed between Teachers A, B, and C in their implementation of the cooperative learning structures, according to the Kagan Framework. When Teachers A, B, and C implemented cooperative learning structures, according to the Kagan Framework, with high fidelity student achievement scores were higher.

Teacher B's implementation (98.4%) of cooperative learning structures according to the components of the Kagan Framework resulted in statistically significant student achievement during intervention weeks. Furthermore, relationships between student confidence levels and student achievement scores were noted for Teacher B's students for all baseline and intervention weeks. Teachers A's (75%) and Teacher C's (82.8%) implementation of cooperative learning structures, according to the components of the Kagan Framework, deviated frequently and resulted in inconsistent student achievement during intervention weeks. In addition, for students in Teacher A and C's classrooms, the relationships between student confidence levels and student achievement scores were inconsistent and students did not have reliable estimates of their confidence in their own knowledge and actual achievement. In Teacher A, B, and C's classrooms no relationship between student social validity scores and student achievement scores was found. Qualitative data showed overall that teachers saw the cooperative learning structures as valuable instructional strategies that engaged and motivated students to learn. Students in Teachers A, B, and C's classrooms believed the cooperative learning structures were a fun way to learn and they thought other schools should use the cooperative learning structures.

Chapter Five provides a discussion of the results and suggestions for implementing the cooperative learning structures, according to the Kagan Framework, for school districts and recommendations for future research.

Chapter Five: Discussion and Reflection

The purpose of this study was to investigate teacher fidelity of implementation with cooperative learning structures, according to the components of the Kagan Framework, related to students' academic achievement and perceptions of cooperative learning. This study employed a mixed-method approach incorporating both quantitative and qualitative data. Through analysis of the fidelity checklists completed during teacher observations, this study aimed to identify the variations in teacher fidelity of implementation with cooperative learning, according to the components of the Kagan Framework. In addition, this study examined the differences in mean achievement scores during baseline and intervention weeks. Through close analysis of student achievement scores the researcher hoped to observe trends in mean student achievement scores (i.e., formative and summative assessment scores) during intervention and baseline weeks of instruction and analyze differences in baseline and intervention student achievement summative scores. Furthermore, this study aimed to analyze a possible correlation of relevant data points: student achievement scores and confidence levels; and student perceptions of cooperative learning structures and student achievement scores. Finally, qualitative data, student and teacher surveys and teacher exit interviews (Appendix D), were used to identify themes in perception. Through this investigation of teacher fidelity of implementation of cooperative learning structures, according to the components of the Kagan Framework, the researcher hoped to learn how FOI increased decreased or maintained student achievement and how the Kagan Framework increased decreased or maintained student achievement when implemented with fidelity.

Research Questions and Hypotheses

The researcher investigated the following research questions:

Research Question 1: How does the fidelity of implementation with cooperative learning structures, according to the Kagan Framework, descriptively increase, decrease, or maintain student performance outcomes with Greek/Latin vocabulary words?

Research Question 2: How do teachers perceive the goals and outcomes associated with the use of cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

Research Question 3: How do students perceive the use of the cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

The hypotheses tested for this mixed-methods study included:

Hypothesis 1: There is a difference in teacher fidelity of implementation of cooperative learning structures, according to the Kagan Framework, measured by the fidelity of implementation checklists during intervention weeks.

Hypothesis 2: There is a difference in students' achievement scores (i.e., formative and/or summative Greek/Latin assessments) during baseline versus intervention instruction.

Hypothesis 3: There is a relationship between student confidence levels and student achievement scores (i.e., summative Greek/Latin assessments) during baseline and intervention weeks.

Hypothesis 4: There is a relationship between student achievement scores during intervention weeks and social validity scores as measured by the social validity survey scores.

Summary of Findings

The researcher noted differences between Teachers A, B, and C in their implementation of the cooperative learning structures, according to the components of the Kagan Framework. The findings indicated student achievement was evident with Teacher B's students, while student achievement in Teacher A or C's classrooms were inconsistent. Teacher B's implementation (98.4%) of cooperative learning structures, according to the Kagan Framework resulted in statistically significant student achievement during intervention weeks. Furthermore, the researcher noted relationships between student confidence levels and student achievement scores for Teacher B's students for all baseline and intervention weeks. Teachers A's (75%) and Teacher C's (82.8%) implementation of cooperative learning structures, according to the Kagan Framework deviated frequently and resulted in inconsistent student achievement during intervention weeks. In addition, for students in Teacher A and C's classrooms, the relationships between student confidence levels and student achievement scores were inconsistent and students did not have reliable estimates of their confidence, their own knowledge and actual achievement. In Teacher A, B, and C's classrooms, no relationship between student social validity scores and student achievement scores was found. Qualitative data showed overall that teachers saw the cooperative learning structures as valuable instructional strategies that engaged and motivated students to learn. Students in Teachers A, B, and C's classrooms believed the cooperative learning structures were a

fun way to learn and they thought other schools should use the cooperative learning structures.

Discussion: Research Questions and Hypotheses

Research Question 1: How does the fidelity of implementation with cooperative learning structures, according to the Kagan Framework, descriptively increase, decrease, or maintain student performance outcomes with Greek/Latin vocabulary words?

Hypothesis 1: There is a difference in teacher fidelity of implementation of cooperative learning structures, according to the Kagan Framework, measured by the fidelity of implementation checklists during intervention weeks.

Through analyzing data measured by the fidelity of implementation checklists, teacher percentages affirmed variations in the implementation of the core components of the Kagan Framework resulted in inconsistent student achievement. "A program or approach that is effective in other settings can be ineffective in yours if the way it is being implemented takes away from its original design" (Protheroe, 2008, p. 40). The ANOVA displayed variations between Teachers A, B, and C's implementation of the cooperative learning structures, according to the components of the Kagan Framework. Teacher B's implementation (98.4%) led to consistent, positive student achievement. Ultimately, the teacher delivered the instruction, and when the teacher failed to implement with fidelity the student achievement was compromised. The results of this ANOVA could possibly assist school districts with the development of instruments to measure the fidelity of implementation during ongoing observations, during implementation.

Furthermore, teacher support during implementation was critical to the overall success of the cooperative learning structures, according to the components of the Kagan Framework. Typically, school districts offered training workshops to impart knowledge of a new program or instructional strategy (Wallace et al., 2008). In this study the researcher provided a training workshop for all participants. The training workshop in this study imparted new knowledge and provided skills practice of cooperative learning structures according to the components of the Kagan Framework; however, it was not enough to result in a change of behavior for all three teachers.

Similar to this study, school districts often provided the initial training workshop, but rarely provided the necessary practice and support teachers needed to implement new practices with high fidelity. Essentially, teachers experienced what Kagan (2000) referred to as the transference gap, meaning the "situation of acquisition is too different from the situation of performance" (para. 12). The ANOVA confirmed that school districts must provide ongoing support with corrective feedback for teachers. All three teachers received the same training workshop, but during implementation, no support or feedback was provided to teachers, which may have resulted in variations in fidelity of implementation and student achievement. "Training by itself seems to be an ineffective approach to implementation" (Wallace et al., 2008, p. 53). The results of this ANOVA could possibly assist school districts with the understanding that during implementation of a new program or instructional strategy the presence of an instructional coach could ensure high fidelity of implementation for individual teachers and consistent achievement for students.

Hypothesis 2: There is a difference in students' achievement scores (i.e., formative and/or summative Greek/Latin assessments) during baseline versus intervention instruction.

Through analyzing student achievement scores during baseline and intervention weeks, differences in student achievement affirmed variations in teacher implementation according to the core components of the Kagan Framework resulted in inconsistent student achievement. The results of the *t*-test could possibly support school districts when making decisions about cooperative learning structures as an instructional strategy that could yield an increase in student achievement. Moreover, school districts should make the connection that poor implementation could result in inconsistent student achievement.

The students in Teacher B's classroom consistently reported high achievement during intervention weeks, compared to baseline weeks. Teacher B also demonstrated high fidelity of implementation (98.4%). Conversely, Teachers A and C reported inconsistent achievement during baseline and intervention weeks. The visual representation of scores (i.e., line graphs) for Teachers A and C during the baseline and intervention weeks presented an inconsistent pattern of scores. Furthermore, there were observably lower fidelity of implementation percentages for Teachers A and C (75% and 82.8%, respectively) during intervention weeks. The researcher posited due to the lower fidelity of implementation percentages for Teachers A and C a negative influence resulted with student achievement. Both teachers struggled to implement the cooperative learning structures, according to the components of the Kagan Framework, with high fidelity. Kagan and Kagan (2009-2015) asserted that "cooperative learning, when

properly implemented, is a powerful instructional approach resulting in a spectrum of positive outcomes" (p. 12.1). In other words, the success of student achievement hinges on the fidelity of implementation of the cooperative learning structures, according to the components of the Kagan Framework.

Another study conducted by Bilen and Tavil (2015) aimed to investigate Kagan cooperative learning structures and student achievement with vocabulary post-assessments. In the study, teachers administered pre and post-assessments to experimental and control groups of fourth grade students. Teachers taught the experimental group using Kagan cooperative learning structures, while the control group was taught using traditional teaching methods. Unlike the study conducted by Bilen and Tavil (2015), this study used three specific Kagan structures (i.e., Flashcard Game, Quiz Quiz Trade, and Numbered Heads Together), an A-B-A-B research design for three groups of students eliminating the need for an experimental group and a control group, and measured teacher fidelity of implementation according to the Kagan Framework. The results of both studies were somewhat similar. Bilen and Tavil (2015) indicated the experimental group (i.e., Kagan cooperative learning structures) performed better on the post-assessment after using the Kagan cooperative learning structures. In this study, only in Teacher B's class did students demonstrate better performance on the summative assessments due to high levels of fidelity of implementation.

A final conclusion, drawn by the researcher, was the idea of a support system versus a support person. During the intervention weeks Teachers A, B, and C established a support system in their classrooms, meaning the teacher was not the only person providing immediate and specific feedback to students. Students in all three classrooms

during the intervention weeks provided meaningful, specific feedback and support to each other when engaged in the cooperative learning structures (i.e., Flashcard Game, Quiz Quiz Trade, and Numbered Heads Together). During the baseline weeks Teachers A, B, and C failed to provide a support system for all students and instead provided a support person; meaning all students in both classrooms had to rely on only the teacher for specific feedback and support.

Hypothesis 3: There is a relationship between student confidence levels and student achievement scores (i.e., summative Greek/Latin assessments) during baseline and intervention weeks.

Through analyzing student achievement scores and student confidence levels during intervention weeks, varying correlations among teachers suggested variations in teacher fidelity of implementation, according to the core components of the Kagan, Framework existed. The results of the PPMCC could possibly support administrators and teachers in their understanding of "self-reported grades" (Hattie, 2009, p. 43). Hattie (2009) stated "students have reasonably accurate understandings of their levels of achievement" (p. 43). Therefore, the researcher expected a strong correlation between student achievement scores and student confidence levels. The findings however, showed a strong correlation for only Teacher B, while students of Teachers A and C demonstrated unreliable estimates of their confidence in their own knowledge and actual achievement during the A-B-A-B sessions.

The students in Teacher B's classroom consistently reported high achievement during intervention weeks compared to baseline weeks. In addition, Teacher B also demonstrated high fidelity of implementation (98.4%). Conversely, Teachers A and C,

had inconsistent achievement during baseline and intervention weeks. The visual representation of scores (i.e., line graphs) for Teachers A and C during the baseline and intervention weeks presented scores that struggled to maintain a consistent pattern. Furthermore, there were observably lower fidelity of implementation percentages for Teachers A and C (75% and 82.8%, respectively) during intervention weeks.

The researcher posited that low fidelity of implementation percentages negatively influenced student achievement and student confidence levels. Students in Teacher A and C's classrooms did not experience consistent instruction aligned to the components of the Kagan Framework. Teachers A and C demonstrated low fidelity of implementation, inconsistent student achievement, and unreliable estimates of their students' confidence in their own knowledge and actual achievement. Students in Teacher B's classroom received consistent instruction aligned to the components of the Kagan Framework. Teacher B demonstrated high fidelity of implementation, high achievement, and reliable estimates of their confidence in their knowledge and actual achievement.

Hypothesis 4: There is a relationship between student achievement scores during intervention weeks and social validity scores as measured by the social validity survey scores.

Through analyzing student achievement scores and student social validity scores, no relationship between student social validity scores and student achievement scores was found. The results of the PPMCC suggested students were unaware of the components of the Kagan Framework. Over 84% of students liked the Kagan cooperative learning structures 'a lot.' Students actively engaged in cooperative

conversations about vocabulary words. The researcher posited that the feelings students recorded on their surveys connected back to the components of the Kagan Framework. While Teachers A, B, and C did not implement the components of the Kagan Framework with 100% fidelity, students still experienced some of the components of the Kagan Framework intermittently.

The four components of the Kagan Framework (i.e., PIES) were tied to student emotions. For example, positive interdependence, when present, yielded students feeling on the same side and a sense of need for each other to complete a task. Individual accountability, when present, yielded students feeling they could not hide. Equal participation when present yielded students feeling equal status, meaning what they had to say mattered. Finally, simultaneous interaction, when present, yielded students feeling engaged. Kagan and Kagan (2009-2015) stated when PIES were consistently present, cooperative learning structures "produces academic gains, improves race relations, develops social skills, educates for character, promotes self-esteem, enhances class climate, and fosters leadership and teamwork skills" (p. 12.1). The researcher posited that even without 100% fidelity in implementation among the three teachers, students received benefits of the components of the Kagan Framework, meaning students still benefited emotionally from working cooperatively with their peers. The differences observed in Teacher A and C's classrooms supported the idea that "[achievement] gains are not guaranteed" when PIES were not present when using cooperative learning structures (Kagan & Kagan, 2009-2015, p. 12.1). If Teachers A and C implemented cooperative learning structures, according to the Kagan Framework, with greater fidelity,

the researcher believes higher student achievement similar to Teacher B could have occurred.

Research Question 2: How do teachers perceive the goals and outcomes associated with the use of cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

Teacher perceptions of cooperative learning structures. Overall, teachers saw the cooperative learning structures as valuable instructional strategies that engaged and motivated students to learn. Unlike the study conducted by Bilen and Tavil (2015), this study aimed to understand both teacher and student perceptions of the Kagan cooperative learning structures. In this study, the researcher found teachers' perceptions and social acceptability of the Kagan cooperative learning structures were observably high. The teachers felt that, even though the study focused on incorporating cooperative learning structures during vocabulary instruction, structures could easily be used in other content areas. Moreover, the cooperative learning structures transformed traditional, didactic instruction. For example, one teacher said, "structures have changed the way I teach everything!"

Research Question 3: How do students perceive the use of the cooperative learning structures, according to the Kagan Framework and traditional teaching practices?

***Student perceptions of cooperative learning structures*.** Over 84% of students liked the Kagan cooperative learning structures 'a lot.' Students in Teachers A, B, and C's classrooms believed the cooperative learning structures were a fun way to learn and they thought other schools should use the cooperative learning structures. Although there

was a lower mean score for item #4 on the student survey (i.e., How often did you receive help from a teammate?), the researcher believes this may have been due to a lack of teambuilding and class building in all three classrooms. As cited earlier, Kagan and Kagan (2009-2015) stated class building and teambuilding provided safety for students which fostered an atmosphere for productive learning. The researcher did not explore the climate and culture of the classroom environment, which could account for the lower mean score on item #4. In addition, teachers in the study did not receive training on how to support student language with peer coaching. The focus of this study was on the fidelity of implementation of the cooperative learning structures, according to the components of the Kagan framework and student achievement.

Implications

Implications for professional development. In this study, fidelity of implementation checklists were used to measure teacher fidelity with the components of cooperative learning structures, according to the Kagan Framework. The use of checklists affirmed the need for not only training, but ongoing support and feedback from a coach. This study did not provide ongoing coaching support with immediate feedback to the participating teachers. The researcher believes if teachers had been provided these supports, the results might have been more consistent across the three teachers.

School districts must provide more than just the initial training workshop, which imparts the knowledge and skills. As noted by Joyce and Showers (as cited in Wallace et al., 2008), 0% of participants were able to use new skills obtained from training workshops alone, as opposed to 95% of participants who were able to use new skills

obtained from training workshops when coupled with “coaching in a clinical setting” (as cited in Wallace et al., 2008, p. 45).

Kagan Cooperative Learning training provided opportunities for participants to learn the cooperative learning structures, according to the Kagan Framework, watch demonstrations of the cooperative learning structures, and practice with feedback the cooperative learning structures. However, school districts decided whether to include Kagan coaching as a follow up to support implementation. Given the results from this study, ongoing support through coaching would better ensure proper implementation aligned to the Kagan Framework and possibly result in consistent achievement. If Teachers A and C had been provided with a coach and feedback about their implementation, according to the Kagan Framework, the researcher concludes their results would have been different.

Implications for students and learning. In this study, Kagan cooperative learning structures produced statistically higher student achievement when implemented according to the components of the Kagan Framework. This study revealed proper implementation was key for positive student achievement, as validated by the student achievement results of Teacher B. Conversely, Teachers A and C demonstrated low fidelity of implementation, which may have produced inconsistent student achievement.

As cited earlier, traditionally “American classrooms are dominated by individualistic learning” (Johnson et al., 1985, p. 65). For example, students answered questions and completed assignments with minimal interactions among peers (Johnson et al., 1985). In this study Kagan cooperative learning structures provided opportunities for students to process content and engage in cooperative conversations that produced higher

achievement for students. Moreover, it is important to note that scores of all students improved in Teacher B's classroom, meaning that cooperative learning structures according to the Kagan Framework improved learning for low achieving students and high achieving students, in the setting and within the constraints of this study.

A final implication, determined by the researcher for students, is for the teacher to consider the power of student metacognition during the implementation of an instructional program or strategy. During this study, students were not told why the Kagan cooperative learning structures were implemented. Therefore, students had no opportunity to understand how the Kagan cooperative learning structures could improve their learning experiences. If students were told the Kagan cooperative learning structures provided immediate feedback and helped (i.e., coaching) to support and structure their conversations, students might have been able to then transfer these instructional strategies to other learning experiences in other classrooms, or later in life. As a result, students could begin to learn how to learn, due to the feedback and support received. Moreover, students could connect the increase in their optimal learning to the use of the Kagan cooperative learning structures.

Implications for future research. While this study produced practical findings for school districts, there were some study limitations. First, the study was conducted with three groups of students (n = 18, n = 19, n = 19). Generalizations to other grade levels and/or subject areas were not justified at the time of this study. Future research should duplicate this study across various subject areas, grade levels, and populations. Second, the study sessions were conducted for short durations (one week) of time. Therefore, it is inaccurate to assume the same results would be attained for longer

durations of time. Future research should investigate cooperative learning structures according to the components of the Kagan Framework for prolonged sessions, with carefully scheduled collection of student data points. Third, the study sessions did not evaluate the culture and climate of the three classrooms; meaning teambuilding and class building, which the researcher perceives as an integral facet to a cooperative learning classroom, were not included in the study. Future research should investigate the student achievement related to classrooms where teambuilding and class building are regularly included in the school day. Finally, the proctors charged with grading student assessments did not closely measure inter-rater reliability. During the study, the proctors collaborated when scoring assessments, but no feedback was given from the researcher to the proctors and no measure of reliability was taken when scoring student assessments. Therefore, it is inaccurate to assume that all scoring of the assessments was consistent. Future research should provide opportunities to measure the inter-rater reliability of the scoring provided by proctors and provide immediate feedback to proctors when scoring student assessments.

Conclusion

Students' abilities to read and write effectively increased their potential for future success in the world around them. In the 21st century, students must also acquire skills highly valued by employers, including the ability to communicate and work on a team. Moreover, as educators worked to provide content and instruction to improve student achievement outcomes outlined by curriculum (i.e., standards), navigating and selecting instructional strategies to deliver instruction became problematic. Empirical research, identified instructional strategies that increased student achievement (Hattie, 2009;

Marzano, 2001). School districts implemented research-based instructional strategies, yet stagnant literacy scores remained.

School districts can no longer ignore the fidelity of implementation of programs and instructional strategies. While training workshops impart new knowledge and skills for teachers, the researcher concluded they are not enough to assure consistent positive student achievement. Teachers must implement core components of a program or strategy as intended by the original design, otherwise potential for variations in student achievement will occur. Furthermore, when school districts added a coaching component to the implementation of a program or instructional strategy, greater probability for positive student outcomes were more likely to occur. That meant by providing support with the program core components and immediate feedback on the use of the core components a teacher could improve their fidelity of implementation and higher student achievement. For school districts to change the instruction of classroom teachers, schools must plan a thorough implementation with training workshops, schedule on-going coaching sessions for teachers, and use fidelity of implementation checklists. The researcher recommends school districts provide teachers actionable feedback to internalize new instructional programs and ensure optimal success for students.

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Appendix A: Fidelity Checklists—Flashcard Game

Set Up:

☐ Students have "flashcards" with the vocabulary term on the front and the definition (answer) on the back.

☐ Students sit facing each other and decide who is the tutor and who is the tutee.

Steps to Structure:

ROUND 1: Maximum Cues

☐ 1. The tutee gives his/her flashcards to the tutor.

☐ 2. The tutor shows the question on the first card, reads the question, and shows and reads the answer written on the back of the card. The tutor then turns the card back over and **again reads** the question on the front of the card asking the tutee to answer from **memory**.

☐ 3. The tutee answers. ***(Positive Interdependence, Individual Accountability)***

- ☐ If the answer is correct, the tutee wins the card back and receives praise from the tutor.
- ☐ If the answer is incorrect, the tutor shows the tutee the answer side of the card and coaches. The card is then returned to stack to try again later.

☐ 4. When the tutee wins all cards partners **switch** roles. When the new tutee wins all his/her cards, partners advance to Round 2. ***(Equal Participation)***

ROUND 2: Few Cues

☐ 5. The process is repeated, except the tutor shows only the **question** on the front of each card, and asks the tutee to answer from memory.

☐ 6. The tutee answers. ***(Positive Interdependence, Individual Accountability)***

- ☐ If the answer is correct, the tutee wins the card back and receives praise from the tutor.
- ☐ If the answer is incorrect, the tutor shows the tutee the answer side of the card and coaches. The card is then returned to stack to try again later.

☐ 7. When the tutee wins all cards partners **switch** roles. When the new tutee wins all his/her cards, partners advance to Round 3. ***(Equal Participation)***

ROUND 3: No Cues

☐ 8. The process is repeated, except the tutor **quizzes** tutee on each question without showing the tutee the flashcards.

☐ 9. The tutee answers. ***(Positive Interdependence, Individual Accountability)***

- ☐ If the answer is correct, the tutee wins the card back and receives praise from the tutor.
- ☐ If the answer is incorrect, the tutor shows the tutee the answer side of the card and coaches. The card is then returned to stack to try again later.

☐ 10. When the tutee wins all cards partners switch roles. When the new tutee wins all his/her cards, the structure is complete. ***(Equal Participation)***

Fidelity Checklists—Quiz Quiz Trade

Set Up:

☐ Each student has a question card. (Answer on inside or on the back is optional).

☐ No music

Steps to Structure:

☐ 1. The teacher tells students, "Stand up, hand up, and pair up."
- ☐ Students put a hand up and find a partner.
- ☐ There should be groups of 2 only.
- ☐ Partners give a greeting gambit.

☐ 2. Partner A quizzes B. ***(Individual Accountability)***
- ☐ Partner A asks the question on the card they are holding.
- ☐ Partner A can show question.
- ☐ Partner A holds the card so B cannot see the answer.

☐ 3. Partner B answers.

☐ 4. Partner A praises or coaches. ***(Positive Interdependence)***
- ☐ If the answer is correct, A praises.
- ☐ If the answer is wrong, A coaches, Partner A re-asks the question. Partner B answers. Partner A praises if answer is correct.

☐ 5. Partners switch roles. Partner B quizzes A. ***(Equal Participation)***
- ☐ Partner B asks the question on the card they are holding.
- ☐ Partner B can show questions.
- ☐ Partner B holds the card so A cannot see the answer.
- ☐ Partner A answers.

☐ 6. Partner B praises or coaches. ***(Positive Interdependence)***
- ☐ If the answer is correct, B praises.
- ☐ If the answer is wrong, B coaches, Partner B re-asks the question. Partner A answers. Partner B praises if answer is correct.

☐ 7. Partners trade cards and thank each other.
- ☐ Partners trade cards.
- ☐ Partners give a parting gambit.

☐ 8. Repeat steps 1-6 a number of times.

☐ Students should split up, put a hand up, and find a new partner without a teacher.

☐ Quizzing continues until teacher calls time.

Fidelity Checklists—Numbered Heads Together

Set Up:

☐ 1 AnswerBoard or paper and 1 marker or pencil per student.

Steps to Structure:

☐ 1. Students number off; students 1-4 within teams

☐ 2. Teacher poses a problem or asks a question and gives think time.
- ☐ Pencils or markers are down during think time.

☐ 3. Students privately write or select their answers. ***(Individual Accountability) & (Equal Participation)***
- ☐ Students keep answers covered.
- ☐ Students signal when they have the answer.

☐ 4. Students stand up and "put their heads together," showing answers discussing, and teaching each other. ***(Positive Interdependence) & (Individual Accountability) & (Equal Participation)***
- ☐ Teacher says, "Heads together, bottoms up." (All students stand.)
- ☐ Everyone shares and compares within team. One student can lead checking.
- ☐ Students reach team consensus
- ☐ Students coach or reteach teammates if necessary.

☐ 5. Students sit down when everyone knows the answer or has something to share.
- ☐ Teammates sit down to signal they are ready.
- ☐ Students clean boards or hide notes.

☐ 6. Teacher calls a number. Students with that number answer simultaneously. ***(Individual Accountability) & (Interdependence) & (Equal Participation)***
- ☐ No help or talking at teams.
- ☐ For recall: students reproduce team response.
- ☐ For procedures: students are given a similar problem.
- ☐ For thinking: students share team ideas.
- ☐ Students show answers using: AnswerBoard Share, Chalkboard Responses, Choral Practice, Response Cards, Finger Responses, Manipulatives
- ☐ Teacher correction if needed.

☐ 7. Classmates applaud students who responded. ***(Positive)***

Note: Checklist was developed by Kagan Publishing and Professional Development. Do not duplicate without permission.

Appendix B: Student Confidence Scale

Thinking About My Word Study Words - FRIDAY

SCALE:
4 = I understand even more about the term than I was taught.
3 = I understand the term and I'm not confused about any part of what it means.
2 = I'm a little uncertain about what the term means, but I think I know.
1 = I'm very uncertain about the term. I really don't understand what it means.

Words	4	3	2	1
biology				
autobiography				
biologist				
survival				
survivor				
vivid				

Note: Student Confidence Scale was adapted from "Building Academic Vocabulary: Teacher's Manual" by R.J. Marzano and D.J. Pickering, 2005.

Appendix C: Social Validity Survey Questions

Student Survey

General Directions**:**

Please read each item aloud to your students and ask them to **circle the number** that best represents their feelings about that particular item. Emphasize the importance of completing the rating individually. Thanks!

1. How important is it for you to do well with vocabulary?				
1-not at all	2	3-somewhat important	4	5-very important
2. How important is it for all students to participate in class?				
1- not at all	2	3-somewhat important	4	5-very important
3. How much did you like using the structures during word study?				
1-not at all	2	3-some	4	5- A LOT
4. How often did you receive help from a teammate?				
1-not at all	2	3-some	4	5- A LOT
5. How much did you like sharing information with other team members?				
1-not at all	2	3-some	4	5- A LOT
6. How much did the structures help you to learn your vocabulary words better?				
1-not at all	2	3-some	4	5- A LOT
7. Do the structures seem like something that should be done in school?				
1-not at all	2	3-maybe	4	5- YES!
8. Overall, what did you think of the Kagan Structures?				
1-didn't like at all	2	3-somewhat liked	4	5-liked them A LOT!

Other Comments:

_____

Note: Survey was developed by Dr. Larry Maheady, Professor at Buffalo State University in New York.

Teacher Survey

General Directions**:**

Please read each item aloud to your students and ask them to **circle the number** that best represents their feelings about that particular item. Emphasize the importance of completing the rating individually. Thanks!

1. How important is it for your students to do well with vocabulary?				
1-not at all	2	3-somewhat important	4	5-very important
2. How important is it for all students to participate in class?				
1- not at all	2	3-somewhat important	4	5-very important
3. How much did you like using the structures during word study?				
1-not at all	2	3-some	4	5- A LOT
4. How often did you observe students receive help from a teammate?				
1-not at all	2	3-some	4	5- A LOT
5. How often did you observe students sharing information with other team members?				
1-not at all	2	3-some	4	5- A LOT
6. How much did the structures help your students learn their vocabulary words better?				
1-not at all	2	3-some	4	5- A LOT
7. Do the structures seem like something that should be done in school?				
1-not at all	2	3-maybe	4	5- YES!
8. Overall, what did you think of the Kagan Structures?				
1-didn't like at all	2	3-somewhat liked	4	5-liked them A LOT!

Other Comments:

_____

Note: Survey was developed by Dr. Larry Maheady, Professor at Buffalo State University in New York.

Appendix D: Exit Interview Questions for Teachers

1. Describe what you observed of students when using the Kagan Structures (i.e., intervention weeks).

2. How did you perceive the effectiveness of the Kagan Structures?

3. How did you perceive students' interactions and achievement during the baseline weeks?

4. How did you perceive students' interactions and achievement during the intervention weeks (i.e., use of cooperative learning using the Kagan Framework)?

5. IF you noticed a difference in behavior and achievement during the intervention and baseline weeks, why do you think there was a difference?

6. Describe your interactions with students during the baseline weeks and the intervention weeks.

7. How easy was it to implement the cooperative learning structures according to the Kagan Framework?

8. If you were talking to another teacher about Kagan Cooperative Learning Structures what would you tell them?

9. How much did students seem to like using the Kagan Structures?

10. Do you have anything else to add?

Vitae

Elizabeth C. DuBray-Allen

Colleges and Universities

1993-1997: Bachelor of Arts Elementary Education, with a minor in Dance Performance from Missouri State University; 2005-2007: Master of Arts in Education from Lindenwood University, 2013-present: pursuing Doctorate of Education in Instructional Leadership (expected graduation date in August 2016) from Lindenwood University

Teaching and Employment History

1998-2010: Fourth Grade Instructor and Grade Level Chair, at Hawthorn Elementary, Fort Zumwalt School District

2010-2012: Gifted Education Instructor, at St. Peters Elementary, Fort Zumwalt School District

2012-present: K-5 ELA Curriculum Coordinator, Fort Zumwalt School District

2012-present: Associate Trainer, Kagan Cooperative Learning

Awards

2008-2009: STARR (Selected Teachers as Regional Resources) Teacher for the state of Missouri

2015-present: Member of Alpha Chi, Lindenwood University