VARIATION OF TEACHER AND STUDENT USE OF
SPANISH WORDS IN ENGLISH VOCABULARY INSTRUCTION

A Thesis in
Curriculum and Instruction

by
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Submitted in Partial Fulfillment
of the Requirements
for the Degree of
Master of Science

August 2017
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ABSTRACT

This study investigates the variance of the use of Spanish words in the implementation of EL RAVE lessons. EL RAVE is a large project which is implementing both teacher and student materials for the purpose of improving students’ vocabulary learning through morphological analysis using bound Latin roots. The Latin roots are used as tools for students to learn new academic words in English. This study specifically examines classroom discourse and use of Spanish words (and other related Spanish words) which are provided in the EL RAVE materials. The Spanish words are used by both teachers and students to aid in the instruction of the new academic English words. A positive correlation was found between the teacher use of Spanish words and student use of Spanish words across the four teachers in the study when measured by utterances. Teachers with both low and high levels of Spanish speakers in their classrooms were found to have similar interactions with Spanish words. A difference was found in the quality of discourse between the teacher who could not speak Spanish and the teachers that could speak Spanish. Also, differences were noted with how students and teachers discussed Latin roots and Spanish words with transparent connections versus non-transparent connections and with Latin roots and Spanish words that have orthographic shifts versus no orthographic shifts.
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ACKNOWLEDGEMENTS

The current study is a subset of the research project “RETURNING TO OUR ROOTS: DEVELOPMENT OF A MORPHOLOGY INTERVENTION TO BOLSTER ACADEMIC VOCABULARY KNOWLEDGE FOR ADOLESCENT ENGLISH LEARNERS” (EL RAVE). This research was funded by a grant from the Institute of Education Sciences. The contents of this research do not necessarily reflect the opinions of the Institute of Education Sciences. I am very thankful for my readers: Amy Crosson, Mari Haneda, and William Carlson. I am very appreciative for Weiyi Cheng, who helped guide me through the statistical analysis.
Chapter 1

Introduction

There is a growing population in the United States of English as Additional Language learners (EAL learners) in primary and secondary schools (Kena et al., 2016). The percentage of EAL learners in 2013-2014 was 9.3% (averaged nationwide), which was roughly 4.5 million students (Kena et al., 2016). Of the 4.5 million students, 76.5% (3,770,816) students came from Spanish-speaking families (Kena et al., 2016).

In 2015, it was found that in 4th graders nationwide only 32% of EAL learners tested at basic or above for reading, versus 73% of non EAL learners (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, & National Assessment of Educational Progress, 2015). In 9th grade only, 29% of EAL learners tested at basic or above for reading versus 79% of non EAL learners (US Department of Education et al., 2015). This is a trend that has not dramatically changed since 1998 (US Department of Education et al., 2015). All of these scores were from the National Assessment of Educational Progress (NAEP) reading assessment (US Department of Education et al., 2015). This test assesses overall reading comprehension by having students read material for their grade level and answer questions (US Department of Education et al., 2015). This is an enormous difference, with EAL learners struggling significantly more than non EAL learners. With the population of EAL learners growing, interventions need to be put into place to help EAL learners succeed as
they progress through the US schools in their development of reading and literacy. The current study examined the variance of use of an intervention for vocabulary development with students who are learning English as a second language.

**Vocabulary Instruction**

Vocabulary knowledge is one of the factors contributing to the gap between Spanish speaking children and English native speakers when it comes to reading comprehension (García, 1991). Through a study involving 104 fifth and sixth grade students, roughly half of which spoke Spanish, students were tested with passages about their reading comprehension, their vocabulary using items from the subset of the California Tests of Basic Skills, and a prior knowledge test using multiple choice questions (García, 1991). Although the EAL students did use Spanish to try to figure out how to answer the questions, they scored lower than the native English speakers (García, 1991).

It has been found that vocabulary depth, size, and reading comprehension are highly intercorrelated (Qian, 2002). This shows that there is positive correlation between a person’s vocabulary depth and size with their basic reading comprehension. The study consisted of 217 students, most of the students were under 30 years of age and all were attending the University of Toronto to learn English (Qian, 2002). These students came from 19 different language backgrounds (Qian, 2002).

In addition, in a study with EAL learners who spoke Cantonese as their first language, it was found that English vocabulary was related to English word reading, English listening
comprehension, and English reading (Uchikoshi, 2012). The EAL learners who participated in the study were 101 second graders that had the mean age of 7.64 years old (Uchikoshi, 2012). All students had Cantonese as their first language with both parents’ primary language being Cantonese (Uchikoshi, 2012).

Vocabulary breadth and depth were also shown to be correlated to reading scores in study completed in Canada (Geva & Massey-Garrison, 2012). It was found that the monolingual students performed better on vocabulary breadth and depth tasks which correlated with their higher readings scores when compared to the EAL learners (Geva & Massey-Garrison, 2012). The study contained 178 total students in grade 5, with 57 speaking English as their first language and 121 EAL learners (Geva & Massey-Garrison, 2012). The EAL learners came from six different home language backgrounds (Portuguese, Punjabi, Tamil, Urdu, Chinese, and Russian) (Geva & Massey-Garrison, 2012). Students were measured in cognitive measures, oral language measures, and reading measures (Geva & Massey-Garrison, 2012).

In another study, when sets of vocabulary words were taught consistently to students – reading scores increased (Beck, Perfetti, & McKeown,. 1982). In a vocabulary intervention, teachers instructed 4th graders with 8-10 new words in 5 day cycles (for a total of 12 cycles) (Beck et al., 1982). This type of instruction was supposed to give students deep knowledge when it came to the new word (Beck et al., 1982). In posttests, the experimental group was found to show significant gains in the correlation to their increased vocabulary knowledge test and increased scores on the Reading and
Vocabulary sections of the Iowa Tests of Basic Skills (Beck et al., 1982). The increased reading comprehension could have been from transfer from the increased vocabulary skills or be from overall general academic performance, but the experimental group who went through the vocabulary intervention did show gains in comprehension (Beck et al., 1982).

EL RAVE is a program that is designed to allow students to more easily learn vocabulary by using knowledge of bound Latin roots. This ability would allow EAL learners to better their reading comprehension in English. This study looked at the student’s use of Spanish words that are in connection to the bound Latin roots and target academic English words. The Spanish words introduced to EAL learners in the EL RAVE program are called “Spanish friends”. These Spanish friends are common Spanish words that share the same bound Latin root as the target academic English words. A list of all of the academic English words, Latin roots, and Spanish friends provided in the EL RAVE materials are listed in Appendix A.

First Language Connections

Some EAL learners have the advantage of already knowing how to read or write another language (other than English) when they come to school for the first time. When a person uses a second language (L2) they do not need to relearn the content, or how to read or write again, if they already have those skills in their first language (L1) (Rodríguez,
Thus, if learners have the prior knowledge of reading and vocabulary in their L1 then they should be able to apply that knowledge to help them with their L2.

The current study examined the teacher and student use of Spanish friends in connection to Latin roots to learn new words in English. The research focused on lessons that provided Spanish friends to students to help them acquire new words. The research took place in two different school districts with two teachers in each school district. Each teacher had a different composition of EAL students; some of the students had Spanish as a first language, while others did not. The current study focused specifically on students who had Spanish as their first language. The Spanish friend provided in the materials for teachers had a connection to the target word in English as well as the Latin root.

It has been shown that Spanish-English bilinguals have an advantage in increasing literacy in school, because Spanish and English share similar the alphabetical principle – letters make sounds (Bialystok, McBride-Chang, & Luk, 2005). In addition, a study with 2nd grade Spanish speaking students showed that there is a strong correlation between L1 phonological and orthographic skills to L2 (English) reading, mirroring the results from Gottardo in 2002 (Sun-Alperin & Wang, 2011). This shows that the development of first literacy proficiency can impact second language literacy. The use of prior knowledge and the alphabetic principle can be used to develop instruction that allows L1 Spanish students to have more success when learning to read English.
In addition to the way that orthographic or phonological principles can affect students in their acquisition of their second language, vocabulary knowledge in the students’ first language can also have an effect. It has been found that students with greater Spanish vocabulary knowledge show increased English reading comprehension when compared to those with lower Spanish vocabulary knowledge (Proctor, August, Carlo, & Snow, 2006). This study was conducted with fourth graders (Proctor et al., 2006). They were tested for Spanish and English vocabulary using the Woodcock Picture Vocabulary test (Proctor et al., 2006). Although the students in the current study did not have a measure of their overall Spanish vocabulary knowledge, this finding supports the use of first language vocabulary in helping students develop their second language reading skills.

Zhao & Macaro (2016) studied participants (aged 19-20) who learned target words either with using their L1 or through a L2 only explanation in an English as a Foreign Language classroom. They found that using the L1 to explicitly explain both concrete (mostly physical items) and abstract (mostly feelings or emotions) words in L2 showed significant gains in learning both concrete and abstract words compared to only using the L2 in vocabulary instruction (Zhao & Macaro, 2016). Although the words taught were not cognates, these findings support the use of the L1 in the classroom for learning new target words, as done in the EL RAVE project and the current study. In EL RAVE, students are given a Spanish friend for each Latin root and English target word pair that is provided to the students. The current study focused on teacher and student use of the given Spanish friend.
Although Proctor et al. (2006) showed a positive correlation between Spanish vocabulary knowledge and English reading comprehension, it has also been found that there is limited transfer from the L1 to the L2 (Goodrich, Lonigan, & Farver, 2013). Goodrich et al. (2013) conducted a study with 94 preschool aged students who participated in 1 of 3 different language interventions for oral and reading skills. Students’ literacy was measured using the Preschool Comprehensive Test of Phonological and Print Processing. Although the results depended on the prior knowledge and language used during the intervention, they did find that students with initially higher vocabulary knowledge benefited from the intervention compared to those with lower vocabulary knowledge (Goodrich et al., 2013).

Mancilla-Martinez & Lesaux (2010) conducted a longitudinal study with a total of 387 Spanish speaking participants. They followed the students from ages 4.5 to 8 years and were measured for proficiency in English and Spanish for word reading, vocabulary, and reading comprehension using the Woodcock Language Proficiency Battery revised (Mancilla-Martinez & Lesaux, 2010). It was found that Spanish vocabulary and reading comprehension did not significantly predict English reading comprehension (Mancilla-Martinez & Lesaux, 2010). This result was explained because the students did not receive any formal Spanish instruction and many families reported using English at home (Mancilla-Martinez & Lesaux, 2010).

It has also been found that language knowledge between English and Spanish are not always consistently correlated (Goodrich, Lonigan, Kleuver, & Farver, 2016). It was also
found that the student is less likely to have a word in their L2 if they do not already have it in their L1 (Goodrich et al., 2016). This study involved 212 total participants ranging from 4.5- 5.8 years of age who were Spanish speakers (Goodrich et al., 2016). When it came to the test involving concept scoring about vocabulary, they found that vocabulary knowledge is largely language specific using the example that the Spanish word *casa* does not provide anything to help the EAL learners with the word *house* (Goodrich et al., 2016). However, the Latin roots taught in EL RAVE, along with the Spanish words, have similarities in their orthography. These relationships, that are similar to cognates, are explained directly by the teacher and utilized to help bridge connections between the Spanish friends, English words, and their shared bound roots.

**Language Cognate Relationships**

Spanish and English both share Latin roots that have evolved over time to create words which can be similar in orthography, phonology, and semantics (Lubiner & Hiebert, 2011). These similar words are called cognates. As language has developed, some words have diverged to show the same orthography but have different meanings entirely (false-cognates) such as *assist* (English - help) and *asistir* (Spanish - attend). There are words that are partial cognates as well as those that are full or identical cognates (Lubiner & Hiebert, 2011). Also, there are some words that may have multiple meanings, where one matches as a cognate and the other does not (such as *letra* which means letter in an alphabet versus *carta* which means letter or card in the mail). When looking at cognates and their use in helping L1 Spanish speakers learn to speak English, awareness must be
made regarding word meaning and pronunciation in both languages. The current study used specific words that have bound roots related to the Latin roots used in instruction, but are also related to an English academic word. The Spanish friend and English academic word did always exactly match in meaning, but the words could both be related to the Latin root. An example of this in the current study was the English word *survive* (to stay alive or continue carry on) that had the Latin root V I V (life) and the related Spanish friend *vivir* (to live). This relationship may seem very clear at a glance, but can also pose some challenges. Students can learn that the Latin root and Spanish friend are very similar, but will need to be able to differentiate from the Latin root to the English target word. The word *survive* is related to the word life, in that life does continue, but *survive* does not mean specifically life. This is where teacher explanation and use of the materials played a large factor in if students could use the root as a tool – not as something that to “plug in” to the new word to find the exact word meaning.

Linguistically, it has been shown that there is a Cognition Facilitation Effect (CFE) in both recognition and production of cognates for bilinguals (Rosselli, Ardila, Jurado, & Salvatierra, 2014). Bilinguals name faster and find meaning for cognates versus non-cognates. Brenders, Van Hell, and Dijkstra (2011) found that child L2 learners activate cognitively in both languages when accessing cognates, although research has shown that there is a cognate advantage with adult bilinguals more consistently (Potapova, Blumenfeld, & Pruitt-Lord, 2016). Additionally, bilinguals have been shown to rate cognates as being more frequent words than non-cognates, even if the word was not rated as a frequent word by a monolingual (Sherkina-Lieber, 2004). This perception may be
because the word shows up in both languages in which the bilingual has access. The author suggested that this perception of cognates may be one of the underlying factors of the CFE (Sherkina-Lieber, 2004). Although this study did not look at response time specifically in the use of cognates, the ability for bilinguals to have that extra resource and linguistic support is evident.

Cognates have been used in many studies, both studies that are linguistically and educationally based. It has been suggested that if a learner receives direct instruction in cognates when learning English, as a Spanish speaker, then they can use that information to facilitate them when reading English (Nagy, Garcia, Durgunoglu, & Hancin-Bhatt, 1993). In order for there to be facilitation, learners are required to know the word in Spanish and then also be able to recognize the word as a cognate in English (Nagy et al., 1993). An interesting fact to note is that many of the participants in the study did identify that they recognized a Spanish-English cognate in a recognition task but then they did not circle the cognate in the passage task. This suggests that the participants were able to activate recognition of the cognate, but needed to be aware of the relationship to the actual language in context to utilize that information. They were not able to use the relationship automatically (Nagy et al., 1993; Lubiner & Hiebert 2014). EL RAVE provided instructional materials to teachers to guide students to see the relationship between the use of the provided Spanish friend and the Latin root. This relationship was made to facilitate that close connection, even though the student might not have had the prior vocabulary knowledge to identify the direct cognate between the Spanish and English word.
A study by Schwartz, Kroll, & Diaz (2007) showed that language is non-selective when reading cognates. This study was completed with bilinguals who were Native English speakers. There was evidence of cross-language interaction (when similarities of phonology or orthography of one language affect response time), such as when there was a difference in response time based on the orthographic or phonological shifts in the words presented (Schwartz et al., 2007). An example of a phonological shift would be in the word *base* (English) and *base* (Spanish). It is when words look the same but are pronounced differently (Schwartz et al., 2007). An orthographic shift is when the word sounds similar but is spelt differently, such as *train* (English) and *tren* (Spanish). It has been shown that when cognates are similar in orthography, phonology, and semantics then cross-language transfer (when knowing a word in one language assists another language ie. cognates) is facilitated (Lubiner & Hiebert 2011). The current study contains two Spanish friends that have exact orthographic cognates in English, but those counterparts are not included in instruction. For example, the Spanish words *valor* and *similar* are used as Spanish friends, but their English counterparts are not part of the words provided in the EL RAVE instruction. Some students may take advantage of these cognates, but not all students are expected to have high levels of Spanish development that would give way to these higher academic words.

Similarity of cognates has been measured in noun and adjective Spanish-English cognates by a rating of transparency by Montelongo, Hernández, and Herter (2009). Cognate transparency is also very important when it comes to bilinguals showing facilitation or inhibition with cognates. When analyzed, it was found that Spanish-
English cognates are more similar in orthography than phonology (Lubiner & Hiebert, 2011). It is possible to teach learners to identify cognates despite differences in orthography or phonology. Differences in orthography can be taught for learners to identify, such as the doubling of consonants, letter shifts, and the complexity of vowels in English compared to Spanish (Lubiner & Hiebert, 2011). The Latin roots provided in the instruction in the current study also may have an orthographic shift from the Spanish friend. For example, the students were provided the Spanish word *torcer* (to twist) with the Latin root *tort* (twist), but there is an orthographic shift between them. The Latin roots were always given to the students from the teacher as letter strings – but the teachers would accept the Latin root both spelled by letter and said as a unit from the students. This may have limited issues with phonological shifts between roots, Spanish friends and English words as the Latin roots were always presented in letter strings. The current study did not address phonological shifts as there was no way to know the correct pronunciation of the Latin root when comparing it to the Spanish word.

Although it may seem that teaching direct cognates from the Spanish friend to the English word (without the use of the bound root in Latin) could be fruitful, that would depend on if the student knew the English word being taught already in their native language. It has been found that many Spanish speaking EAL students fail to show use of academic words in writing tasks in their Native language (Crosson, Matsumura, Correnti, & Arlotta-Guerrero, 2012). Without the prior knowledge of the word in Spanish, students will not be able to use the cognate without learning the word in both languages at the same time. The Spanish friends that were given to the teachers were words that were
chosen to be more common than the academic English target words. The common Spanish words were postulated to create a bridge between the unknown English word and the already known Spanish word. Students in EL RAVE were provided a picture vocabulary task in order to confirm that the Spanish friend provided in the instruction was a known word for the Spanish speaking learners.

**Classroom Context**

The instruction provided for EL RAVE was given in public school classrooms. Each classroom maintains a social context, an interactional context, and the discourse of the lesson may show individual agency of both the students and the teacher (Rymes, 2009). Although each classroom was given the same scripted materials as part of the EL RAVE research project, the use of Spanish friends in each classroom was predicted to differ. Classrooms can be affected by what happens outside the classroom and what the students and teacher bring into the classroom with past experiences (Rymes, 2009). This means that when students are talking and discussing the Spanish friends with the teacher, they will use their own personal experiences to aid to the context. Talk can be regulated by the interactional context in the classroom, both between the students and between the students and the teacher (Rymes, 2009). This interactional context will be affected by both the social context in the classroom and individual agency of the students and teacher in the class (Rymes, 2009). Individual agency is the personal control that the people have for how they act, including whether they choose to go against the social and interactional norms (Rymes, 2009). The current study examined how students use their own individual
agency and language knowledge through the use of Spanish vocabulary during the classroom discourse. It was predicted that students may show individual agency to show misunderstandings between teacher and student as well as provide their own input about the Spanish vocabulary.

Individual agency also can be shown through the teacher’s attitude in the classroom. There are many teachers who are not trained specifically to work with EAL learners (Garcia-Nevarez, Stafford, & Arias, 2005). One norm in many classrooms in America is that English should be the only language used in education, with bilingual education being seen as a minority issue (Garcia-Nevarez et al., 2005).

Garcia-Nevarez et al. (2005) studied 152 elementary school teachers in Arizona (including bilingual and English only teachers) and looked at teacher attitudes towards the use of their students’ first language (L1) in the classroom. Most of the students had the first language of Spanish (Garcia-Nevarez et al., 2005). They found specific differences between bilingual teachers, English as a Second Language (ESL) Teachers, and traditional teachers. In regards to instructional purposes, bilingual teachers supported the use of the native language in the classroom and believed there was a connection to the use of Spanish and the student’s self-esteem. ESL teachers only used the student’s first language to facilitate instruction while traditional teachers (not trained in bilingual or ESL teaching) were against using a student’s first language (Garcia-Nevarez et al., 2005). Some teachers believed that use of the first language with a student should depend on a
student’s age and proficiency in their native language but all teachers believed that instruction should be only in English after the third grade (Garcia-Nevarez et al., 2005).

In addition, the longer teachers taught (in years) the more negative they felt towards the student’s first language (Garcia-Nevarez et al., 2005). Also, Latino teachers were more positive towards using the student’s first language in the classroom (Garcia-Nevarez et al., 2005). These results would lead to the belief that there might be differences between teachers when teachers have different experience levels and backgrounds.

Gándara, Rumberger, Maxwell-Jolly, & Callahan (2003) found that EAL learners have seven primary areas of inequitable conditions in school, based on their research in the California school systems. EAL learners are less likely to be taught by a fully credentialed teacher than any other student (Gándara et al., 2003). There are also issues with not enough professional development for teachers to learn how to support their EAL learners as well as adequate monitoring of EAL progress (Gándara et al., 2003). EAL students are also not given the instructional materials, facilities, or time needed to meet their learning goals (Gándara et al., 2003). There is also an issue with segregation in California schools where there is a high concentration of EAL learners in classrooms (Gándara et al., 2003). They argue that this makes it so students do not have good models for the English language and high/moderate academic achieving students as well as experienced qualified teachers as mentioned previously (Gándara et al., 2003). The current study argued that the implementation of the instructional materials and training of the EAL learner’s teachers would help increase the overall well-being of the students.
García, Arias, Harris Murri, & Serna (2010) advocated that teachers must be responsive to the diversity of their students. Teachers need to have preparation programs that give them understanding of the EAL learner communities (García et al., 2010). They also support linking university with teachers to create collaborative learning communities to best teach EAL learners (García et al., 2010). Teachers in the current study worked directly with professors and staff at University of Utah and Pennsylvania State University to learn how to use the instructional materials effectively.

**Classroom Discourse**

Discourse in the classroom can vary greatly from teacher to teacher. Mercer (2000) described how classroom discourse is created through a variety of factors including “thinking together” and “ground rules of the conversation”. “Thinking together” describes the way that people use language to work together to create a shared experience in discussion (Mercer, 2000). It allows for people to work together to solve problems and create new ideas through discourse. There are conversational ground rules in place in each classroom (Mercer, 2000). These ground rules may be different depending on the teacher and students and may affect how students interact in the classroom. There is a shared agreement and understanding on how certain conversations should be held in a classroom. In the current study these ground rules were predicted to differ per classroom and affect how conversation took place between the students and the teacher.
Past knowledge can be used to jointly build new understanding and shared context, as called the givens and the new by Mercer (Mercer, 2000). Words and structures of language are considered given knowledge and can be used to help build understanding in the classroom. The given and the new allows for the class to be built together by both students and teacher.

Classroom Discourse within EL RAVE

The classrooms in the current study contained students who had been together in a class for the previous semester, and most of the students had participated in EL RAVE previously. It was expected that the teachers and students were able to use prior knowledge of EL RAVE to build a more cohesive classroom and discussion than if it had been a novel experience for both the teachers and students. Types of classroom talk include cumulative talk where students and the teacher build on each other’s contributions and are mutually supportive (Mercer, 2000). Conversations also were predicted to include exploratory talk where the students and teacher engage critically with each other’s ideas to make progress in the conversation (Mercer, 2000). Also, classrooms could show types of disputational talk when the conversation participants may not take another person’s point of view (Mercer, 2000).

These conversations were predicted to be vital in showing how the teachers and students address the materials given in the EL RAVE intervention, specifically the Spanish words used in this instruction. It was expected that the students who engaged in productive and
exploratory conversations about the Spanish friends would have Spanish as their home language.
Chapter 2

The Current Study

The current study was a subset of EL RAVE, which is a research project investigating the use of Latin roots in EAL instruction. EL RAVE introduces EAL learners to Latin roots in order to aid them in the acquisition of new words in English. The instruction was broken into an introduction cycle, eight full instructional cycles, and two review cycles. Throughout the full cycle the students learned eight new academic words in English and the Latin root in each word. For each English academic word and Latin root, the students also learned root-related words and a root-related Spanish word (the Spanish friend). Lesson 1, 2, 4, and 5 gave the EAL learners instruction for the eight target words, one word root-related to those in English, the Latin root, and the related Spanish friend. Lessons 3 and 6 and 9 provided the students review as well as instruction about more related words to the Latin root in English. Lessons 7 and 8 gave the students a chance to review the English words and roots and practice the academic English words in paragraph contexts. Each student was provided a student binder and each teacher was given materials with scripted instruction to guide students through the process of learning and connecting roots to new English words.

The current study focused on Lessons 4 and 5 from Cycles 5, 6, 7, and 8 where a Spanish word was introduced to the students for each Latin root that is taught. This word was provided to the students and teachers as a “Spanish friend” which is just a term coined to help the students understand that the word will help them as they learn new roots and
English words. For example, for the Latin root J U D I C, which means judge, the materials directed the teachers and students to the Spanish friend *juez*, which also, in this case, means judge. These Spanish friends were used in all materials of EL RAVE, including the classrooms where there are not a majority of students who speak Spanish. The current study looked at how the use of language connections vary based on the teacher’s use of the materials. This study also examined the student and teacher use of Spanish words that are related semantically or if the Latin root had an orthographic shift when comparing to the Spanish friend. An example of this would be if the Spanish friend was the word *vivir* and a student said the word *vida* in the lesson. The word *vivir* means the verb “to live” while the word *vida* means the noun “life.” These words are semantically related, but someone without Spanish knowledge might not see the connection because of the orthographic differences. In this study, these words were called related Spanish words.

The current study examined classroom composition differences between school districts and how the variation in use of Spanish friends was related to the students’ home language. The current study looked at the spontaneity of student response and discourse in general regarding the use of first language connections to new words. It involved four teachers in two different school districts. Three of the teachers were teaching ESL classes, while the other teacher was teaching an English class with a large amount of EAL students. The teachers came from different language backgrounds and had different years of experience teaching EAL learners.
Research Questions

The main research question was as followed: How are teachers using Spanish friends as language tools in the implementation of EL RAVE?

The following sub-essential questions were addressed:

1. Will average talk time of Spanish Friends positively correlate to average lesson time across all teachers?
2. Is there a relationship between the following: classroom size, teacher use of Spanish friends, student use of Spanish friends, and percentage of Spanish speakers in the classroom?
3. Does teacher correlate to the teacher use and student use of Spanish friends?
4. What patterns of discourse can be observed in two transcripts from teachers with different language backgrounds for classroom instruction and implementation of EL RAVE?
5. Do students process transparent Latin root and Spanish friend connections better than non-transparent Latin root and Spanish friend connections?
6. Do students struggle when discussing Spanish friends that have an orthographic shift from the Latin root?

Hypothesis and Predictions

In response to the research questions, the following predictions were made:

1. With increased amount of lesson time there would be an increase in use of talk
time for the Spanish friend and related Spanish words. The current study predicted that the teachers that spent more time overall on the lesson would spend more time on the Spanish friends and related Spanish words. This would mean that the effect of time would not matter when looking at the other relationships and the average amount of times teachers used Spanish friends and related Spanish words in their lessons.

2. There would be a positively trending relationship between teacher use of Spanish friends and related words and student use of Spanish friends and related words. This would mean that the more that the teachers connect to the first language of their students, the more the students would also apply and use their first language with the material. This would show that teacher use of the instructional material in the classroom can change student responses allowing for more connections to be built to the students’ L1.

3. Teachers who have lower numbers of Spanish speaking students in class would not use Spanish friends as much as teachers who have a majority of Spanish speaking students. This was predicted because although teachers are all given the same materials to implement in the classroom, teachers that did not have Spanish speaking students were predicted to not be able to have full discussions with the Spanish friend and related Spanish words because of lack of knowledge in the classroom about Spanish. This could mean that classrooms that have EAL learners who do not speak Spanish may not utilize the Spanish friends to their fullest in connection and aid to learning how to use the Latin root to acquire new words.
4. Teachers who speak Spanish would use Spanish friends and related words more often than the teacher who does not speak Spanish. This was predicted because teachers who did not have knowledge in Spanish would not have the vocabulary to use related words in Spanish. This could mean that Spanish speaking teachers who teach the intervention may provide better resources for their students when it comes to connecting the Latin root to the Spanish friend.

5. Classroom size would not change the talk time of Spanish friends and related words in the lessons that teach Spanish friends. This was predicted because talk time may vary based on the amount of Spanish speakers in the classroom, not how big the classroom is. For example, if there are 10 students who could speak Spanish in a very small classroom it was predicted that there would be more talk related to the Spanish friends and related words than in a classroom of 20 students with 2 Spanish speaking students.

6. Patterns of discourse would vary between the teacher who did not speak Spanish and the teachers who spoke Spanish fluently. This was predicted because teachers who cannot speak Spanish might not be able to assist their students as they discuss Spanish friends and related Spanish words. This might mean that the instructional materials for Spanish friends would need to include more scaffolding and assistance for teachers who do not speak Spanish.

7. Students would struggle with non-transparent roots with their discussion to that of Latin roots that are transparent to the Spanish friend. This was predicted because the meaning was not the same; they would have to process the meaning of the Spanish friend in order to understand the connection.
8. Students might struggle using the Latin root in the Spanish friend when there is an orthographic shift. This was predicted because the Latin root would not as easily be shown in the words where there is an orthographic shift.
Chapter 3

Materials and Methods

Participants

The participants consisted of four classrooms of students, two classrooms from District 1 and two classrooms from District 2. The students ranged from 7th to 10th grade. Three of the four classrooms were specified as ESL, while one classroom (Teacher 4) taught an English classroom with many EAL students. All of the students were part of the EL RAVE intervention program. All of the four teachers taught EL RAVE previously (either fall semester or during spring last school year). Table 3-1, below, shows how many years each teacher had taught, the actual class they were implementing the materials in, and the languages that teacher could speak.

Table 3-1

Teachers

<table>
<thead>
<tr>
<th>District</th>
<th>Teacher</th>
<th>Years Taught</th>
<th>EL RAVE Class</th>
<th>Languages Spoken</th>
</tr>
</thead>
<tbody>
<tr>
<td>District 1</td>
<td>Teacher 1</td>
<td>11</td>
<td>ESL</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Teacher 2</td>
<td>15</td>
<td>ESL</td>
<td>English, Spanish, French, Tongan, limited Hungarian</td>
</tr>
<tr>
<td>District 2</td>
<td>Teacher 3</td>
<td>18</td>
<td>ESL</td>
<td>English, conversational Spanish and Italian</td>
</tr>
<tr>
<td></td>
<td>Teacher 4</td>
<td>4</td>
<td>English</td>
<td>English, Spanish</td>
</tr>
</tbody>
</table>
Data

The data used for analysis was transcripts from Iteration #3 implementation of EL RAVE (Lessons 4 and 5 in Cycles 5, 6, 7, and 8). Eight lessons from Teacher 1, six lessons from Teacher 2, seven lessons from Teacher 3, and seven and a half lessons from Teacher 4 were audio-recorded and transcribed. Home Language Surveys were given to the students in each classroom to identify the language that they used at home. Their responses were used to identify which students spoke Spanish or a different language. An example of the Home Language Survey is in Appendix B. Also, a Spanish Picture Vocabulary Task was given to the students to see if the students knew the common Spanish friends before the instruction. This task consisted of 8 pictures per page that corresponded with 8 Spanish friends. When the test administrator (someone part of the research team either at the University of Utah or Pennsylvania State University) read the Spanish friend aloud the students had to match the word to the correct picture.

Analytic Approach

Each transcript was coded at document level for teacher and district. As there was missing data for some of the teachers, averages were calculated for all of the variables except for individual classroom size. It was assumed that the missing lessons would look similar to the lessons that were recorded and coded for the corresponding teacher. Correlations were run between the following variables: teacher average frequency of use of Spanish friends, teacher average frequency of use of related words, student average frequency of use of Spanish friends, student average frequency of use of related words,
total time discussing Spanish friends and related words, classroom size, total lesson time, and percentage of Spanish speakers in the classroom. Frequency of use of Spanish friends and related words for both teacher and student were recorded by utterance.

Total time of discussion of Spanish friends was timed from when the teacher gave the class an indicator such as Teacher 1 in Cycle 7 Lesson 4, “on to our Spanish root,” to when the class moved on to another topic which was usually marked by a word such as good or alright. An example of this is Teacher 1 in Cycle 8 Lesson 4, “to write, good, alright, excellent.” If the teacher or student spoke the Spanish friend or a related Spanish word to the Latin root aloud in one utterance in the middle of another part of the lesson than that utterance was coded as one second. If there was extended time of a teacher talking off topic about the Spanish friend in the midst of transcript of Spanish friend conversation then the timer was paused. For example, note the transcript excerpt below where 18 seconds of the Spanish friend time were subtracted from the overall time of Spanish friend discussion.

1 S: vista
2 T: kay, those of you that speak, (34:57) S1 sit down, S1, grab your binder, yup, sit down, I tell you when you’re done not you
3 SS: ohh
4 T: sit down
5 S: wow
6 T: don’t start, you already know
7 SS: chatter
8 (35:15) T: so, those of you that speak Spanish

Transcripts were analyzed for patterns of teacher talk, teacher and student discussions of Latin roots and Spanish friends that have orthographic shifts, and teacher and student discussions of transparent connections between Latin roots and Spanish friends.
Transcripts were examined in mini comparative case studies to look at patterns of talk comparing a teacher who does not speak Spanish to a teacher who does speak Spanish. These lessons were coded using types of talk as discussed above by Mercer (2000) and Rymes (2009). This included exploratory, disputational, cumulative talk, as well as prior knowledge indicators (the given and the new) (Mercer, 2000), as well as speech that showed the individual agency of the classroom participants (Rymes, 2009).

Also, transcripts were examined for student talk with Spanish friends that had an orthographic shift and those which did not. In the table below, Table 3-2, the Spanish friends are listed with the Latin root. 4/16 (25%) of the Latin roots had an orthographic shift, while 12/16 (75%) of them did not. The Spanish friends which had an accent on part of the Latin root (for example, círculo and C I R C) were not counted as an orthographic shift as the letter was still the same.
Table 3-2

*Orthographic Shifts between the Latin Root and Spanish Friend*

<table>
<thead>
<tr>
<th>Latin Root</th>
<th>Spanish Friend</th>
<th>Orthographic Shift</th>
</tr>
</thead>
<tbody>
<tr>
<td>circ</td>
<td>circulo</td>
<td>no</td>
</tr>
<tr>
<td>ver</td>
<td>verdad</td>
<td>no</td>
</tr>
<tr>
<td>sent/sen</td>
<td>sentimientos</td>
<td>no</td>
</tr>
<tr>
<td>viv</td>
<td>vivir</td>
<td>no</td>
</tr>
<tr>
<td>spec</td>
<td>especifico</td>
<td>no</td>
</tr>
<tr>
<td>tort</td>
<td>torcer</td>
<td>yes</td>
</tr>
<tr>
<td>val</td>
<td>valor/valiente</td>
<td>no</td>
</tr>
<tr>
<td>vid/vis</td>
<td>vista</td>
<td>no</td>
</tr>
<tr>
<td>cred</td>
<td>creíble</td>
<td>yes</td>
</tr>
<tr>
<td>judic</td>
<td>juez</td>
<td>yes</td>
</tr>
<tr>
<td>ult</td>
<td>último</td>
<td>no</td>
</tr>
<tr>
<td>luc/lum</td>
<td>luz</td>
<td>yes</td>
</tr>
<tr>
<td>scrib</td>
<td>escribir</td>
<td>no</td>
</tr>
<tr>
<td>medi</td>
<td>medio</td>
<td>no</td>
</tr>
<tr>
<td>son</td>
<td>sonido</td>
<td>no</td>
</tr>
<tr>
<td>simul/simil</td>
<td>similar</td>
<td>no</td>
</tr>
</tbody>
</table>

Latin root to Spanish friend transparency was also examined in the transcripts. Table 3-3 shows the Latin root, its meaning, the Spanish friend, and the Spanish friend meaning. The relationship was said to be transparent when the Latin root meaning was the same as the meaning of the Spanish friend. 4/16 (25%) roots were not transparently related to the Spanish friends meaning.
Table 3-3

<table>
<thead>
<tr>
<th>Latin Root</th>
<th>Latin Root Meaning</th>
<th>Spanish Friend</th>
<th>Spanish Friend Meaning</th>
<th>Transparent</th>
</tr>
</thead>
<tbody>
<tr>
<td>circ</td>
<td>around</td>
<td>circulo</td>
<td>circle</td>
<td>no</td>
</tr>
<tr>
<td>ver</td>
<td>believe or truth</td>
<td>verdad</td>
<td>truth</td>
<td>yes</td>
</tr>
<tr>
<td>sent/sen</td>
<td>feel</td>
<td>sentimientos</td>
<td>feelings</td>
<td>yes</td>
</tr>
<tr>
<td>viv</td>
<td>life</td>
<td>vivir</td>
<td>to live</td>
<td>yes</td>
</tr>
<tr>
<td>spec</td>
<td>type or kind</td>
<td>especifico</td>
<td>specific</td>
<td>no</td>
</tr>
<tr>
<td>tort</td>
<td>twist</td>
<td>torcer</td>
<td>twist</td>
<td>yes</td>
</tr>
<tr>
<td>val</td>
<td>strong</td>
<td>valor/valiente</td>
<td>bravery/brave</td>
<td>no</td>
</tr>
<tr>
<td>vid/vis</td>
<td>see</td>
<td>vista</td>
<td>view</td>
<td>no</td>
</tr>
<tr>
<td>cred</td>
<td>believe</td>
<td>creíble</td>
<td>believable</td>
<td>yes</td>
</tr>
<tr>
<td>judic</td>
<td>judge</td>
<td>juez</td>
<td>judge</td>
<td>yes</td>
</tr>
<tr>
<td>ult</td>
<td>beyond or last</td>
<td>último</td>
<td>last</td>
<td>yes</td>
</tr>
<tr>
<td>luc/lum</td>
<td>light</td>
<td>luz</td>
<td>light</td>
<td>yes</td>
</tr>
<tr>
<td>scrib</td>
<td>write</td>
<td>escribir</td>
<td>to write</td>
<td>yes</td>
</tr>
<tr>
<td>medi</td>
<td>middle</td>
<td>medio</td>
<td>middle</td>
<td>yes</td>
</tr>
<tr>
<td>son</td>
<td>sound</td>
<td>sonido</td>
<td>sound</td>
<td>yes</td>
</tr>
<tr>
<td>simul/simil</td>
<td>be like</td>
<td>similar</td>
<td>similar</td>
<td>yes</td>
</tr>
</tbody>
</table>

The transcripts were analyzed to see how teachers and students discussed both the transparent roots and non-transparent roots. These transcripts were coded in four ways, examples shown below:

Teacher and student (or student and student) had dialogue about the Latin root and how it related to the Spanish friend:

Teacher 3, Cycle 7, Lesson 4

1 T: so what’s, okay, so what’s the connection between the meaning of the Spanish word and the meaning of the root? S1 what’s the meaning, what’s the connection?
2 S: the same
3 T: what’s the connection?
4 S: judge
Teacher told the class the relationship of the root and the Spanish friend:

**Teacher 4, Cycle 5, Lesson 4**

1. T: kay so Spanish friend let’s see if S1 is correct, what do you think our Spanish friend is?
2. S1: verdad
3. T: kay, he’s right again, so Spanish friend is verdad, those of you that know Spanish, what does verdad mean
4. SS: truth
5. T: kay what’s the connection there?
6. S: is that right?
7. T: they actually mean exactly the same thing right? verdad and truth, sit down we’re not done, kay, so Spanish word is verdad which means truth

Teacher said the root meaning but relationship was not explained:

**Teacher 1, Cycle 5 Lesson 4**

1. T: Anybody knows what a círculo means?
2. SS: yes, circle.
4. S: círculo

Root was not mentioned in Spanish friend instruction:

**Teacher 2, Cycle 7, Lesson 5**

1. T: so the Spanish friend is luz and that means light
2. S: light
3. T: okay, and our root –related word is translucent
4. S: what is translucent
5. S: what is the Spanish word miss?
6. S: luz, L U Z
7. S: luz, L U Z
Chapter 4

Results

Through the use of the Picture Vocabulary task, it was shown that in District 1, on average, students knew 90.63 (mean=29, SD=3.32) of the Spanish friends. In District 2, on average, students knew 79.75 (mean=25.52, SD=6.62) of the Spanish friends. This shows that most of the students knew the Spanish friends that were presented in the instruction.

As shown in Table 4-1, average lesson time did not vary much except for between Teacher 3 and the other teachers. The overall percentage of lesson that was used for Spanish friends did not show much variation between district and teacher.

Table 4-1

<table>
<thead>
<tr>
<th>Classroom Time Use (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Teacher 1</td>
</tr>
<tr>
<td>Teacher 2</td>
</tr>
<tr>
<td>Teacher 3</td>
</tr>
<tr>
<td>Teacher 4</td>
</tr>
</tbody>
</table>

In response to research question one, a positive trending correlation was found significant at the alpha=.05 level between the amount of lesson time and the amount of average time spent on Spanish friends ($r = .980$, $p = .02$).
In response to research question two, correlations were run between the following variables: classroom size, teacher use of Spanish friends and related words, student use of Spanish friends and related words, and percentage of Spanish speakers in the classroom.

Table 4-2 shows the averages by teacher. Table 4-2 shows the correlation matrix.

**Table 4-2**

*Classroom Composition and Average Use of Spanish Friends and Related Spanish Words*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Teacher Use of Spanish Friend Mean</th>
<th>Teacher Use of Related Spanish Word Mean</th>
<th>Student Use of Spanish Friend Mean</th>
<th>Student Use of Related Spanish Word Mean</th>
<th>Classroom Size</th>
<th>Percentage Students who are Spanish Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
<td>9.13 2.75</td>
<td>1.13 2.47</td>
<td>7.63 3.50</td>
<td>1.25 1.75</td>
<td>10</td>
<td>20%</td>
</tr>
<tr>
<td>Teacher 2</td>
<td>3.33 2.42</td>
<td>1.00 1.27</td>
<td>4.83 4.07</td>
<td>1.17 0.75</td>
<td>18</td>
<td>16.67%</td>
</tr>
<tr>
<td>Teacher 3</td>
<td>10.25 5.04</td>
<td>1.38 2.00</td>
<td>8.36 4.27</td>
<td>1.75 2.19</td>
<td>24</td>
<td>75%</td>
</tr>
<tr>
<td>Teacher 4</td>
<td>6.75 1.75</td>
<td>0.75 0.71</td>
<td>5.00 4.17</td>
<td>3.86 4.61</td>
<td>18</td>
<td>66.67%</td>
</tr>
</tbody>
</table>
Table 4-3

*Correlations of Spanish Use (n=4)*

<table>
<thead>
<tr>
<th>Teacher Use of Spanish Friend</th>
<th>Teacher Use of Related Spanish Word</th>
<th>Student Use of Spanish Friend</th>
<th>Student Use of Related Spanish Word</th>
<th>Percentage Spanish Speakers in Classroom</th>
<th>Classroom Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Use of Related Spanish Word</td>
<td>(r = 0.612)</td>
<td>(p = 0.388)</td>
<td>(r = 0.907)</td>
<td>(p = 0.093)</td>
<td></td>
</tr>
<tr>
<td>Student Use of Spanish Friend</td>
<td>(r = 0.873)</td>
<td>(p = 0.127)</td>
<td>(r = 0.873)</td>
<td>(p = 0.127)</td>
<td>(r = 0.014)</td>
</tr>
<tr>
<td>Percentage Spanish Speakers in Classroom</td>
<td>(r = 0.512)</td>
<td>(p = 0.488)</td>
<td>(r = 0.113)</td>
<td>(p = 0.887)</td>
<td>(r = 0.258)</td>
</tr>
<tr>
<td>Classroom Size</td>
<td>(r = 0.060)</td>
<td>(p = 0.940)</td>
<td>(r = 0.298)</td>
<td>(p = 0.702)</td>
<td>(r = 0.068)</td>
</tr>
</tbody>
</table>

Although none of the correlations between variables showed significant at the alpha = .05 level, there is a strong positive trend between the teacher use of Spanish friend and student use of Spanish friend \((r = 0.907, p = 0.093)\) and between student use of Spanish friend and teacher use of related Spanish word \((r = 0.873, p = 0.127)\). The chart, Figure 4-1, shows the average teacher use of Spanish friend and student use of Spanish friend for each teacher.
There was no relationship between classroom size and teacher use of Spanish friend and classroom size \((r = .060, p = .940)\), between teacher use of Spanish friend and student use of related word \((r = .014, p = .986)\), and between class size and student use of Spanish friend \((r = .068, p = .932)\). The relationship between teacher use of related words and student use of related words correlated as a negative medium effect \((r = -.668, p = .332)\). When looking at the actual raw data for this relationship, the number of occurrences of teacher use of related words and student use of related words were very similar except for Teacher 4, where two lessons had low numbers for teacher use of related words (1 and 1) when compared to the student use of related words (13 and 8 respectively). Due to the small sample size, these two lessons strongly affected this correlation.

Figure 4-1. Teacher Use of Spanish Friend and Student Use of Spanish Friend
Case Studies

The following case studies were chosen to address research questions four, five, and six. These questions examined the relationship of teacher language background on Spanish friend instruction, the transparency of Latin roots to Spanish friends in instruction, and the effects of orthographic shifts between Latin roots and Spanish friends in instruction.

Teacher Language Effects on Instruction

The following transcripts address research question four, “What patterns of discourse can be observed in two transcripts from teachers with different language backgrounds for classroom instruction and implementation of EL RAVE?” The transcripts show the instruction and dialogue of the Latin root V I V (life) and the Spanish friend vivir (to live) in Cycle 5, Lesson 5. The first transcript was taught by Teacher 1, who did not speak Spanish. The second transcript is taught by Teacher 4 who spoke Spanish fluently. 20% of Teacher 1’s students were Spanish speakers and 67% of Teacher 4’s students were Spanish speakers. The transcripts below were analyzed for types of talk, teacher and student agency, as well as any indicators of the benefit or disadvantage that teachers may have had due to language abilities.

Transcript 1 - Teacher 1

1 T: Our Spanish friend.
2 S: vivasa
3 S: vivasay
4 T: What do you think it is?
5 S: vivir
6 S: vivir
7 S: vida, vida
8 T: how about vivir.
S: vida
S: what?
T: it means the same thing? Well I dunno, I dunno Spanish
S: what is it?
T: vivir.
S: vivir
S: oh
T: is it I R? V I V I R?
S: I R yeah
S: what? Oh vivir, oh that’s right
S: vivir
S: vivir
T: and what’s vivir mean, S2?
S2: life.
T: life, All right. Got the same root, as vivacious, and survive and all of them together, mean live or life. Excellent.
S: T, isn’t vida life?
T: S3 stop, S4, isn’t vida mean life?
T: isn’t what?
S: vida
T: vida?
S: uh huh
T: yes, living la vida loca, living la vida loca
S: oh my god
T: what? That’s your favorite song right? What’s that guys name? Who sang that? Living la vida loca?
S: that guy
S: Enrique
S: Enrique
T: no ah, living la vida loca
S: oh Mark Anthony
T: no Mark Anthony
S: Mark Anthony?
T: nooo
S: WWE
T: living la vida loca, oh no, what was that guys name, we’ll google it when we are in the computer lab

Transcript 2 - Teacher 4

T: so we’re gonna talk about our Spanish friend, what do you think our Spanish friend is?
S: vivir
S: vivi
T: maybe vivi?
S: viendo or something
S: vivir
S: vida
S: vida
S: vida en pena
S: Frida
S: no manches
T: kay, our word is actually verdad
S: ahh damn
S: verdad?
S: but it doesn’t have V I V
T: you’re right
S: verdad
S: what?
T: so I’m guessing that the root?
S: wait, that, we also have that for verify
T: verdad?
S: yeah
S: vivacious
S: yeah we have that for verify
S: yeah we do
T: we do, hold on then
S: somethings wrong
T: so that’s probably not right, so erase it
S: oh no
S: vida
S: or vida
S: la vida
T: kay, we’re gonna put vivir, kay so you guys are right, vivir,
S: we’re gonna teach you Spanish
T: kay, vivir makes you more sense, now let’s underline our root, V I V, um those of you that know Spanish, what does vivir mean?
SS: live
T: to live right? so we see that those are pretty much the same thing right? life, to live, kay good

Transcript 1 and Transcript 2 showed great differences in how the teachers were able to talk and discuss relationships of the Spanish friend and related words. The overall classroom ground rules looked similar. In Transcript 1 and Transcript 2, line 1, Teacher 1 just had to say the words “our Spanish friend” to have students start trying to volunteer answers while Teacher 4 asked “what do you think our Spanish friend is?” Both of these showed that there are ground rules in the classrooms that have been built so that the students feel comfortable speaking out and answering questions (Mercer, 2000).

Transcript 1 showed the students and Teacher 1 discussing the word vida together from lines 30-42 in context with a song that the teacher knew. Although this teacher did not speak Spanish, the class builds on what Mercer calls the givens and the new to try to
create new knowledge. This type of cumulative talk showed how the conversations can explore different ideas, as shown in the teacher turning a question back to the class regarding the reference he remembered in line 30. Although Line 30 showed where the teacher used his own agency to differ from the given materials and bring in a personal experience that relates to the lesson, he did not connect his knowledge back to the Latin root to provide connections for his students (Rymes, 2009). Also, because of Teacher 1’s lack of knowledge in Spanish, he could not accurately and flexibly apply the root V I V to the other word that the students suggested, vida. This could be a disadvantage to the Spanish speaking students because although the students are saying the Spanish friend and related Spanish words, the teacher was not fully utilizing those resources to make connections between the root and the Spanish friend.

Teacher 4 provided the incorrect root, verdad (line 12). This caused for there to be both disputational and exploratory talk in the lesson, as students tried to figure out how the root could be correct or what else could be used that would make the connection (line 14 to line 24) (Mercer, 2000). Both the teacher and the student showed individual agency in going against what was provided in the materials and picking a word that made sense with the root that they had just learned (line 33 and line 37). The differences between Teacher 4 and Teacher 1 in this instance are very stark. Teacher 4 was able to acknowledge that something was wrong with the word that was provided for the Latin root V I V. Her knowledge of Spanish allowed her to understand why her students were confused and then reevaluate the lesson.
Transparency between Latin Roots and Spanish Friends

The following transcript analysis is response to research question five, “Do students process transparent Latin root and Spanish friend connections better than non-transparent Latin root and Spanish friend connections?” When coding the transcripts to see if teachers conducted a discussion between the meaning of the Latin root and the meaning of the Spanish friend when the connection was not transparent, there were vast differences between the teachers of District 1 and District 2. The lessons were coded based on if the teacher discussed the relationship of the Latin root and the Spanish friend or otherwise. Table 4-4 and Figure 4-2 below, shows how the two school districts differed greatly in their discourse regarding how Latin roots are connected to the Spanish friends, with no discussions happening in District 1 versus 15 discussions in District 2. This made it so there was not a way to compare discussions between Teacher 1, who could not speak Spanish, with a teacher who did speak Spanish. Therefore, the transcripts below were purely analyzed to see if teachers and students were able to successfully connect the Latin root to the Spanish friend with or without the connection being transparent.

Table 4-4

*Latin Root and Spanish Friend Connection in Lesson*

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Discussion about Spanish Friend and Latin Root Connection</th>
<th>Teacher Provides Connection to Students (No Discussion)</th>
<th>Teacher Provides Root Meaning But No Connection Is Discussed</th>
<th>Nothing About The Root Is Mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher 1</td>
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Transcript 3 and 4, below, show how Teacher 3 and Teacher 4 introduced the Spanish word *específico* for the Latin root S P E C. This was part of Cycle 6, Lesson 4. This was not a transparent connection between the Latin root and Spanish friend in this lesson because *específico* means specific while S P E C means type or kind. It was expected that the students would need to problem solve in order to make this connection.

**Transcript 3 – Teacher 4**

1. T: I forgot our Spanish friend, so what do you think our Spanish friend is for S P E C if it means type or kind
2. S: específico
3. T: good job
4. S: hey, S2 said it
5. T: it’s actually específico
6. S: hey S2 said it like, no lie
7. T: for real?
8. S: yeah
9. T: wow S2, kay, especifico, specific, especifico, what does especifico mean in Spanish?
10. S: specific
11. T: specific right? so it’s kinda similar to specify, so something that’s specifico is something specific, kay, good
Transcript 4 – Teacher 3

1 T: okay now you’re gonna do a Spanish friend for the word, for the root S P E C, okay anybody got an idea? no, no, no, no, no, S P E C
2 S: espe- *(cannot hear)*
3 T: especifico
4 SS: especifico
5 T: especifico, especifico
6 S: especifico
7 S: especifico
8 T: E S, pe, especifico, I gotta make sure I spell it right cause that would be ridiculous, where did it go, come on
9 S: C I F
10 T: especifico
11 S: especifico
12 T: especifico, es pe, accent on the I, hey, fico, especifico, that means what?
13 S: specific
14 T: specifically? specifically?
15 S: yes, no, specific
16 T: specifically right?
17 S: yeah
18 T: okay, specify, specific, specifically, specimen, I love all these words, I didn’t know all this you guys, just so you know, I didn’t that was a Latin root S P E C, kay? Okay so, if we know, what is the connection between the meaning of the Spanish word and the meaning of the root, wait a minute, did they give us the definition of, especifico means specific type or
19 S: it means the same thing
20 S: yeah
21 S: specific
22 T: specific, especifico, specific, well it’s not the same thing cause that’s specify right? but what, okay so, tell me the link, between the span, between the meaning of the Spanish word which is specific and S P E C, I’ve got one hand, I’m waiting for more, the meaning of, okay so, I want the connection between the meaning of the Spanish word which is specific right, and the meaning of the root, and S1 got it but he’s the only one who’s got his hand up, I’m waiting, S2, I’m waiting for you, kay, come on, I’m waiting, S3, I haven’t seen your hand, S4 what do you think? The connection between the meaning of this and the meaning of this, hmm, what’s that? so
23 S: *(cannot hear)*, types of a certain thing
24 T: so a certain thing, what’s a certain thing
25 S: *(cannot hear)*, like I mean for the, since the meaning means type or kind *(cannot understand)*
26 T: and specific is a certain
27 S: type of thing
28 T: uh huh, good, okay, what were you going to say
29 S: um so especifico’s specific and *(cannot hear)*, a certain type or a kind
30 T: exactly, if you’re asking for a specific thing then you want a certain kind or type, really good you guys

Both Teacher 3 and Teacher 4 were Spanish speakers, although Teacher 4 was more proficient. In Transcript 3, the teacher asked the students what especifico means, but then related it back to the English word “specific,” not the Spanish root S P E C (line 11).
Although this connection might be easier for the students to make, it was not utilizing the Latin root (which is the main point of instruction in EL RAVE). The conversation went differently for Teacher 4. When a student said that especifico and S P E C were the same thing, Teacher 4 corrected the student in line 22 and then waited for explanations from the class on why that is the case. Line 23-29 show how the class used cumulative talk to figure out how the root S P E C, which means type or kind, related to the word especifico (Mercer, 2000). This type of problem solving and scaffolding allowed the students to bridge the connection from the Latin root to the Spanish word.

The following transcript, Transcript 5 shows the questioning of Teacher 3 about the Spanish friend círculo and the Latin root C I R C. This was from Cycle 5, Lesson 4. This was not a transparent connection because círculo means circle, while the Latin root C I R C means around.

Transcript 5 – Teacher 3

1    T: you’re gonna learn a Spanish word okay, and here we go, the Spanish word, that we’re, does anybody want to take a guess at what the Spanish word might be?
2    S: círculo (whispers)
3    T: no?
4    S: whisper cannot hear
5    T: is it circulo or is it circulo?
6    S: círculo
7    T: círculo, kay everybody say círculo
8    SS: círculo
9    T: so what does círculo mean?
10   S: circle
11   T: circle, and what does that have to do with the meaning of, of the root
12   S: around
13   S: all the way around
14   T: yeah, a circle is round, you go around a circle, okay, so same, same root, kay
Teacher 3 asked the students to bridge the connection. This connection seemed to be easier for the students than that of Transcript 4, as the students immediately answer the teacher (line 12-13) that the relationship between círculo and C I R C is “around” or “all the way around”. The teacher then helped with the cumulative talk and replied “yeah, a circle is round, you go around a circle, okay, so same, same root” (Mercer, 2000).

In order to see how students handled the connection between a Latin root and Spanish friend that were labeled as a transparent connection, the Latin root V I V with the related Spanish friend vivir where analyzed in Transcript 6. The Latin root V I V means “life” and the Spanish friend vivir means “to live. The following transcript is from Cycle 5, Lesson 5.

**Transcript 6 – Teacher 3**

1 T: we’re going to learn a Spanish root for the word, uh friend for the root V I V, okay, what do you think it is Spanish people?
2 S: vivir
3 T: vivir, okay, so we’re going to write that on here, okay, vivir, spell it for me
4 SS: V I V I R
5 T: hahaha yup you knew it was V I V okay, vivir means what?
6 SS: life
7 T: to live, right? and is it, okay, so how does this, relate to this?
8 S: cause it’s the same thing
9 S: life
10 T: it’s almost the same thing okay, life, to live, kay, all about life, good

Transcript 6 shows, in lines 5-10 how the students replied to the teacher’s question about “so how does this, relate to this?” by saying that it is the same thing, life. This connection was made very quickly, showing a difference between the transparent connections of Latin roots and Spanish friends versus not transparent connections.
Orthographic Shifts

Research question six, “Do students struggle when discussing Spanish friends that have an orthographic shift from the Latin root?” was addressed in the following results. The following transcripts were analyzed to see if there was any difference between student use and connection of Latin roots with orthographic shifts. As mentioned above in Table 4-4, only some of the lessons analyzed showed discussion between teacher and students about the connection of the Latin root to the Spanish friend. The transcripts below were chosen to highlight any problem solving students showed related to orthographic shifts. Transcripts were analyzed to look at this discourse closer. When combining the lessons with discussion about the connection between the Latin root and Spanish friend with the lessons where the teacher provided the connection of the Latin root and Spanish friend, 2/5 lessons mentioned how the Latin root is spelled differently in the Spanish friend.

The transcripts, Transcript 7 and Transcript 8, below show how Teacher 3 and Teacher 4 taught the orthographic shift between the Latin root T O R T and the Spanish friend torcer. This is from Cycle 6, lesson 4. Both the Latin root T O R T and the Spanish friend torcer mean twist.

Transcript 7 –Teacher 3

1 T: what’s the meaning between the meaning, okay, what’s the connection between the Spanish word torcer and the meaning of the root, what’s the, what’s the connection
2 S: it’s, they mean the same word
3 S: same meaning
4 T: they mean exactly the same thing, a really close connection, okay? So it doesn’t, it’s not T O R T but it’s torcer, okay
Transcript 8 – Teacher 4

1 T: kay our Spanish friend, any ideas?
2 S: torta
3 SS: laughter
4 T: laughter
5 S: tortilla
6 T: Spanish friend is actually torcer
7 S: yay!
8 T: so good job S1
9 S: it only has T O R
10 T: you’re right, it does
11 S: torta
12 T: so torcer, what does torcer mean in Spanish?
13 S: to twist
14 T: literally to twist right? so it has exactly the same meaning

In transcript 7 the students did not mention anything about the root having an orthographic shift in the word *torcer* from T O R T to just containing T O R. The teacher mentioned the shift “it’s not T O R T but it’s *torcer*, okay” but then that was the end of the discussion. She had previously asked the students what the connection was between the Spanish friend and the Latin root and through call and response received the answer that they had the same meaning. Transcript 8 highlights how students related the Latin root T O R T to words in Spanish that contain the entire Latin root (lines 2-5), such as *torta* and *tortilla*. Teacher 4 spoke Spanish fluently and was able to engage with laughter with her students in response to their ideas. This showed how both the students and teacher understood that the Spanish friend needs to be connected to the Latin root in meaning, not just in spelling. When she told the students that the Latin root is *torcer* (line 6), a student mentioned the orthographic shift; the Spanish friend only has T O R in it (line 9). This was then acknowledged by the teacher who agreed and then went on to ask what the word meant in Spanish. She then explained that the word had the exact same meaning as the Latin root.
The last transcript, Transcript 9, shows Teacher 1 instructing the students about the Latin root J U D I C which has the Spanish friend *juez*. Both J U D I C and *juez* mean judge.

This teacher did not speak Spanish. This is from Cycle 7, Lesson 4.

**Transcript 9 – Teacher 1**

1. T: alright, we have a Spanish friend,
2. S: I dunno
3. T: juez, juez, juez
4. S: who is?
5. T: J U E Z
6. S: juez
7. S: juez
8. S: how do you spell juez?
9. S: juez
10. T: juez
11. S: juez
12. T: the pronunciation for me is capital H U and then e z so that’s juez, juez, juez, and it also means judge, it also means judge, alright

This teacher did not mention the Latin root in the instruction, instead just said what the meaning is (judge) and that the Spanish word *juez* also means that. He also said in line 12 what the pronunciation is for him, a blatant marker that he was using the materials for the information and did not know what this word is deeper than what he read in the teacher materials.
Chapter 5

Discussion

Through analysis of the results, certain trends were discovered. As predicted, as the amount of class time increased so did the amount of time that teachers spent on Spanish friends’ instruction. This meant that lesson time did not have to be accounted for when looking at the amount of discussion in transcripts by different teachers. As there were only four teachers, that limitation must be taken into account when looking at the data. Also, a total of 3.5 lessons were missing out of the 32 taught lessons. With a small sample size this can impact the overall correlation and trends shown in the data. Averages were used instead of the raw data scores in order to help negate any effects and that should be taken into account.

As predicted classroom size did not change the amount of talk time that was for Spanish friends or related words. This meant that the transcripts could be compared across teachers who had varying classroom sizes.

Before discussing the results of utterances and transcript analysis, it must be noted that one of the limitations of this study included the accuracy and ability to clearly hear the full audio of the teacher and the students in the audio files of the lessons. In many lessons multiple students participated, but because of the limitations of the recorders, individual students could often not be identified. Also, the lessons that were analyzed were only 32/252 lessons, so there is a possibility that Spanish friends could have been mentioned.
by the teacher or students in other parts of the implementation in ways that involved discourse and problem solving.

It was predicted that the relationship between teacher use of Spanish friends and related words would positively trend with student use of Spanish friends and related words. Hypothetically, teachers who use the words more in class would help create ground rules in the classroom that allow the use of the Spanish speaking students to use their first language (Mercer, 2000). In the results, a positively trending relationship between the teacher use of the Spanish friend and student use of Spanish friend was shown. This showed that there could be a relationship between the usage of the Spanish friend by the teacher and the student. Surprisingly, there were not large differences in the amount of utterances of the Spanish friend between the teachers, even with the percentage of Spanish speakers being drastically different in the classrooms for Teacher 1 (20%) and Teacher 2 (16.67%) versus the classrooms for Teacher 3 (75%) and Teacher 4 (66.67%). Teacher 1, who did not speak Spanish, on average, said the Spanish friend more than Teacher 4, who spoke Spanish fluently. This quantitative analysis showed that on surface level, it looked like teachers without Spanish knowledge can utilize the scripted materials to use the Spanish friends in the classroom.

In contrast, there was either a low correlation or negative correlation between the utterances of related Spanish words between teachers and students and between the utterances of related Spanish words and the Spanish friends. This finding pushed the current study to analyze the transcripts more closely, as with a very small sample size of
teachers \((n=4)\), one teacher’s data from one or two classes could change the correlations drastically.

In terms of the case studies and discourse analysis, the limitations included not being able to understand the full scope of every lesson, teacher, and classroom culture. One lesson may have shown surprising variance, but that did not always account for what happened for all other lessons by that teacher. Even with these limitations, the case studies allowed for a deeper look at the variances between teachers and their use of Spanish friends in the classroom.

Also, although the majority of Spanish speaking students in both school districts were able to identify the Spanish friend through a picture vocabulary task, their recognition was not 100\%. This helps support the idea that many EAL learners come to school without having advanced literary knowledge and skills in their home language (Crosson et al., 2012). This should be noted because not all students may have been able to confidently participate in the classroom discourse because they were not familiar with the words that the teacher was prompting for or may not have spoken Spanish.

Despite that the amount of utterances of the Spanish friend by teacher and students did not vary much quantitatively by teacher and school district, a closer look found there to be a lot of differences in how the Spanish friends were being taught to the students. District 1, with the lower percentages of Spanish speaking students in the classroom, did not have any discussions between the teacher and the students about how the Latin root
related to the Spanish friend. District 2 showed that the majority of lessons had either a discussion between the teacher and the students about the connection between the Latin root and the Spanish friend or the teacher provided the connection to the students about the connection between the Spanish friend and the Latin root. This drastic difference showed that in spite of the quantitative statistics showing similar results between the districts in the amount of utterances of the Spanish friend and Latin root, there are differences that are in the actual discussion. This result shows that teachers of classrooms that do not have large amount of Spanish speakers may not explain the connection of the Spanish friend to the Latin root. This is very important to EL RAVE because this material is going to be implanted in a wide variety of classrooms with students from many different language backgrounds.

It was hard to tell from the transcripts if the lack of discussion for the connection of the Latin root and Spanish friend was because of teacher training, classroom composition, or another factor. Although research was noted that teachers that are not from a Latino background may impact their overall view of use of the Spanish language in the classroom, that cannot be stated without more observations and interviews with all the teachers (Garcia-Nevarez et al., 2005). Although this could have made an impact, the interaction of Teacher 1 and his students in Transcript 1 showed how he was unable to scaffold and assist his students with other language connections because of his lack of knowledge of Spanish. This differs from Teacher 2, in Transcript 2, when she was able to realize there was a mistake in the materials and find a word that fit correctly to the Latin root V I V. This type of adjustment is important for teachers as they work with EAL.
learners because it will allow there to be dialogue and mutual understanding in the language instruction.

The small sample size of transcripts containing discussions regarding transparent and non-transparent roots should be noted, but it was evident that with scaffolding teachers and students could work together to connect the Latin root to the Spanish friend. This was shown in Transcript 4 where the teacher pushed the students to bridge the connection between *especifico* and S P E C. One important thing to note is that in Transcript 3, Teacher 4 showed the relationship between the Spanish friend and the English academic target word. This is an interesting connection, but the goal of the EL RAVE program was not to just teach Spanish/English cognates, but to have students be able to problem solve using the Latin roots that are in the words. The lack of data made it difficult to see if teachers without a Spanish speaking background would be able to successfully lead the students through these connections.

Although only five transcripts showed discussion about the orthographic shifts between the Latin root and Spanish friend, two of them showed that shift being mentioned. The instructional materials did not instruct the teachers to point out this shift to the students, so that may have been why this was not more evident in the transcripts. It is crucial to note that also the students joked about “torta” and “tortilla” in Transcript 8 they were searching for words that contained the entire Latin root T O R T. The major issue with this is that if the teacher had not spoken Spanish fluently, she may not have been able to joke with the students about how that Latin root did not work in that case. This could
have led the students into thinking that the Latin root should be applied in all cases, not
that it may not fit into every word.

**Future Work**

The next steps for future work with Latin roots and Spanish words would be to look at if
the students are using Latin roots in their Spanish reading, writing, and speaking after the
lessons are completed. Do students only use the Spanish friends that they were taught or
do they expand their home language knowledge with the use of the Latin roots? Also, it
would be important to see how the students are using the Latin roots, Spanish friends, and
English words as a combination to learn more academic words in English. Retention of
Latin roots, Spanish friends, and English words would also be vital to check – is this
usage something that the students can use over time? Also, it would be important to talk
to the teachers about their own experiences with the use of the Spanish friends. What type
of materials could help teachers who teach EAL learners who do not have a Spanish
background and assist them to create discussions about the Latin root connections in the
same manner that teachers with a lot of EAL learners that speak Spanish could?

**Conclusion**

Spanish friends can be used successfully in instruction with Latin roots, but teachers need
to have more support from the instructional materials and knowledge of Spanish in order
to fully guide the students through the connections of the Latin root and Spanish friend.
From the surface level, Teacher 1 appeared to be able to say the Spanish friend and related words similarly to the teachers who spoke Spanish. The instructional materials provided him the basic words needed for the EL RAVE program but, with further discourse analysis, did not provide him the deeper knowledge about the Spanish language and related words. Although all the teachers mentioned the Latin root, not all of them were able to create successful classroom discourse that showed understanding of the Latin root and how it related to the Spanish friend.

Teachers who do not speak Spanish will need extra support with the EL RAVE materials in order to help them be able to support their students who know Spanish. These materials could allow them to access more language resources in the classroom and encourage more participation and critical thinking when it comes to seeing language connections. Further research can examine how the students use the Spanish connections that were elucidated to them in the EL RAVE program to further help them utilize and understand the Latin roots in their English literacy acquisition.
Appendix A

Target English Words, Latin Roots, and Spanish Friends

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Appendix B

Home Language and School Experiences Survey

EL RAVE

Name: ____________________  Date ________________  School ___________________

1) How old are you? __________________________

2) In which country were you born?
   ○ United States  ○ Mexico  ○ Nepal  ○ Tonga  ○ Samoa
   ○ Other: ______________________

3) Have you ever gone to school in another country?
   ○ Yes  ○ No
   If no, go to #3.
   If yes, which country? ________________________________

4) How old were you when you moved to the United States?
   (If you were born in the U.S., write “I was born here.”) _____________________________

5) Have you ever lived in another city or state in the United States?
   ○ Yes  ○ No
   If no, go to #6.
   If yes, Where else in the U.S. have you lived? ______________________________________
   How many years did you live there? ______________
   Did you go to school in there? ______________

6) In what grade did you begin going to school in Pittsburgh? ______________

7) What is the highest level of schooling of your guardian/parent (that you live with)?
   (Fill in one for each guardian/parent and label Mother, Father etc.)

   **Mother (or guardian)**
   ○ Did not go to school
   ○ Primary school (up to 5th grade)
   ○ Middle school (up to 8th grade)
   ○ High school (up to 12th grade)
   ○ Some college
   ○ Finished college
   ○ More than college
   ○ Don’t know

   **Father (or guardian)**
   ○ Did not go to school
   ○ Primary school (up to 5th grade)
   ○ Middle school (up to 8th grade)
   ○ High school (up to 12th grade)
   ○ Some college
   ○ Finished college
   ○ More than college
   ○ Don’t know
9) What languages does your family speak at home?
____________________________________________________________________

10) How much of each language does your family speak at home?
○ Only English ○ Mostly English ○ Same amount of English and my home language ○ Mostly my home language ○ Only my home language

11) Can you read in your home language?
○ Yes ○ No

If no, go to #12.

If yes,
What kinds of things do you read in your home language? ____________________________
How often do you read in your home language? ______________________

12) Are you studying another language (other than English) in a class at school?
○ Yes ○ No

If no, go to #13.

If yes, which language are you studying? ______________________

13) What do you like to do? Put a check ✓ on the smiley face that matches how much you like each activity. If you really like the activity, check the “happy” face. If you kind of like the activity, check the “neutral” face. If you dislike the activity, check the “unhappy face”.

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