The Effect of Whole Brain Teaching Strategies

on the Acquisition of High Frequency Words

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Abstract

The purpose of this study was to evaluate the acquisition of high-frequency words, between English Language Learners (ELLs) and their peers when instructed using the Whole Brain teaching approach. The participants were 11 five- and six-year-olds from a pre-existing kindergarten class in Anne Arundel County Maryland. A pre-post-test design was used to compare data from before and after the implementation of the intervention, with a period of one month between the assessments. Findings from this study suggest that the Whole Brain teaching strategies can yield positive results for all students when used during instruction of high-frequency words. However, the existing data revealed that the acquisition of high-frequency words was not as significant for ELLs as compared to their native-English speaking peers.

CHAPTER I

INTRODUCTION

Overview

Beginning in kindergarten, the achievement of students who are enrolled in the nation's public schools is measured by students' ability to demonstrate mastery of skills defined by the rigorous academic learning standards set forth by the state in which they reside which generally reflect standards defined at a national level. While foundational at its core, the progression of reading skills advance to levels in which early learners are expected to be able to read simple stories and produce a variety of their own texts (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Although the understanding of letters and their sounds is one of the building blocks towards mastery of these basic reading skills, the ability of the student to read words by sight in addition to phonetically (sounding out), supports the development of fluency with literary tasks (Rawlins & Invernizzi, 2019).

High frequency words are those that a reader will encounter most frequently in print materials. In fact, only 100 of these high frequency words account for more than 50% of a child's reading materials (Whole Brain Teaching, 2019). While some high frequency words have regular spelling patterns that allow the readers to use their knowledge of phonics to sound them out, others have irregular spellings which make it more difficult for the reader. In school districts that implement the common core state standards, high-frequency words are part of the curriculum in the primary years, and students are expected to recognize them by sight (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). To support student growth in reading, including mastery of these high frequency words, a variety of teaching strategies can be implemented.

Unfortunately, it has been the experience of this researcher in her work with beginning readers, that there are students who reach the end of their kindergarten year without developing mastery of these high-frequency words. These students are unable to write simple sentences to communicate ideas and have poor accuracy in reading grade-appropriate leveled texts, which impede their ability to access and comprehend written information. This early inability to read high frequency words has been found to have a more significant impact on English Language Learners (ELLs) when compared to their peers (Relyea & Fitzgerald, 2018). In their research on early word reading ability, Relyea and Fitzgerald found that when ELLs have low reading ability in the early years there was a significant, negative impact on their later reading comprehension skills.

This study focuses on student performance in recognition of sight words, comparing the achievement levels of ELLs to their native English-speaking peers. The researcher became interested in this topic as her school emphasized the performance of ELLs in the school's improvement plan. Through data analyses and collaborative decision-making meetings, it was determined that students identified as ELLs were demonstrating prolonged struggles in literacy throughout their primary years. Through collaborative meetings with school-based specialists, the researcher determined the importance of providing opportunities for students to use the language themselves and desired to learn how Whole Brain teaching could impact student achievement in the area high-frequency words.

Statement of Problem

The purpose of this study was to evaluate the acquisition of high-frequency words, between ELLs and their peers, when instructed using the Whole Brain teaching approach.

Hypothesis

There were two hypotheses included for the current study. The first hypothesis was that students would recall a greater number of high-frequency words following instruction using the Whole Brain Teaching (WBT) approach. The second hypothesis was that high frequency word acquisition by ELLs would be lower than that of their peers, as measured by the Anne Arundel County Public Schools' (AACPS) foundational skills assessment.

Operational Definitions

- **English Language Learner (ELL):** A child in grades k-12 who is eligible to receive language services as a part of his or her daily instruction. These students are either multi-lingual or exposed to another language in the home environment and demonstrate difficulties with the use of the English Language in the areas of understanding, speaking, reading, and writing.

- **High-Frequency Words (HFW):** The most frequently occurring words in print materials that students are expected to be able to read with automaticity by sight, such as the, a, can, she, their, you.

- **Whole Brain Teaching (WBT):** A cyclical teaching strategy in which information is broken down into manageable chunks, or segments, to enable students to have the opportunity to learn and utilize the language in order to master content. WBT follows a structure in which the teacher first uses a call and response (class-yes) to gain the attention of the learners, followed by the teacher engaging the learner through a technique called "mirror words." In this activity students imitate both the gestures and spoken words used by the teacher to learn one new point. This leads to the students participating

in a collaborative learning activity in which they teach one another the content using the gestures and language of the teacher (Biffle, 2021).

- **Biffytoon:** A whole brain teaching resource that is implemented when teaching high-frequency words. These colorful posters contain one HFW and an image to teach students the corresponding gesture.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This review is presented in four sections that explore relevant literature regarding students who are English Language Learners (ELLs), the barriers this population faces in their educational career, and research-based strategies designed to support them in their school experiences. The first section explores how the term English Language Learner (ELL) differs from many other similar definitions and the demographics of those learners. Section two provides a description of the barriers that put ELLs at-risk, followed by a discussion of the impact on students presented by these barriers in section three. The fourth and final section describes various instructional strategies used to improve the academic achievement of this population.

Definitions of an English Language Learner

A variety of terms and acronyms are used to identify overlapping (but different) populations of individuals whose first language is not English. Some common terms that often are incorrectly considered interchangeable include English Language Learner (ELL), English for Speakers of Other Languages (ESOL), English as a Second Language (ESL), and English as a Foreign Language (EFL). For consistency and clarity, this literature review uses the term English Language Learner (ELL), since this term is used most frequently to describe students within the K-12 academic setting, who meet the necessary criteria to receive English Language supports.

Eligibility is considered initially when it is determined that a child is either multilingual or resides in a home setting in which he or she is exposed to a language other than English. This

determination must be accompanied by the student's inability to demonstrate proficiency in the use of the English language across four domains (speaking, understanding, reading, and writing), thus directly impacting the student's participation and levels of achievement as measured in the classroom by assessments based upon state standards (Barrows & Pithers, 2016).

Many individuals make assumptions about what qualifies a person to be an ELL. For example, they inaccurately assume that those who are simply exposed to a home environment in which English is not the primary language, those who develop fluency in a foreign tongue as one's primary language, or those who immigrate from other countries are typical ELLs. In fact, a vast number of students who are ELLs are native born citizens from the United States (Baecher et al., 2012). To serve this group most effectively, educators need to develop a clear understanding of the culture and background that the students in their classroom bring to their school experiences.

The population of ELLs is a heterogeneous group. There are over 300 different languages spoken by these students in North American schools (NCES 2016, as cited in Vera et. al., 2018). However, within this diverse group of learners, there is a notable trend in representation, with Spanish being the predominant language of individuals qualifying for English language services in American schools today (Barrows & Pithers, 2016) and with this population being anticipated to grow 33 percent by the year 2022 (Mendez et al., 2018).

Barriers that Place English Language Learners at Risk

Like their native English-speaking peers, ELLs are at the early stages of development in their communication skills when they begin their educational career. Once in school, they are expected to communicate their needs, current levels of understanding, and demonstrate growth to

their teachers and classmates in the English language, since English-only instruction is the reality for a large portion of this population (Menken, 2013). However, this population of students, particularly Latino children, tend to lag behind their peers in vocabulary development (Mendez et al., 2018). This discrepancy in vocabulary development, dependent upon their linguistic environment in the early years, has direct implications on an ELL's ability to demonstrate achievement in both academic and social settings.

As ELLs enter the mainstream classroom, they often are taught by educators with a different cultural background, which may have different social norms and values from those of the ELLs. These differences potentially could cause conflict in the classroom setting. Due to the difference in backgrounds and language discrepancies of ELLs, intercultural miscommunication often occurs in the classroom environment, and is falsely determined to be the fault of the student (Huang & Bowers, 2012). Intercultural miscommunication is characterized by the inability to effectively communicate verbally and nonverbally among people whose cultures differ. Interactions such as this play a role in influencing teacher perceptions and development of expectations of learners. Sirota and Bailey (2009) state that "teachers hold more negative perceptions of their ELL students than they do of their white students" (p. 255). When negative or low expectations of a learner are developed, barriers are placed on opportunities for growth and development.

In addition to many general education teachers holding low-level expectations for the achievement of ELLs in their classrooms, Vera et al. (2018) found that these teachers may not be as invested in the experiences of the ELLs in their classrooms as they are in their native English-speaking students. Balancing and building proficiency in two languages creates additional obstacles that are infrequently considered during instruction. ELLs may understand content but

without proper scaffolds, the individualized supports provided to a student, the students may not know how to properly express their competency with the content.

Constraints are further experienced by ELLs when educators do not consider the language load of assignments or content being presented. When language demands in assignments are heavy, such as lengthy explanations or questions or lacking visuals, a student's understanding of the basic concepts can be masked by their inability to understand vocabulary or successfully or efficiently use cognitive switches between the two languages (Alt et al., 2014). More time and mental effort may be spent by the ELL translating the written content to their language of comfort than investing in the specific task, exhausting the learners, and making them more vulnerable to errors and to teachers misjudging their understanding or capabilities.

Impacts of the Various Risk-Factors

The risk-factors explored above have direct impact on an ELL's academic achievement and social-emotional success. The impact of these risk factors also can be observed early in ELLs' development. Despite ELLs having been enrolled in pre-school programs, the data affirms that ELLs' scores frequently fall below those of their peers on assessments of kindergarten readiness (de Oliveira et al., 2016). Without sufficient and immediate remedial efforts, such early discrepancies can establish a lasting achievement gap between ELLs and their peers. Relyea and Fitzgerald (2018) completed a study that compared early word reading abilities and later measures of reading comprehension of ELLs with those of their native English-speaking peers. They found in their research that initially, both groups of low word readers demonstrated comparable reading comprehension scores, but as time passed, the gap widened with native English-speaking peers surpassing those who were identified as ELLs. While their research

highlights the academic area of reading, Relyea and Fitzgerald note in that individuals' achievement in reading comprehension has a direct impact on their ability to comprehend the written content in other subject areas. Therefore, the achievement gap between ELLs and their peers exists across content areas.

Evidence of these achievement gaps between ELLs and their native English-speaking peers can be found by examining school districts' annual yearly progress evaluation data. High-stakes state-wide testing such as that done through TerraNova and Partnership for Assessment of Readiness for College and Careers (PARCC), backed by legislation such as No Child Left Behind, is used to determine schools' effectiveness in instruction. ELLs are still working towards language proficiency but are expected to demonstrate the same levels of academic achievement as their native English-speaking peers. These tests, administered in English only, naturally place ELLs at a clear disadvantage, which results in ELLs scoring, on average, between 20 and 50 percentage points lower than their English-speaking peers (Menken, 2013).

In addition to illuminating the impacts on academic achievement of being an ELL, the literature reveals that there are also social-emotional impacts for ELL students. A natural consequence of being a member of this population is time spent separated from native English-speaking peers, such as time spent with families, which can be problematic for relationship building. In a retrospective study on ELLs, Baker (2019) found that over half of the participants reported negative experiences in school, with ELLs reporting they often felt excluded, were picked on by others, and even felt harassed by their peers in their educational career. These social-emotional experiences can lead to issues with engagement in the learning environment. Rather than face embarrassment or shame, ELLs may choose to be blend into the background

(Dooley, 2009), which in turn impacts their educational achievement as participation is key to the development of understanding.

Moreover, feelings of social isolation and broken relationships at school are not confined to the classroom. Home and school issues tend to be reflected in both settings. Emphasis on the use of English over a child's native tongue, combined with facing adversity with peers can influence a loss of culture for ELLs to which families may react in a negative or non-supportive manner. Children as young as kindergarten age begin to condemn their home language as they internalize the attitudes of others, refusing to speak anything other than English (de Oliveira et al., 2016). Parents or caretakers of ELLs may not have proficiency in English to engage with their child effectively and communication problems result. For example, positive socialization is reduced and the successful transmission of knowledge and culture between generations is affected (de Oliveira et al.).

Suggested Strategies and Interventions

Relevant literature offers two categories of strategies and interventions that can be used effectively when working with ELLs and one that has promising results. These include the use of culturally responsive teaching practices, decreasing the language demands on task/assignments, and the use of whole brain teaching practices during instruction. The goal of these strategies is not only to promote overall academic achievement but also to improve upon the learners' English language proficiency.

Culturally responsive practice refers to the incorporation of students' cultures into the learning environment. The curricula and tools for learning should reflect the learners in the classroom and students should be encouraged to share their experiences, which elicits

participation and connections made amongst the learners (Baker, 2019) and between home and school. Such practices could be expanded upon by including the native languages of ELLs throughout the day. For example, a teacher could incorporate all languages into center signs and greetings to support awareness and celebration of the rich linguistic culture of the classroom (Baker). At a more advanced level, teachers could utilize a student's home language to reinforce instructions, rephrase questions, and provide a bridge during vocabulary instruction. The work of de Oliveira et al. (2016) suggests that this can be done even by educators who consider themselves monolingual. The researchers cited one kindergarten teacher who was able to promote understanding and interact with students successfully using Spanish words and phrases. This allowed students to construct meaning even when grammatical structures of the home language were incorrect. Simple bridges can be made in vocabulary by using cognates or words that have similar meaning and spellings in Spanish and English. An example of these types of words is lampara/lamp. When instruction includes using cognates, explicit modelling of the similarities needs to occur, as the comparison may not be automatic for the learner (Delbridge & Helman, 2016). Culturally responsive teaching strategies promote positive self-esteem, allow students to build upon their foundations of language, and provide a teacher model for the learner on how to transfer skills (de Oliveira et al.)

When a learner's first language cannot be used in the classroom, educators can decrease the language demands on task/assignments. This can be done by presenting information and questions simplistically and focusing on what is most important. Alt et al. (2014), concluded that when language-heavy mathematics assignments were provided, ELLs in their study did not perform as well as their native English-speaking peers. Mathematical language demands can be decreased when the delivery of the content relies on animations or visuals, rather than words, to

provide information (Alt et al.). This strategy can be used during literacy instruction as well by replacing instructional texts and stories with wordless picture books. Wordless picture books remove frustrations and threats to the reader that manifest when a learner struggles to identify words (Louie & Sierschynski, 2015). Unlike the typical guided reading structure, the learner is exposed to a story over multiple days while participating in meaningful conversations about story elements, determined by the students. Oral language is foundational in literacy and in the development of an ELL towards English language proficiency. Beginning in kindergarten, students are assessed on their ability to communicate information, feelings, and messages against the English Language Proficiency Standards (Council of Chief State School Officers, 2014). When the words are not included in a story, ELLs are able to construct their own meaning of the story. In the collaborative conversations, ELLs benefit from using English themselves to build upon their vocabulary under the guidance of their teacher (Louie & Sierschynski, 2015).

While the research on its use is not expansive, there is some evidence that the whole brain teaching (WBT) method can positively influence the development of ELLs in the areas of reading and writing (Lockhart, 2016). WBT breaks student learning into manageable chunks by focusing on one new point at a time. The call and response, "class – yes" is used to gain the learners' attention and then students engage in structures where they imitate, and replicate with their peers, the gestures and spoken words of their teacher. In a study completed in 2016, participants in fourth grade at a school in north-east Spain received instruction using the WBT method. At its conclusion, it was determined by the researcher that ELLs participating in this method of English instruction, scored approximately twenty points higher than the control group on assessments of reading and writing (Lockhart).

Summary

The ELL population in schools within the United States continues to grow. These learners still are developing proficiency in the English language, while participating alongside peers in a shared academic setting. Due to the added language challenge, ELL students are at-risk of falling behind their native English-speaking peers academically and for experiencing social and emotional difficulties.

In recent years, research to identify best practices and development of instructional strategies has expanded greatly. It is important that all teachers of ELLs are aware of and implement strategies that have been found to be effective with their students in order to promote ~~the~~ achievement and open doors to opportunity and positive social relationships for all learners.

CHAPTER III

METHODS

Design

The purpose of this study was to evaluate the acquisition of high frequency words between ELLs and their peers after receiving instruction using the Whole Brain Teaching (WBT) approach. The design of the study was quasi-experimental in nature and implemented the use of a pre- and post-test for assessment. The independent variable of the study was the language background of the students, ELL vs. non-ELL, and the dependent variable was the number of high frequency words (HFW) acquired within the allotted time.

Participants

Non-random, convenience sampling was used to identify participants in the study. All 12 children participating in the study were between the ages of five and six years old and were members of a pre-existing kindergarten class at a public contract school in Anne Arundel County, Maryland. Of these participants, eight children were identified as qualifying for English language services, as determined by a specialist within Anne Arundel County Public Schools (AACPS). Four of these students were female and the other four were male. One participant also received special education services for academic learning. The other four participants were non-ELL or native English-speaking students. One of these students was male and the other three were female.

During the study, the number of participants was reduced to a total of 11 children. One participant had difficulty switching between Google meetings to attend small group sessions and

was therefore excluded from the study. This participant was a male and was characterized as an ELL.

Instrument

Within the virtual environment, the researcher assessed students on their ability to recognize sight words from the AACPS kindergarten curriculum using a checklist. When a word was presented on the screen, the student had three seconds to read the word to the researcher to determine if it was known. Words were marked unknown if recognition of the word was not automatic or the student sounded out the word phonetically. The same test was utilized for both the pre- and post-assessment.

A curriculum-based assessment was chosen for the study as it is designed to evaluate each student's skill level against the curriculum (Burns, 2001). Literature from previous studies has reported success with this type of assessment in determining acquisition and retention rates with both ELL and non-ELL populations (Burns, 2001; Burns & Helman, 2009). In one such study, participants in first, third and fifth grade were assessed using this type of assessment to determine their knowledge and acquisition of high frequency words (Burns). At the completion of the study, the researcher reported that the curriculum-based assessment had a correlational coefficient above .90 for two of the groups and .76 for the other, suggesting high measures of reliability for the instrument (Burns).

Procedure

To begin the study, the researcher administered the pre-assessment to the participants in a one-on-one Google meet using the instrument described in the previous section. At the conclusion of the pre-assessment, item analysis data was examined to determine the specific words that were unknown to each participant. This information was used to create flexible instructional groupings for small group reading intervention using the WBT technique.

At the onset of the intervention, it was planned that instructional groups would be gathered for a total of three sessions per week. However, this was reduced to two sessions per week due to circumstances outside of the researcher's control (i.e., internet connectivity issues and changing schedules). During small group instruction, WBT structures were used to support student learning and were accompanied by the WBT resource, Biffytoons. Biffytoons are colorful posters that contain one HFW and a cartoon image modelling the accompanying gesture for the word. At the beginning of each session, the researcher would present a biffytoon containing an unknown high frequency word to the students. The pronunciation of each word and WBT movement was modeled before students had the opportunity to rehearse it with their peers. Rehearsal strategies included:

- Mirror-Words: A WBT technique where students imitate both the gestures and spoken words used by the teacher to learn one new point.
- WBT Oral Writing Technique: A technique in which simple sentences are orally produced using the target words. As a high-frequency word was spoken it was accompanied by the movement presented on the biffytoon.

- Sing-Spelling: a technique where the unknown words were practiced by spelling and naming the word to the tune of Frere Jacques. When the word was named in the song the students made the gesture that was presented with the biffytoon.

The role of the teacher transitioned between the researcher and participants in the group. This use of student leadership during instruction encouraged engagement and provided the opportunity for the participants to learn from their peers.

Following the rehearsal techniques, participants were provided the opportunity to read each target word in the context of a sentence or text. While reading, students were expected to utilize taught gestures when they came to a target word in the sentence. Immediate feedback and corrections were provided by the researcher to encourage correct pronunciation and use of the WBT gestures. Participants had access to all supplemental resources in their virtual classroom and were provided with an individualized slide deck containing the biffytoons of their target words.

The intervention was concluded after a period of four instructional weeks. A post-assessment was administered to the participants at that time. This assessment mirrored the pre-assessment to determine if there was an acquisition of any new HFW during the duration of the study. A comparison was made between ELL and non-ELL students to determine if there was a difference in a participant's ability to acquire HFW, using the WBT method, based on language background.

CHAPTER IV

RESULTS

The purpose of this study was to evaluate the acquisition of high frequency words between ELLs and their peers after receiving instruction using the Whole Brain Teaching (WBT) approach. The first analysis compared all students' scores before and after receiving WBT. Further analysis evaluated the number of words recalled by ELLs as compared to their peers.

A dependent groups t test revealed that there was a statistically significant difference in number of sight words recalled during the pre-test assessment before whole brain teaching was introduced ($M = 13.45$, $SD = 11.82$, $n = 11$), as compared to the post-test assessment ($M = 18.18$, $SD = 14.23$, $n = 11$), with small effect size, $t(10) = -3.85$, $p < .05$, $d = .36$. On average there was a 4.73 increase in number of sight words recalled. See Figure 1.

Figure 1

Mean Number of Words Recalled Between the Pre- and Post-Assessment (N = 11)
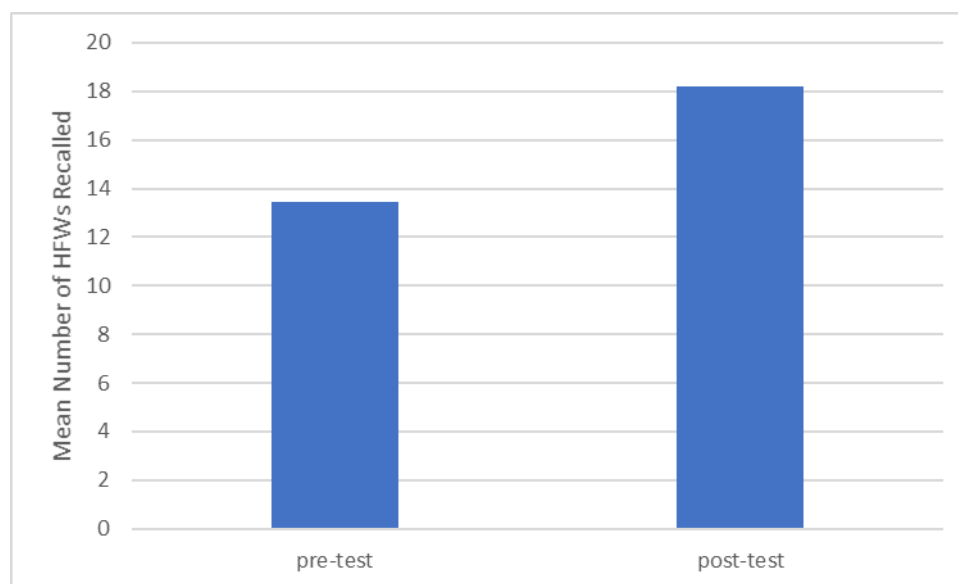
An independent groups *t* test revealed that there was not a statistically significant difference in the number of high-frequency words recalled by non-ELL students on the post-test ($M = 6.50$, $SD = 1.00$, $n = 4$), as compared to number of high-frequency words recalled by ELLs on the post-test ($M = 4.00$, $SD = 4.55$, $n = 7$), with medium effect size, $t(9) = 1.06$, $p > .05$, $d = 0.76$. See Figure 2.

Figure 2

Comparison of the Mean Number of Words Recalled Between Participants (N = 11)
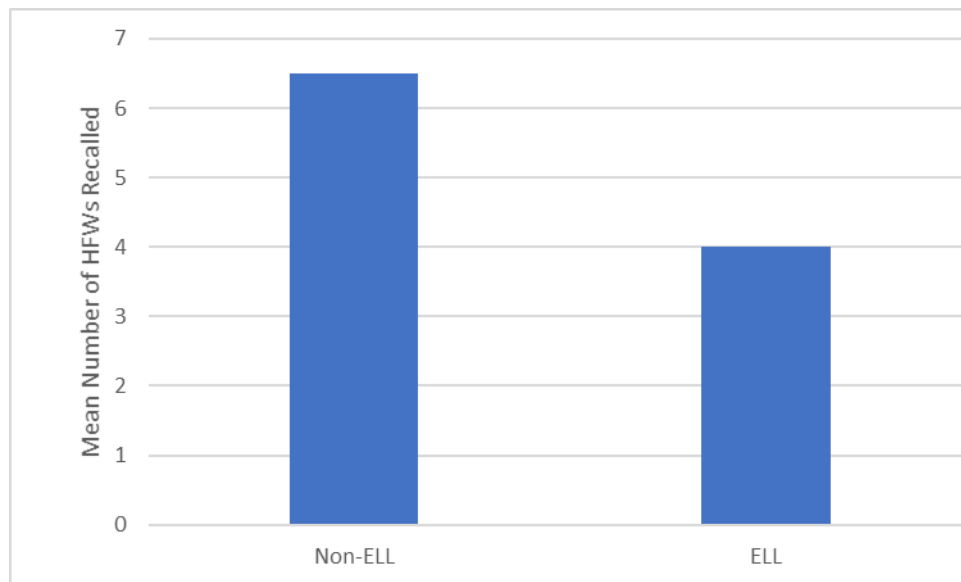
CHAPTER V

DISCUSSION

The purpose of this study was to determine the impact of using the Whole Brain

Teaching (WBT) technique during instruction of high frequency words (HFW) and learn if there

was a difference in the overall performance of English Language Learners (ELLs) versus non-

English Language Learners (non-ELLs), after implementation of the intervention. The first

hypothesis for the study stated that students would recall a greater number of high-frequency

words following instruction using the WBT approach. The second hypothesis was that high

frequency word acquisition by ELLs would be lower than that of their peers, as measured by the

Anne Arundel County Public Schools' (AACPS) foundational skills assessment. After analyzing

the data presented in Chapter IV, it was found that both hypotheses were supported.

Implications of the Results

The results of this study supported the hypothesis that students would recall a greater

number of high-frequency words following instruction using the WBT approach, but the effect

size was small. This small effect size suggests that although there was a statistically significant

difference, the difference between the two groups' performance after the implementation of the

intervention was small. However, there was not a statistically significant difference in word

acquisition between ELLs and their peers. Although this second hypothesis was not statistically

significant, there was a medium effect size. While the participants who qualified as ELLs in this

present study did demonstrate growth in their overall performance, most students in this group

did not demonstrate a level of growth that was as considerable as their non-ELL counterparts.

Theoretical Consequences

Results from this study suggest that using strategies from the WBT method to teach high-

frequency words (HFW) to ELL and non-ELL students in the primary classroom can have a

positive impact on their overall word recognition performance. Therefore, it is recommended that results from the study be made available to instructors of primary grade ELL and non-ELL students as well as to those individuals interested in doing further research on this topic.

Threats to Validity

Internal threats to validity include differential selection of the participants for the study. Both the ELL and non-ELL participants were members of a pre-existing classroom population. Using this sampling method, the researcher did not account for any differences between participants in each group (ELL and non-ELL). These unaccounted-for differences, such as current word reading abilities and exposure to print, may have had an impact on the individual participants' scores on the post-test and the difference in final performance between groups.

Participant selection and group size presented a second threat to internal validity. There was a total of four participants in the non-ELL group and seven participants who were considered ELLs in this study. During the data analysis it was found during the independent group's t test, the difference between group performance on the post-assessment was not statistically significant. Perhaps if there had been a larger number of students in the study, the results may have reflected a significant difference in performance. The small group size in the current study directly impacts the generalizability of results to the larger population.

External threats to validity include the interaction of history and treatment effects. This research study occurred during a global pandemic that changed the typical format of education for students in AACPS, Maryland. During most of the intervention, students received instruction virtually from their homes. With virtual instruction there is a plethora of disruptions that can impact student learning. The first of these disruptions is Wi-Fi connectivity issues. Connectivity issues can alter a planned intervention strategy with problems such as a lagging feed. This issue

can interrupt or discourage student participation during instruction, ultimately impacting their performance on the post-assessment. Another disruption was distractions that were experienced by the participants as they were working in their home environment. The home environment may have had distractions such as interaction with a sibling, an adult, or extraneous noise in the room. For example, many students had support from parents that they would not have had during the typical school day. The researcher had to discourage parents from becoming involved with the intervention, as some would try to tell their student to "sound it out" when presented with a high-frequency word.

Connections to Existing Literature

In a study completed by Burns and Helman (2009), it was found that ELLs with limited language proficiency had a HFW acquisition rate approximately four points lower than their peers who were non-ELL. While this current study did not take language proficiency scores into consideration, when analyzing student performance, it was found that most ELLs improved by three words or less on the post-assessment. This is compared to their non-ELL counterparts whose HFW acquisition improved on average by a total of 6.50 words.

However, the WBT technique did prove to be a successful strategy overall, when teaching HFW to students in the kindergarten classroom as demonstrated by the dependent groups t test. All but one participant in this current study had an increase in their initial score from pre- to post-test. While Lockhart (2016), focused primarily on the performance of ELLs in their research, they did find that participants who received WBT instruction scored higher on assessments of reading than participants in their control group who did not receive this method of instruction. Both studies demonstrate that WBT strategies can have a positive influence on an individual's reading ability.

Implications for Future Research

Due to factors outside of the researcher's control, adjustments were made to the current study that may have had an impact on the participants' ability to acquire knowledge of HFW. Future studies on this topic may benefit from implementing the intervention of WBT techniques with the participants for a longer period. This would allow for the participants to have greater exposure to taught words and build fluency with the gestures. Researchers may also consider beginning their study or implementation of WBT techniques at the onset of the school year with an entire class. As discussed in Chapter I, HFW are those that the reader will most frequently encounter within reading materials. Exposing the entire group of participants to the same words can allow for more organic intervention and implementation of WBT techniques throughout the instructional day, as compared to this study during which the techniques were implemented in isolation.

Conclusions

After analyzing the data, the researcher concludes that, although strained by external factors, the study was worthwhile and provided insight on the use of WBT techniques with ELL and non-ELL students in the primary classroom. Overall, it can be concluded that there is a positive correlation between the use of WBT techniques on student reading performance with HFW. However, the language background of the participants did appear to have some impact on the number of words acquired throughout the study. Although it was not statistically significant, the majority of students who were characterized as ELLs demonstrated less growth than their non-ELL counterparts.

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