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Third Grade Science Teachers' Perspectives on Implementing Sentence Frames and Word Banks During Science Lectures to Increase the Writing Levels of English Language Learners

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**Third grade science teachers' perspectives on implementing sentence frames
and word banks during science lectures to increase the writing levels of
English Language Learners**

By

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A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Elementary Education
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Thesis Chair: Dr. Donita Grissom

Abstract

Each year, there is an increase of English Language Learners (ELLs) entering today's classrooms. A third grade teacher can be faced with having multiple ELLs in the classroom and still be required to teach them alongside native English speakers. Furthermore, third grade science teachers are also responsible for preparing all students in the classroom to comprehend and utilize scientific academic language based upon the Florida State Standards. Additionally, students are required on the FSA Florida Assessment to write about science content. Therefore, scaffolded instruction for ELLs, which will prepare them to write about science content, is critical. This research study explored two third grade teachers' perspectives on implementing sentence frames and word banks in order to increase the writing levels of ELLs during science lectures. A professional development session was conducted by the researcher with the two participating third grade teachers regarding the use of sentence frames and word banks with ELLs while teaching science content. The teachers, thereafter, conducted a science lesson using the scaffolded strategy of sentence frames and word banks. It was found that when the third grade science teachers implemented sentence frames and words banks during science lectures, the ELLs showed improvement in their writing as well as their use of scientific academic language. Both teachers stated that their ELLs were somewhat completing more of their science worksheets than before the intervention. These results can conclude that implementing sentence frames and word banks during science lectures can increase the writing levels of ELLs during science lectures.

Dedications

To my husband Yasu, who has always supported me in every way. Never doubting or stopping me from reaching my dreams. His constant love and support has allowed me to push myself in every imaginable way possible.

Most importantly, to my daughter, Neena. When we are together, we can take on the world! She is a definite confidence booster filled with love, laughter and endless songs!

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Chapter One: Introduction

The likelihood of an ELL being in a classroom is imminent. According to the National Center of Education Statistics (NCES), “the percentage of public school students in the United States who were English language learners (ELLs) was higher in school year 2014–15 (9.4 percent, or 4.6 million students) than in 2004–05 (9.1 percent, or 4.3 million students). In 2014–15, the percentage of public school students who were ELLs ranged from 1.0 percent in West Virginia to 22.4 percent in California. (NCES, 2017)”.

In Florida, the percent of ELLs was 9.2% of the school population (OCPS *Pocket Guide*, 2014). Not only are there a high number of ELLs in the State of Florida, in Orange County, Florida, there are a high number of ELLs that speak different languages. According to the 2016-2017 Orange County Public Schools (OCPS) *Pocket Guide*, “students in OCPS comes from 197 countries and speak 168 different dialects” (OCPS, 2014, p. 2). These figures indicate there are a high level ELLs enrolled in OCPS. There are also varying levels of English proficiency within the ELL public school population.

Because it is likely that an ELL will be enrolled in a large number of classes in Florida, it is imperative that teachers be prepared to teach ELLs. Teachers are required to have either their ESOL endorsement, or certification. In fact, in 2003 the requirements were modified from just requiring all instructors who teach ELLs to earn the ESOL endorsement, to require guidance counselors, school psychologists, and/or administrators to also be ESOL endorsed (FLDOE, 2011).

Part of the responsibility of teaching ELLs is the requirement to teach how to write in a content area. More specifically, science teachers are required to ensure all of their students learn the science curricula based on the Florida State Standards. Teachers are required to implement ESOL strategies. The types of strategies would depend on the level of English the ELL is able to comprehend and apply.

Therefore, the purpose of this thesis will focus specifically on how two third grade elementary teachers in a Florida school district, implemented the ESOL strategies of sentence frames and word banks during science instruction. The focus will be on how these two strategies may enhance their instruction by increasing the writing abilities of English language learners (ELLs).

Why target the third grade science teacher's perspectives on their ELLs writing abilities?

The awareness that third grader ELLs needed assistance with writing about science was discovered when the researcher was completing service learning hours in an elementary school in a nearby school district. There was an observation of a third grade teacher lecturing to the students during science class. This classroom had twenty students and five of them were beginning level ELLs. With that said, the ELLs were sitting together in the back of the room and it was noticed they all were not engaged in the lesson. This could have been because they were not able to understand what the teacher was saying. Two of them were playing with items in their desk, another one was looking around the room, while the other two were drawing on some paper. It was at that moment when I realized that this situation could be my own upon becoming a teacher. The question begged itself, "How will this situation with ELLs be handled in my

future classroom?” Therefore, this research was created to investigate further what could be done in the content classroom to assist ELLs in the classroom. More specifically, how could ELLs be supported with writing in the science classroom at the third grade level?

Once I discovered that the ELL population has been on a steady increase for the past ten years I knew that it was very probable that I would have a least one ELL in my classroom. To add even more facts to the situation, I had just become a substitute teacher. I had taken teaching assignments all around the OCPS area. I was astonished to discover that in most schools, the ELL population was very high. Of course, it depended on the location of the school because some areas had a high population of ethnic groups of people. One middle school I taught at had twenty-two ELLs in the fifth period. This situation was because the school decided to group all the ELLs together and they moved to each class together. Even more interesting was the elementary school I went to that had eighty-five percent Haitian students that spoke Creole. It was my first time seeing Creole dictionaries in the classroom. Turns out that area has a very large Haitian population. With all these real life experiences, it was very clear that when I become a teacher, I am bound to have ELLs in my classroom.

I care about this topic because I am certain I will be teaching ELLs alongside native English speakers when I become a teacher. Thinking back to those five ELLs, I realized teachers need strategies that will help engage their students, ELLs and native English speakers. However, most importantly teachers need a way to help ELLs comprehend and write about the subject being taught. This is a big challenge for any student because third grade is where very specific academic scientific language is beginning to appear. Specifically, teachers are requiring the student to explain and talk about what science situations may have just occurred. This would

include after the science lesson and the teacher is having the students record their thoughts or even re-think the experiment in a different situation. This process requires the ELL to be able to write on demand about school subjects. Moreover, all children deserve the skills to read and write.

Thus, the need for ELLs to write about content, and for this study, specifically science content, demands the necessity of strategies to prepare the ELL to do just that. Therefore, this is where the implementation of sentence frames and word banks could become a great combination strategy that teachers could use with their ELLs. This intervention would help the ELL answer questions by choosing a word from the word bank and applying it to the sentence frame. The next step is to have the ELL re-write the entire sentence. By re-writing the sentence, the ELL is able to get a better context of the vocabulary being used as well as practice writing the sentences. All students need to be able to write using science based academic vocabulary. Furthermore, when you think about it, there are words used in the social setting, but those same words will mean something different in scientific setting. In fact the terms Basic Interpersonal Communicative Skills (BISC) are discussed by Cummings. He states that “BICS, language used in informal face-to-face interactions, can be acquired by ELL quite quickly and easily while the more Cognitive Academic Language Proficiency (CALP) is a more challenging and take longer to acquire.” (Cummings, 2008, p.175).

I believe the utilization of sentence frames and word banks are beneficial to ELLs while learning to write about science content. This strategy can assist increase the writing levels of ELLs during third grade science lectures. It is the key component of re-writing the sentences the ELL has just filled in with words from the word bank. This is scaffolding the ELL to become an

independent writer. Sentence frames and word banks could be created at the ELLs' level of English proficiency as well. For example, a third grade teacher has an ELL who speaks conversational English very well, but they have trouble understanding scientific academic vocabulary. This strategy could be used to help them understand the vocabulary words in context of the sentence. It will also allow the ELL to put their thoughts into words as the sentence frames and word banks are tailored to answer the questions posed during the lectures. In the same vein, if an ELL is in the beginning stages, pictures could be added to the sentence frames and word banks to give visualization to the questions posed. This can be taken one step further with high performing ELLs. The sentence frames and word banks could be written in a level that matches the English proficiency of the ELL.

With all this talk about sentence frames and word banks, one may wonder if it is the same as using sentence strips. The answer is no. Sentence strips were initially used during any type of discussion based activity. The teacher held up a sentence strip that was large enough for all the students to see. It made a beginning statement and the students were to fill in the end of the statement with their own thought. Students would then take turns filling in the ending of the sentence. This was a verbal activity that would help students express their thought verbally. Another use of sentence frames is used to help students with writing. In this case, a sentence would start off a thought, and the student would have to complete the ending with their own thought, such as:

I like to _____.

My favorite color is _____.

A sentence frame would look like this:

The _____ is the earth's closest _____.

Listed in the word bank would be the words (star, sun). The ELL would have to place the words in the appropriate places and re-write the entire sentence. Therefore, sentence frames are asking the ELL to use the words in the correct context of the sentence and not just give their opinion like sentence strips do. This is why I believe using sentence frames and word banks during science lectures will help increase the ELLs writing levels.

Of course, this is only one strategy that could be used with ELLS during science lectures. The types of strategies needed for ELLs would depend on the level of English the ELL is able to understand. The following chapter will reveal what current types of researched ESOL strategies are currently being used in today's classrooms. The review of literature in Chapter Two will be followed by Chapter Three and the description of the methodology used in this study. Chapter Four includes the results of this study, and, Chapter Five provides the conclusions and future recommendations.

Chapter Two: Review of the Literature

This thesis focused on how third grade science teachers were exposed to a strategy for ELLs incorporating the use of sentence frames and word banks. Elementary students are required to be exposed to the required curriculum. Third grade science teachers are required to ensure all their students learn the required curriculum regardless if they speak English or not. When an ELL is given an assessment about a science state standard, the ELL may be required to write their answer because they may need to explain the answer. This may be a significant challenge for an ELL that is performing on a beginning or middle level of English. Even so, ELLs are given certain accommodations during assessments. These will include: allowing the ELL to have an approved bi-lingual dictionary, flexible scheduling, seating and extended timing (OCPS, 2014, p.12). However, even with these accommodations, ELLs will still need to be able to navigate through the academic textual language that a science exam presents. ELLs may be able to look up a term, but unless they understand the context it is being used within the question, the bi-lingual dictionary will offer little help to express their understanding of the science curricula based on the state standards.

Current science instruction in classrooms

Consequently, with science based-practices, OCPS teachers are moving towards the 5-E inquiry method. This initiative means teachers are developing lessons that are hands on learning which involves the students thinking about what will happen before an experiment is conducted and talk about what has happened when the experiment is finished. Third grade science teachers are moving away from class lectures and focusing on peer interaction based upon this 5-E

instructional model of “engage, explore, explain, extend, evaluate” (BSCS, 2016). “When science is taught, inquiry-based instruction through hands on experiences often minimizes textbooks,” (Person, Moje, & Greenleaf, 2010 as cited in Lapp, Grant, Moss, & Johnson, 2013, p. 110).

Furthermore, the National Research Council (NRC) encourages teachers to let the students focus on the inquiry-based activity and have limited support from the curriculum materials or the teacher (NCR, 2000). Inquiry based instruction does help the ELL to visually see what is happening and to make a real life connection, however this method leans towards “describing, explaining, and reflecting” (Adamson, Santau, & Lee, 2012, p.599). They also state, “Although ELLs are routinely tested for levels of English proficiency, they are generally tested on the type of language used in casual conversations (ie, social language) rather than the language of textbooks and high-stakes assessments,” (Adamson, Santau, & Lee, 2012, p. 555). It is certainly important to note that ELLs can only learn about scientific academic language during science classes and yet it appears teachers are moving towards a discussion based format.

What are third grade science teachers required to teach their ELLs?

A quick visit to the Florida State Standard website, “CPALMS”, reveals complex thought processes that require students to be able to think critically and express these thoughts in writing. One of the state standards listed is: SC.3.E.5.1 – Explain that stars can be different; some are smaller, some are larger, and some appear brighter than others; all except the sun are so far away that they look like points of light.” (C-PALMS, 2017). After each science unit, a classroom assessment is completed during which the ELLs may be required to write their answers. It is

possible for the teacher to use verbal assessments or an assessment that uses pictures. However, there will still come a time that the ELLs will need to write or explain their answers.

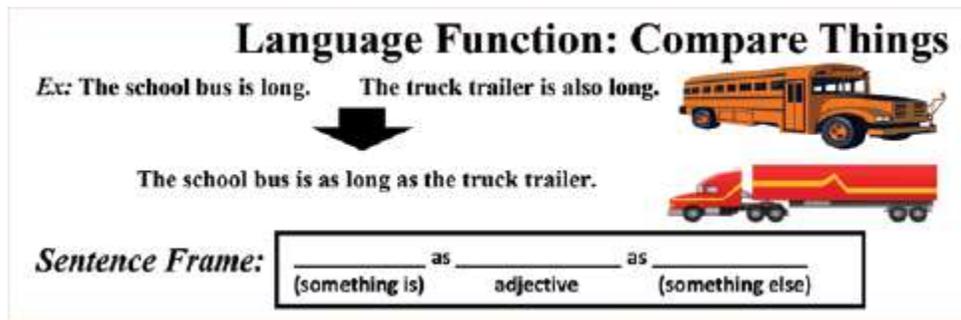
Upper elementary level students are faced with an increasing focus on the academic content becoming very specialized, which means there is an increasing level of disciplinary-based tasks that require the student to write in scientific means as opposed to their familiar narrative stories (Christe & Derewiank, 2008). As students enter third grade science class, more emphasis is placed on scientific academic language, whether it is spoken, read, or written (Olivera & Lan, 2014, p. 23). Many ELLs lack sufficient academic language in both their home language and in classroom English to be successful with complex academic tasks (Kinsella, 2010, p. 2). This notion reminds us that when students are in science class, and inquiry-based instruction is focused on using a hands-on method, the use of a textbook is minimal, (Pearson, Moje, & Greenleaf 2010, p. 459).

Donnelly and Roe (2010, p. 135) specifically addresses the need to help ELLs understand scientific concepts by using sentence strips within the classroom. The authors use several graphs depicting how to break down complex sentences and modify the sentences according to the English proficiency of the ELL. Their method is based upon “English-language development (ELD),” (Donnelly & Roe, 2010, p. 131). They further suggest the use of sentence frames in the classroom to help develop ELLs’ oral and written practice (Donnelly & Roe, 2010, p. 135).

Similarly, Tretter, Ardasheva, and Bookstrom (2014, pp. 41-42) wrote an excellent article that goes one step further by “teaching language structures by using sentence frames.” ELLs need the structure of the new language in order to make sense of a second language and all its components. Again, teachers are encouraged to use a comparison chart containing the basic

sentence frame along with directions to explain how to modify sentences when ELLs are trying to compare two items (see Figure 1).

Figure 1: Sentence frame with sample comparison.



Tretter, Ardasheva, and Bookstrom .(2014, p.42)

This format can be used to modify science curricula into a very, clear, and easy to understand format. All the teacher needs to do is provide the student with this sentence frame and word bank containing the science vocabulary related to the classroom activity. Then, the ELLs can practice slotting in the words as they perform the science activity. It must be stated that Tretter, Ardasheva, and Bookstrom (2014) used this sentence frame with high school ELLs. The authors have concluded that many high school ELLs are having a hard time writing in scientific language and even being able to verbally express themselves in a way that allows them to even understand the activity they are working on (Tretter, Ardasheva, & Bookstrom, 2014, p. 40). It can be said that third grade ELL science students can suffer from the same aspects of difficulty with a new and sophisticated vocabulary related to science. If ELLs are unable to verbally express themselves in typical everyday language exchanges, how can they understand demanding scientific terms they are supposed to be writing about? After reading this article, one

would consider using sentence frames and word banks in order to help the third grade ELLs to learn the concepts of the inquiry-based science curriculum along with the writing practice, and to be able to navigate the science assessments which inherently involve scientific vocabulary.

One more example of an ELL strategy that encompasses concepts related to scientific vocabulary is included in an article entitled, “Close reading of science texts” (Lapp, Grant, Moss, & Johnson, 2013). These researchers collaborated on “weaving together the Common Core State Standards and the New Generation Science Standards” (Lapp, Grant, Moss, & Johnson, 2013, p. 109). The keys to their strategy are conducting multiple readings of the text. During each reading the students work on one of four different aspects of comprehension and pick apart the text to achieve a better understanding of the concepts, which in turn will help the ELL to be able to become an independent reader (Lapp, Grant, Moss, & Johnson, 2013, pp. 115-118).

Teaching science to third grade ELLs

The initial literature review yielded one key research study which was conducted in South Florida with fifth grade science teachers in urban elementary schools. The study was quite extensive because it included 15 elementary schools and 221 science teachers that taught upper elementary level grades. The study is titled “Urban Elementary Teacher’s Perspectives on Teaching Science to English Language Learners” and was published online on April 18, 2009 by *The Journal of Science Education*. The study was conducted by Okhee, Maerten-Rivera, Buxton, Penfield, and Secada. Interestingly enough, this study started in spring of 2005 and “addressed schools that had populations that consisted of 40% students that were currently in ESOL programs or had exited from ESOL programs.” (Lee, Maerten-Rivera, Buxton, Penfield, & Secada, 2009, p. 276). This study’s focal points were to find out how the teachers felt about

their own ability to teach science, if they felt knowledgeable in science content and if their ELL training was useful, or, if they were even using ELL strategies during science activities. (Lee, Maerten-Rivera, Buxton, Penfield, & Secada, 2009, p. 263). Ultimately, this study revealed that “after science teachers received their ESOL endorsement, at least half of the teachers reported never having participated in professional development after beginning their teaching careers or even using ELL strategies during their science lessons” (Lee, et al. p. 276). It can be further stated that in 1999 the National Center for Educational Statistics (NCES) reported that 50% of teachers that work in school, containing a population equal to half of a minority student body, did not enroll in professional development activities that would increase their ability to meet the needs of their ELL students (NCES, 1999).

Moreover, it is important to mention that this study (Lee et al., 2009) primarily focused on the teachers’ perspectives of the science teachers’ knowledge of science lessons. After all the data were compiled and interpreted, the authors concluded that another study based upon the teachers’ perceptions actually reflect their classroom practices and whether or not the teachers collaborate with their administrators (Lee et al., p. 278). This study is important because these researchers were targeting the teachers’ perspectives as to how they feel they are prepared to teach ELLs in their science classroom. The teachers’ perspectives highlighted the unpreparedness and lack of confidence that science teachers felt to teach ELLs in the elementary classroom.

The second research study, which was a follow-up to the previous one, is titled: “The impact of Professional Development on Elementary Teachers’ Strategies for Teaching Science with Diverse Student Groups in Urban Elementary Schools” (Adamson, et al., 2010). “Data

consisted of 213 post-observation interviews with third, fourth, and fifth grade teachers. The teachers reported using instructional strategies to promote scientific understanding, but generally did not employ more sophisticated inquiry-based strategies” (Adamson et al., 2010, p. 553). This study is important because it shows the teachers perspective about what type of ELL strategies they are actually implementing in their science classrooms.

This study brought out the latest fact that most ELLs are able to speak English in social settings but have extreme difficulty understanding scientific academic language. The study also addressed the need for the teachers to focus on the National Science Education Standards. The study included a variety of modifications used and one in particular called “write, repeat, highlight” (Adamson, et al, p. 561). This was the most used modification by the majority of the science teachers involved in the study. All in all, there were twelve ESOL strategies listed.

The third piece of literature comes from *Teaching Academic Content and Literacy to English Language Learners in Elementary and Middle Schools* (Baker, et al, 2014) by the Institute of Sciences and was published in April 2014. This publication lists numerous researched practices that are recommended to be used in the public classroom.

According to Adams, Santau, and Lee (2012), their study mentions that the teachers interviewed stated these are the most popular teaching strategies used in their Miami-Dade County Public Schools:

- “Structures activities to reduce the language load required for participation
- Use key terms and definitions of these terms to support comprehension and English language development.

- Use multiple modes of representation using non-verbal (gestural), oral, graph, and written language.
- Use language in multiple contexts (eg. introduce write, repeat, and highlight)” (Adamson, et al, 2012, p. 569).

Because this thesis focuses on sentence frames and word banks, there are still other ELL writing strategies used in upper elementary science classrooms, such as the one used with Ji Soo in research conducted by Oliveira and Lan (2014). They implemented a “teaching-learning cycle that is made up of three phases of activity” in “Genre-based Pedagogy: Deconstruction, Joint Construction, and Independent Construction” (Oliveira & Lan, 2014, p. 26-27). This study was based on daily remedial work with an ELL from Korea. Although he grew up in the United States and attended school from kindergarten to the fourth grade, Ji Soo had a difficult time writing academically in science contexts. Ji Soo’s teacher, Mrs. Darcy, used a “modified teaching-learning cycle” (Oliveira & Lan, 2014, p. 37).

Lastly, the most prominently used recommendations come from the National Center for Education Evaluation (Baker et al., 2014). They just updated their EIS Practice guide titled: *Teaching Academic Content and Literacy to English Language Learners in Elementary and Middle Schools*. “They now have four recommendations which are:

- Teach a set academic vocabulary words intensively across several days using a variety of instructional activities.
- Integrate oral and written English language instruction into content-area teaching.

- Provide regular, structured opportunities to develop written language skills.
- Provide small-group instructional intervention to students struggling in areas of literacy and English language development”

(Baker, et al, p. 6)

All of these practices can relate to the use of sentence frames during a typical classroom time for science lectures and lessons. For instance, the vocabulary words will be placed in the word banks as they are introduced. The teacher will provide the sentence frames with blank spaces so ELLs can fill in the appropriate vocabulary word. This will give ELLs a way to write scientifically as they observe and participate in the science activity. Since most inquiry-based activities are performed in small groups, ELLs will be able to integrate the oral language as well as the written language. The NCEE practice guide gives in depth examples as to how to implement the above ELL strategies: “It describes how practice guide panels determine the level of evidence for each recommendation and explains the criteria for each of the three levels of evidence (strong evidence, moderate evidence, and minimal evidence),”.(NCEE 2014-4012, p. 6).

This review looked at research studies that focused on the teachers’ perspectives of how they felt about teaching ELLs in their science classrooms. Whether or not the teachers felt they had appropriate training, professional development or even if they were using the learned strategies in their classrooms. It was also discovered that science teachers are moving towards an inquiry-based science lesson that requires all students to write about their findings and that this method does not require a textbook to be used. The ELLs are also required to write using

scientific academic language on their informal and formal assessments. As the Lee study discovered back in 2005, there was a lack of ELL strategy implementation going on in the classroom. Still other studies suggested the use of sentence frames to help increase the verbal and written levels of the ELL. Finally, it can be said that many studies have concluded the ELL needs to be able to write using scientific academic language within context of the sentence.

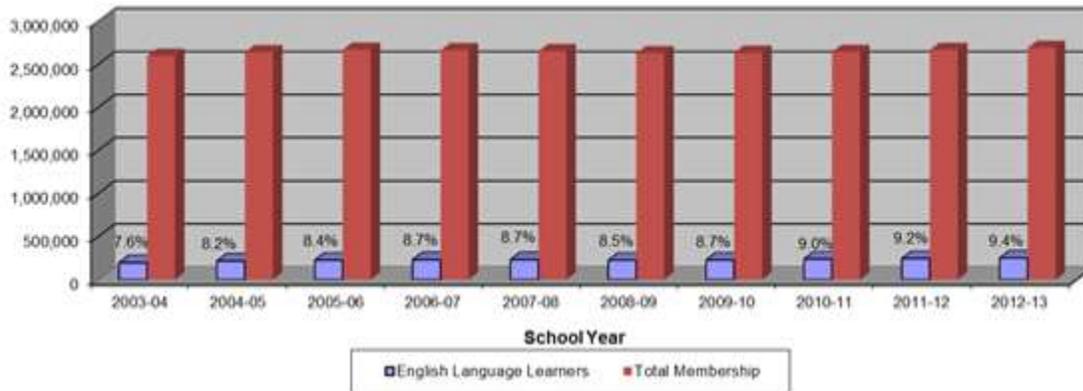
The following chapter gives information on how this study tapped into teachers' perspectives on implementing sentence frames and word banks during third grade science class to increase the ELLs writing levels. The sentence frames and word banks are created with specific vocabulary that is used during the science lecture. Once the ELL fills in the blanks with the vocabulary word, the ELL must then re-write the whole sentence. This allows the ELL to see how the word is used in context of the sentence. Then, Chapter Four provides results and discussion regarding the two teachers' sentence frames and word banks while Chapter Five provides closure to the thesis with conclusions, lessons learned, and future research.

Chapter Three: Methods

This chapter provides information on how this study was designed in order to obtain the two third grade science teachers' perspectives on the implementation of sentence frames and word banks to increase the writing levels of ELLs. Before information regarding this study's approach to the teachers, one needs to find out what the chances are of having ELLs in the third grade. It is important to say that due to the increasing ELL population, the state of Florida has put into place several policies that by which all teachers must abide. The first policy is that teachers must be ESOL endorsed. In 2003, this policy was modified to include school psychologists, guidance counselors, and administrators. In 2014, OCPS implemented their ELL plan that was approved by the Florida Department of Education (FLDOE) which is targeted to help ELLs to be successful in school (FLDOE, 2014).

A closer look at a graph (see Figure 2) published by the FLDOE shows that the ELL population has risen considerably over a ten year period from 2003 to 2013.

Figure 2: OCPS Ten Year Comparison Chart- ELL Population Increase



Next, if we consult the OCPS Pocket Guide, (see Figure 3) in the 2016 – 2017 school year, there are 85,115 students registered in OCPS elementary schools. With these facts, the chances of having ELLs in the third grade science classroom are almost certain.

Figure 3: OCPS District Profile



Retrieved from:

<https://www.ocps.net/SiteCollectionDocuments/Docs%20Continually%20Updated/OCPS%20Pocket%20Guide.pdf>

The school setting

The targeted school is located in a low socio-economic area and is also recognized as a Title 1 school in Orange County School District. Of the total number of students, 90% of the students qualify for free breakfast and lunch. The classrooms are inclusive, meaning 50% of the students have one or more types of disability and the other 50% of students have no type of recognized disability. Classroom A has 27 non-ELLs and 2 ELLs. Classroom B has 20 non-ELLs and 4 ELLs. Since half of the students have special needs, each classroom has a teacher, a paraprofessional, and a teaching assistant. Parental involvement is very low due to either a single parent home or both parents are working. Lastly, this is a charter school with a student population of 150 students.

The Pre/Post Questionnaire

The pre-questionnaire was created in order to gain the teachers' perspectives about how their students were currently participating and learning during science lectures. It is important to find out the behavior of the ELLs in their current classroom in order to create a baseline for the study. Since the study is targeting the teachers' perspectives on the writing levels of their ELLs then very specific questions were crafted to ask the teachers out how they felt their ELLs were currently writing during science lectures. For instance, are the ELLs completing their worksheet pages during class lectures? Are the ELLs using academic science vocabulary in their science

writing? It was important to know if the ELLs were even engaged during the lecture and how often they were writing sentences during class. (See Appendix A) The post questionnaire contains the exact same questions, but I worded the format in terms of questioning the teachers on their perspectives of the implementation of the modified worksheets that consisted of sentence frames and word banks. Most importantly, the main question was did the participants notice an increase in their ELLs use of scientific academic word use and in increase in the ELLs writing. (See Appendix B).

Steps to completion for the current study

Step 1: The targeted school was contacted and permission was granted to send an e-mail to invite the third grade teachers to participate in this study. Two teachers accepted the invitation and a meeting was arranged. Since the IRB submission states that the school would remain confidential and anonymous, this study did not include any additional steps that might identify important information.

Step 2: On the meeting day, background information was gathered about the school and the participants/teachers background information of certifications, length of teaching, the number of ELL students in each class, class size, and teaching styles. After that information was gathered, the researchers explained that the following week's worksheet would need to be submitted in order for the researcher to modify them with sentence frames and word banks. It was further explained that on the chosen morning of the lesson, the researcher would meet with the participants and provide training on how to implement the modified worksheets during the day's science lesson. Most importantly, how to keep track of their ELLs writing during the lesson.

Step 3: On the morning of the lesson, the researcher met with the teachers to give them their modified worksheets. The researcher provided training on how to implement the sentence frames and words banks and a thorough comparison between the original worksheet and the modified worksheet was given.

Participant A's worksheet (see appendix C) asks for the students to list ways they can overcome gravity. The only way for the students to answer this question is to recall information that was discussed during the lesson or go back through the textbook and find the various answers that were given. The modified worksheet (see appendix D) now contains sentence frames and word banks that give the ELLs structured sentences and a choice to use the appropriate word to place inside the sentence. Now the ELLs can focus on using the words in the context of the sentence, instead of trying to remember what was said during the lecture or search through the textbook. After each question, the ELL is instructed to re-write the sentence in order for the ELL to practice writing in scientific academic contexts.

Participant B's worksheet also contained questions for the students to write answers based on the science lecture. Unfortunately, since this lesson was inquiry-based, the students' have no textbook to go back and refer to in order to answer the questions. (See appendix E). The modified worksheet (see appendix F) contains sentence frames with specific words the ELL would have to use to complete the sentences. Again, lines were provided after each question in order for the ELL to practice writing using the scientific vocabulary within the context of science based situations.

Once the training was finished, the researcher made sure the participants understood how to implement the modified worksheets. It must be noted here that both participants indicated that

at the end of the science lecture, both teachers would be working with their ELLs in a small group setting to help them complete the worksheets. Lastly, the participants were reminded about keeping track of their ELLs engagement during the science class by taking anecdotal notes. It was also suggested to compare previous worksheets with the modified worksheet to see if there was an increase in usage of scientific academic words as well as an increase in writing levels.

Step 4: At the end of the same day, after teaching their science lesson and using the modified worksheets using sentence frames and word banks, the teacher's reviewed their anecdotal notes, compared the ELLs previous worksheets to the modified worksheets and answered the post questionnaire. Once completed, the participants e-mailed the post questionnaire to the researcher.

The teacher-participants

This study focused on the only two third grade teachers in the target school. Teacher/ Participant A has been teaching for eight years, is ESOL endorsed, and feels prepared to teach ELLs. A total of two ELLs are in Classroom A. Science lessons are based on reading from a textbook, use of an interactive whiteboard, and answering questions from the workbook.

Teacher/Participant B has been teaching for five years, is ESOL endorsed, and feels prepared to teach ELLs. There are a total of four ELLs in the Classroom B. In this class, science classes are inquiry-based with hands-on activities. To follow up and consolidate science concepts, workbook pages are pulled from internet sources for teachers.

This was a voluntary study and no compensation was given to the teacher/participants. Both teacher/participants are certified to teach in the state of Florida and are ESOL endorsed. This study took place over the course of a few weeks during the course of one semester.

Overall, the two teacher-participants were very happy to provide information about their teaching certifications, length of time teaching, how they felt about teaching the ELLs in their classroom, and their teaching styles. After the training session, the teachers were excited to implement the modified worksheets using sentence frames and word banks with their ELLs to discover if it would help their students increase their English skills in writing levels. The questionnaire, observations, and discussions surrounding the science concepts were met with enthusiasm and respect.

The next chapter will reveal the results of the study in order to reveal any possible benefits or challenges of using sentence frames and word banks. The last chapter or Chapter Five provides a summary and conclusions of the current study as well as recommendations for using this best practice in elementary classrooms. Finally, ideas for future research are also provided.

Chapter Four: Results and Discussion

In order to get a picture of how the use of sentence frames and word banks were received by teachers and students in third grade classrooms, this study included two teacher-participants of ELLs who agreed to participate. Previous to the intervention, they had their students write and complete answers during or after science lectures. Then, both teachers answered a pre-questionnaire and gave information about the backgrounds, number of ELLs in their classroom, and their teaching styles. They provided a good overall picture of their classrooms.

The Role of the Researcher

The researcher's role was to locate participants for the study and gather background information on the participants. Followed by obtaining worksheets that would be used during a targeted science lecture and to modify the participant's worksheets with the sentence frames and word banks. After the modifications, the researcher provided the training for the intervention and ensured the participants understood how to implement the modified worksheets during the science lecture and the importance of keeping anecdotal notes of the ELLs during the lecture as well as the ELLs completion to the modified worksheet. Lastly, the researcher analyzed the teachers perspectives based upon the pre/post questionnaires. The researcher was not present during either of the science lectures as the focal point of this study is to obtain the participant's perspectives of their ELLs writing during the science lectures.

Teacher-Participant Lesson concepts and materials covered

Participant A's lesson consisted of reading the science textbook as a whole group lecture. The first few pages of the textbook explained about gravity and why things fall to the ground rather than floating in the air. The second sections explains the different ways gravity could be overcome. This is the focal point of the work sheet, the students need to list the different ways gravity can be overcome.

Participant B's lesson consisted of a whole group discussion based on what types of metals are magnetic, what materials found in nature are magnetic, and the difference between Earth's magnetic North Pole and the True North Pole. Hands on activities were provided for the students to use various metals in order to find out which ones were magnetic. After the whole group lecture, the students were asked to complete the worksheets.

Here are the results of the questionnaires from before and after the intervention was put in place.

Pre-questionnaire results

Teacher-Participant A felt the ELLs were somewhat engaged during science lectures while Teacher-Participant B felt like the ELLs were very engaged during science lectures. While both participants indicated their ELLs were only somewhat completing their workbook pages. This is important to note because within each classroom, there appeared to be space for improving the ELLs writing which is what this study focused upon.

Teacher-Participant A stated the ELLs were not using academic scientific vocabulary in their science writing, while Teacher-Participant B stated the ELLs were somewhat using academic science vocabulary in their writing. Both participants stated their ELLs were somewhat

writing sentences during science class. Again, this is a good baseline to note because there is room for improvement once the intervention is introduced.

The final question revealed that Teacher-Participant A had used sentence frames and word banks during science lectures a few times before, while Teacher-Participant B had never used sentence frames and word banks during science lectures. Since Teacher-Participant B has not used this strategy before, it was important for the teacher to become familiar with the procedures. Both participants were informed that they need to keep track of the ELLs' writing during the science lessons.

Modification of the worksheets

After a lesson is taught, the teacher will assess the students verbally or in written form. Assessments are required because the teacher needs to have proof the students have mastered the state standards. In this study, we are focusing on third grade science standards because the curriculum is beginning to include rigorous scientific academic vocabulary. This would also include words that may be used in a social setting, but can have a totally different meaning in science. It is important for ELLs to start to make these distinctions when writing about science topics.

Teacher/Participant A's worksheet came from a textbook and consisted of one question: "What are some ways you can overcome gravity?" (See Appendix C). This format requires the ELL to look back in the text and find the answers to the question and create several sentences. This can be difficult for ELLs if they are not proficient readers or writers. The modified worksheet listed sentences with key vocabulary words missing that were placed in the word bank

(see Appendix D). This format allows the ELL to focus on the vocabulary word and to write it in context of the sentence.

Teacher/Participant B's worksheet came from an on-line source. Since he is using inquiry-based science lessons, there is no textbook involved. (See appendix E). Again, the student is asked questions and the student must answer, however, since there is no textbook to refer to, the ELL must come up with the sentences on their own. This is increasingly difficult for ELLs to do and could be the reason ELLs in this class are not always completing worksheets during lectures or only sometimes writing using scientific academic vocabulary. The modified worksheet was prepared by Mary-Margaret M. Shimada and is shown in Appendix F.

As the pre-questionnaire reveals, there is a good base line drawn to show how the ELLs are writing during science lectures in both classes. It is interesting to see that the two participants teaching styles are very different: one is more textbook based, the other is more inquiry-based. Interestingly enough, it could be said that Teacher-Participant A's pedagogical style most often focused on the textbook teaching style which offered teacher guidance. While Teacher-Participant B's pedagogical style often focused on the inquiry-based teaching style being promoted today.

Post Questionnaire Results

The first question asked for the participant's perspective on whether the intervention increased the engagement of the ELLs. Teacher-Participant A responded somewhat involved while Teacher-Participant B responded with very involved. Interestingly enough, both participants noticed the ELLs completed more worksheets than previously. The participants both agreed that there was an increase in the ELLs use of academic science vocabulary.

Now comes the time to answer the question which is the primary focus of this study: Will the implementation of sentence frames and word banks increase the writing levels of ELLs during science lectures? Both participants wholeheartedly answered yes; they answered that they saw an increase improvement in writing by the ELLs as a result of implementing sentence frames and word banks during the science lecture. This is very important as this is exactly what the study was trying to determine. Despite the very limited number of participants, this study echoed an important idea that using sentence frames and word banks were influential in boosting ELLs' writing performance, both in quantity and quality. Even more encouraging was both participants agreed that this intervention could become a best practice and researched strategy in order to help increase the writing levels of the ELLs during science lectures.

Lastly, it does need to be noted that Teacher-Participant A was able to implement the modified worksheets as taught in the training session, while Teacher-Participant B was only able to somewhat utilize the modified worksheets as taught in the training session. This raises the question of what did Teacher-Participant B do differently to implement the modified worksheets. Yet, each teacher-participant still held the same perspectives that the ELLs' writing levels did increase.

Despite the differences across these two teacher-participants and their classrooms, both felt that sentence frames and word banks were at least somewhat beneficial to their ELLs' writing levels. This will be addressed in the next section, Chapter Five, which includes the conclusion, recommendations, and future research.

Chapter Five: Conclusions, Educational Implications, and Future Research

Each year, there is an increase of English Language Learners (ELLs) entering today's classrooms. A third grade teacher can be faced with having multiple ELLs in the classroom and still be required to teach them alongside native English speakers. Furthermore, the two third grade science teachers are also responsible for preparing all students in the classroom to comprehend and utilize scientific academic language based upon the Florida State Standards. Additionally, students are required on the FSA Florida Assessment to write about science content. Therefore, scaffolded instruction for ELLs, which will prepare them to write about science content, is critical. This research study explored two third grade teachers' perspectives on implementing sentence frames and words banks in order to increase the writing levels of ELLs during science lectures. A professional development session was conducted by the researcher with the two participating teachers regarding the use of sentence frames and word banks with ELLs while teaching science content. The teachers, thereafter, conducted a science lesson using the scaffolded strategy of sentence frames and word banks. It was found that when the third grade science teachers implemented sentence frames and words banks during science lectures, the ELLs showed improvement in their writing as well as their use of scientific academic language. Both teachers stated that their ELLs were somewhat able to complete more of their science worksheets than before the intervention. These results can conclude that implementing sentence frames and word banks during science lectures can increase the writing levels of ELLs during science lectures.

In conclusion, this thesis answered the following question: Does the use of sentence frames and word banks during science lectures help to increase the writing levels of the ELLs?

During this study, it was revealed that both teachers agreed that using sentence frames and word banks helped to increase their ELLs' writing levels during science lectures. Furthermore, both teachers noticed an improvement in their ELLs' use of writing with academic science vocabulary, primarily due to the fact that the modified worksheet required the ELLs to re-write the entire sentence once they had filled in the sentence frames. These results are important and are believed to answer the question of whether the use of sentence frames and word banks would increase the writing levels of ELLs during science activities and lectures. Furthermore, perhaps this could continue to as a researched best practice strategy that principals could require their teachers to use. Once teachers try using sentence frames and word banks with ELLs, they may react as these two teachers did in this exploratory study, to use sentence frames and word banks across many content areas.

Recommendations for teachers based on my experiences in this study.

Even though this was a very small sample, I feel ELLs could benefit from this intervention. Although teachers may not have time to modify the worksheets for every lesson, perhaps this strategy could be self-regulated or may only be done for a short period of time until the ELL became a more confident writer. Another factor that teachers should consider is the realization that ELLs are not all the same; meaning that there are different levels of English proficiency. Some beginning ELLs are just learning and may need pictures and extensive modifications to help them understand basic needs. Then, there are the more experienced ELLs who can speak English in social settings, but have trouble using scientific academic vocabulary. Finally, there are ELLs who are very proficient in English and are almost at the same level as the

native English speakers, who may be daunted by technical vocabulary within a content area such as science. In all three cases, different levels of sentence frames and word banks can be created to fit the English proficiency of a variety of ELLs. Sentence frames and word banks appear to be an outstanding choice of strategies to use with ELLs in the content area of elementary science.

What would I do differently next time?

If I were to do this research over, I would include more participants and extend the use of the intervention over a longer period of time. One lesson is not a very valid study and certainly there needs to be a varied level of ELLs as well. When a study includes more participants, you are able to see if any problems occurred with the intervention. I also believe this intervention should be done at all levels of socio-economic levels because a best practice strategy needs to work in all situations. In order for this intervention to become a best-practice and researched strategy, extensive research across a variety of teacher-participants would need to be gathered. I would also be interested to see if the quantity of writing or the quality of writing improved for non-ELLs or for students with some exceptionality.

Future research

As previously mentioned, I would like to see this research conducted on a much larger scale that could involve third grade to fifth grade science teachers. The worksheets could be developed into workbooks that are structured with the three levels of English proficiency. Perhaps the textbook publisher could create a special ELL workbook to accompany the text. This could also be done as an online auxiliary format. That way, the teachers could print the needed

pages for their individual ELLs levels. However, if the teacher is using inquiry-based teaching, accommodations to utilize some sentence frames and word banks in a learning log might be most powerful. In that case, there are no workbooks, and the teacher could create their own modified sentence stems to get ELLs started with implementing the newly learned vocabulary.

One last thought: even though this research focused on ELLs, I believe this is an excellent strategy to use with students with disabilities as well as all students. Using the sentence frames and word banks are a great way to help students focus and be engaged alongside their peers. Students with exceptionalities tend to need extra support just as ELLs. In either case, if students are struggling just to come up with words that explain the lesson they just saw, why not give them the tools to help them along? As this study discovered, implementing sentence frames and word banks during science lectures can increase the writing levels of the ELL.

Lessons learned from the process of writing a thesis

This thesis has taken me to levels of academic achievement I would not have been able to do on my own. To begin, it all started when I noticed a problem in the classroom and wanted to find a solution to help myself and future teachers as well. The problem was teaching ELLs alongside native English speakers. The first solution I came up with was based on what I learned in my college classes, which was using sentence strips during whole group lessons. I also discussed the idea to my Teachers of Students of Other Languages (TSOL) class professor, Dr. Grissom. She suggested using sentence frames and word banks as a solution. Two weeks into the process, I decided to present my idea “The Power of Sentence Frames” at the Student

Undergraduate Research Fair (SURF). In doing so, I quickly found out when you are trying to find a solution, you must first narrow down the problem to a very specific question. For instance, I knew I needed a solution for teaching ELLs alongside the native English speakers in the elementary level classroom. I was told my subject was too broad and could involve all grade levels in all subjects. Basically, I needed to really narrow my research down to one specific question.

Luckily, after that presentation, I was invited to enroll in the Honors in the Major (HIM) program. At that time, I knew that course would take me to a solution to my problem. I asked Dr. Grissom to be my thesis chair because she was my professor, had a background working with ELLs, and was interested in the same topic. After enrolling in the program, the next step was to do the literature review in order to find out what was already being done in the field. As I began the research, I was able to narrow down my question even more. I knew I wanted to find out the teachers' perspectives on implementing sentence frames in the third grade science class.

Consequently, the best way for me to know if I am on the right path is to present my research. Even though I was still doing the literature review, I wanted to present at the Student Undergraduate Showcase of Excellence (SURE) event. I immersed myself in my research in order to talk to the public about it. In doing so, I was asked several important questions that I needed to address in the study and which further helped me to narrow the question. For any future research, I will definitely include presentations at research fairs and conferences because it allows me to have other viewpoints and to find the answer to questions I would not even have considered. I consider presentations a vital approach to any research project.

Furthermore, there are more components that helped me to be able to write this thesis. Specifically, my Collaborative Institute Training Initiative (CITI) which I am required to do in order to write and submit an Institutional Review Board (IRB) document. I am now a certified CITI training for IRB which I can note on my professional resume. Both of these need to be completed in order to obtain permission to conduct research. This in itself opened my mind and taught me the correct procedures involved in doing human research. I will be able to use this training for future research projects.

Lastly, I have to say this thesis would not have been written had I not had the support of my thesis chair, my HIM coordinator, and the staff at the Burnett Honors College. They have taught me how to research, format, and write this thesis. Every step along the way has been a learning experience that I will be able to use in my graduate level studies.

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Appendix A

Pre-Questionnaire

1. How engaged are your ELLs during science lectures?
 - a. Not at all b. somewhat involved c. Very involved

2. Do your ELLs complete their workbook pages during class lectures?
 - a. Not at all b. Sometimes c. Yes

3. Are your ELLs using academic science vocabulary in their science writing?
 - a. Not at all b. somewhat c. Yes

4. How often do your ELLs write sentences during science class?
 - a. Not at all b. Sometimes c. Often

5. Have you used sentence frames and word banks during science lectures with your ELLs previously?
 - a. Not at all b. A few times c. Quite often

Appendix B

Post Questionnaire

1. Did the use of the modified workbook pages increase the engagement of your ELL students during the science lecture?
 - a. Not at all
 - b. somewhat involved
 - c. Very involved

2. Did you notice if ELLs were completing more workbook pages than previously?
 - a. Not at all
 - b. somewhat
 - c. Yes

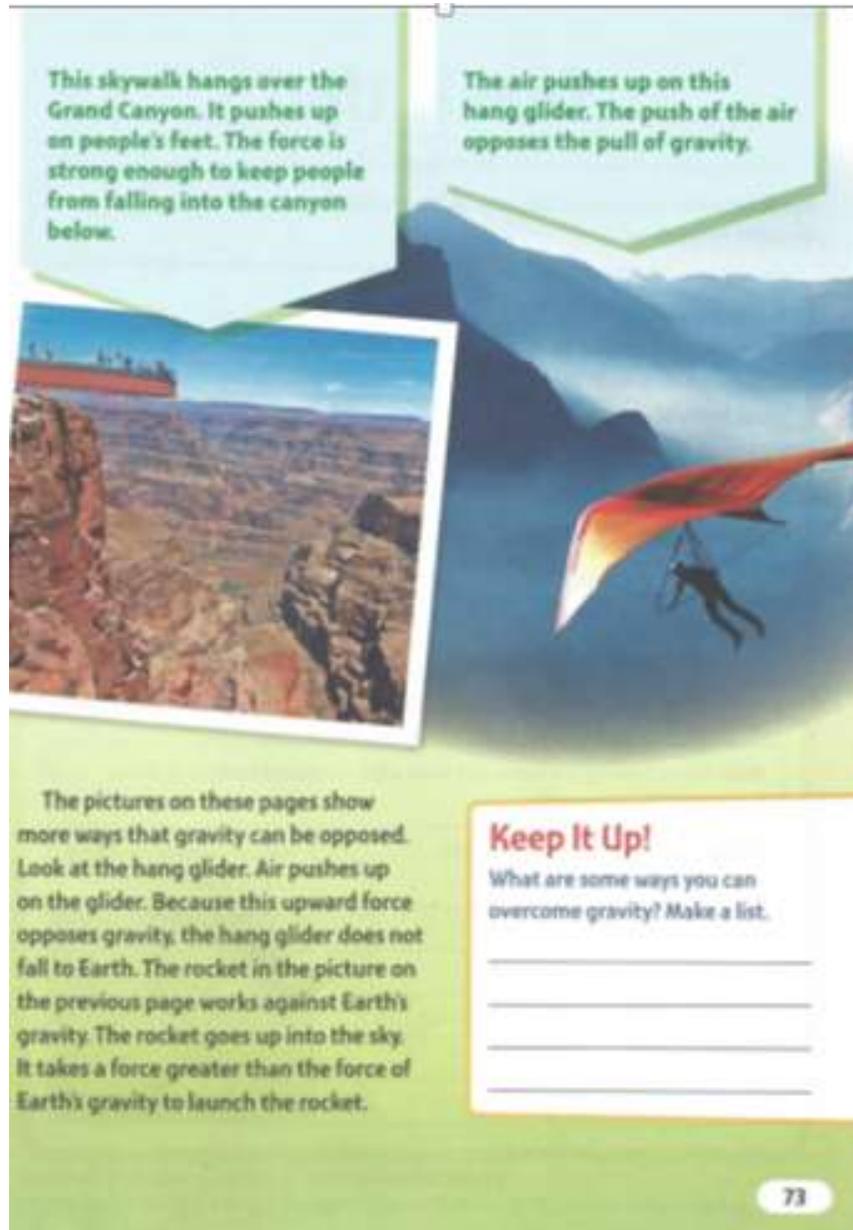
3. Did you see an increase in writing using academic science vocabulary?
 - a. Not at all
 - b. somewhat
 - c. Yes

4. Did you notice an improvement in writing by ELL's as a result of using the sentence frames and word banks?
 - a. Not at all
 - b. somewhat
 - c. Yes

5. Were you able to utilize the sentence frames and word banks just as you learned in the training session?
 - a. Not at all
 - b. somewhat
 - c. Yes

6. Do you feel as though the use of sentence frames and word banks could become a best practiced researched strategy in order to help increase the ELL's writing during science lectures?
 - a. Not at all
 - b. somewhat
 - c. yes

Appendix C



This skywalk hangs over the Grand Canyon. It pushes up on people's feet. The force is strong enough to keep people from falling into the canyon below.

The air pushes up on this hang glider. The push of the air opposes the pull of gravity.

The pictures on these pages show more ways that gravity can be opposed. Look at the hang glider. Air pushes up on the glider. Because this upward force opposes gravity, the hang glider does not fall to Earth. The rocket in the picture on the previous page works against Earth's gravity. The rocket goes up into the sky. It takes a force greater than the force of Earth's gravity to launch the rocket.

Keep It Up!
What are some ways you can overcome gravity? Make a list.

73

Houghton Mifflin Harcourt, (2012, p. 73)

Appendix D

Name _____

Date _____

Keep It Up!

Fill in the blanks and re-write the sentence.

ball gravity

1. I can overcome _____ by catching a _____.

Re-write the sentence:

_____.

standing overcome bridge

2. I can _____ gravity by _____ on a _____.

Re-write sentence:

_____.

force opposes

3. The _____ of a rocket _____ gravity.

Re-write the

sentence:

_____.

opposes push gravity

4. The _____ of air _____ the pull of _____.

Re-write sentence:

_____.

Appendix E

Name: _____

Magnetism Questions



1. List six things in your home or classroom that are made of metal that are not magnetic.

2. Describe some things in nature that are magnetic.

3. When a magnetic compass points north, is it pointing to the true North Pole of the Earth? Explain.

4. Describe how you would build an electromagnet.

Super Teacher Worksheets: (2017)

Appendix F

Name _____ Date: _____

Magnetism Questions

not	magnetic	penny	Aluminum	metal	can
-----	----------	-------	----------	-------	-----

1. List three things in your home or classroom that are made of metal that are not magnetic.

a) An aluminum _____ is made of metal but is not _____.

Re-write the entire sentence: _____
_____.

b) A _____ is made of _____ but is not magnetic.

Re-Write the entire sentence: _____
_____.

c) _____ foil is made of metal but is _____ magnetic.

Re-write the entire sentence: _____
_____.

Pole	North	Earth
------	-------	-------

2. Describe some things in nature that are magnetic.

a) The _____ is magnetic because it has a _____ Pole and a South _____.

Re-write the entire sentence: _____
_____.

magnetic stones

b) Also, _____ are _____ stones.

Re-write the entire sentence: _____

magnetic different geographic pointing

3. When a magnetic compass points north, it is pointing to the true North Pole of the Earth?

No, it is _____ to the magnetic North Pole. The _____

North Pole and the _____ North Pole are in _____ places.

Re-write the entire sentences: _____

copper battery positive iron

4. Tell how you would build an electromagnet.

a) Wrap _____ wire around an _____ nail. Connect the
copper wire to the _____ and negative ends of a _____.

Re-write the entire sentence:

magnet	copper	electricity
--------	--------	-------------

b) The nail wrapped with _____ will become a _____ because of the _____ flowing through it.

Re-write the entire sentence: _____
