

Cardinal Stritch University Stritch Shares

Master's Theses, Capstones, and Projects

8-20-2012

Effects of writing language objectives on the language proficiency of English Language Learners

Katherine G. Hayes

Follow this and additional works at: <https://digitalcommons.stritch.edu/etd>

 Part of the [Education Commons](#)

Recommended Citation

Hayes, Katherine G., "Effects of writing language objectives on the language proficiency of English Language Learners" (2012).
Master's Theses, Capstones, and Projects. 390.
<https://digitalcommons.stritch.edu/etd/390>

This Graduate Field Experience is brought to you for free and open access by Stritch Shares. It has been accepted for inclusion in Master's Theses, Capstones, and Projects by an authorized administrator of Stritch Shares. For more information, please contact smbagley@stritch.edu.

The Effects of Writing Language Objectives on
the Language Proficiency of English Language Learners

By

Katherine G. Hayes

A Graduate Field Experience

Submitted In Partial Fulfillment of the

Requirements for the Degree of

Master of Arts

Urban Initiatives

At Cardinal Stritch University

Milwaukee, Wisconsin

2012

This Graduate Field Experience

Has been approved for Cardinal

Stritch University by

(Advisor)

(Date)

Acknowledgements

I would like to first acknowledge the advice and feedback given by my advisor, Andrew Patterson, who pushed me to become a better teacher and writer throughout the past year. I would also like to acknowledge the careful editing by Rachel Lynn Hayes, who has such a talent for words and writing. Lastly, I would like to acknowledge the ongoing support of my bilingual colleagues, who helped me more than they know throughout this long process. Thank you all for your continuing support.

Abstract

Teachers of English Language Learners are faced with the challenge of developing their students' second language. This study investigates the impact of integrating language instruction during mathematics instruction. The research question asks: What are the effects of using writing language objectives on language proficiency of English Language Learners? The intervention was implemented in a fourth grade dual language classroom comprised of 24 native Spanish speakers of varying English language proficiency levels. During the intervention the researcher modeled writing language objectives, provided more opportunities to write during math lessons, assessed the language objectives, and provided students with written corrective feedback on their writing. The writing samples of five students were analyzed through quantitative rubric data, error analysis, and qualitative trends. The results indicated that integrating language instruction in the content areas, using writing language objectives and a system of written corrective feedback can aid English Language Learners in their second language writing development.

Keywords: English Language Learners, second language, language objectives, language acquisition, writing

Table of Contents

Approval Page	
Acknowledgements.....	3
Abstract.....	4
Table of Contents.....	5
List of Tables.....	8
CHAPTER ONE: INTRODUCTION.....	9
Purpose of the Study.....	9
Description of the Population.....	11
Overview of the Intervention.....	11
Summary.....	12
CHAPTER TWO: REVIEW OF LITERATURE.....	13
Writing Development and Pedagogy of English Language Learners.....	13
Language Instruction in the Content Areas.....	26
Teacher Beliefs Regarding Language and Writing Development.....	38
Conclusion.....	57
CHAPTER THREE: PROCEDURES FOR THE STUDY.....	61
Description of the Sample.....	61
Description of the Procedures.....	63
Description of the Data Collection Methods.....	67
Quantitative Methods.....	67
Qualitative Methods.....	69
Conclusion.....	70

CHAPTER FOUR: RESULTS.....	72
Writing Rubric Data.....	72
Weekly Quantitative Data.....	75
Weekly Qualitative Data.....	79
Student 1.....	79
Student 2.....	80
Student 3.....	81
Student 4.....	83
Student 5.....	85
Teacher Field Notes.....	87
Conclusion.....	88
CHAPTER FIVE: CONCLUSIONS.....	90
Connections to Existing Research.....	90
Accuracy and Vocabulary.....	90
Written Corrective Feedback.....	92
Language Instruction in the Content Areas.....	94
Teacher Mindsets and Beliefs.....	96
Explanation of Results.....	98
Rubric Data.....	98
Error Analysis.....	100
Qualitative Data.....	101
Strengths and Limitations.....	102
Recommendations for Future Research.....	105

Conclusion.....	107
References.....	108
Appendix A.....	111
Appendix B.....	112
Appendix C.....	113
Appendix D.....	114
Appendix E.....	115
Appendix F.....	116
Appendix G.....	117

List of Tables

Table	Page
1. Table 1: Linguistic Complexity.....	73
2. Table 2: Vocabulary Usage.....	74
3. Table 3: Language Control.....	75
4. Table 4: Weekly Error Rate (Errors/Total Words) by Student.....	76
5. Table 5: Cumulative Error Rates by Week.....	77
6. Table 6: Cumulative Word and Sentence Level Error Rates	77
7. Table 7: Cumulative Error Rates by Error Type.....	78
8. Table 8: Student 1 Response to Written Corrective Feedback and Teacher Modeling.....	80
9. Table 9: Student 2 Response to Written Corrective Feedback and Teacher Modeling.....	82
10. Table 10: Student 3 Response to Written Corrective Feedback and Teacher Modeling.....	84
11. Table 11: Student 4 Response to Written Corrective Feedback and Teacher Modeling.....	86
12. Table 12: Student 5 Response to Written Corrective Feedback and Teacher Modeling.....	87

Chapter 1 Introduction

Purpose of the Study

The teachers of English Language Learners (ELLs) are faced daily with students who struggle with spelling English words, using new English vocabulary, describing processes, and expressing their ideas in written form. Even with extended exposure to English, writing proficiency is not increased for ELLs (Doiz & Lasagabaster, 2004). While many of these students receive English language instruction during the English writing block of the school day, they often do not receive much time to practice writing skills in the content areas, such as science, social studies, and mathematics. Research suggests that in order for students to be able to demonstrate mastery on language objectives, it is important for them to have ample time during the lesson to write. This can also occur across the content areas without hindering content area learning (Wingate et al., 2011).

The research question of this study asks: What are the effects of using writing language objectives on language proficiency of English Language Learners? The study investigated what happens when students are given more opportunities to write during the content areas and are given specific language objectives to master. It has been argued that teacher practices are consistent with their beliefs. When content teachers believe their role is to teach language, there is more language support throughout lessons (Tan, 2011). Throughout the study, the researcher concurrently taught math content and language, while providing students with written corrective feedback on their daily language. Studies by Falhasiri et al. (2010) and Bitchener et al. (2005) provide evidence for the use of explicit written corrective feedback to improve second language (L2) writing accuracy.

In this study, the researcher hoped to improve the written English language proficiency of

her ELL students by believing she was both a mathematics teacher and a language teacher. In order to reach this goal, the researcher planned more opportunities to write during math lessons, set daily writing language objectives during mathematics instruction, and provided her students with daily written corrective feedback on written language assessments. By targeting language instruction through writing, the researcher taught and assessed several Common Core State Standards (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

- L.4.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- L.4.2. Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- L.4.3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.
- L.4.6. Acquire and use accurately grade-appropriate general academic and domain-specific words and phrases.
- W.4.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- W.4.4. Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

These standards were taught through modeling, administering daily language assessments to the students, and providing students with feedback on grammar, mechanics, conventions, vocabulary, clarity, and cohesion of their writing.

Description of the Population

This study took place in a fourth grade classroom in a dual language bilingual elementary school in an urban public school district in Wisconsin. The school's goal was to empower students to become bilingual and bi-literate in Spanish and English. The classroom in which the intervention took place had twenty-four students. One hundred percent of the students in the classroom identified themselves as Hispanic and the majority of whom identified Spanish as their first language. Five students participated in the research study. All five identified themselves as Hispanic and all five students spoke Spanish as a first language. The five students had varying language and writing proficiency levels. This sample was analyzed in the study in order to see the effects of the intervention on a variety of students with different written English language proficiency levels.

Overview of the Intervention

The writing language intervention consisted of five, sixty-minute math lessons (Monday through Friday) for four weeks. The researcher implemented the intervention to the fourth grade class as a whole, and analyzed the data for the five students in the sample. On the first day of each week, the students were introduced to the writing objective for the week and were given a pretest to assess their baseline writing proficiency for that week. During the math lessons, the researcher consistently modeled the writing language objective and provided additional language support with additional writing time for students. Each math lesson concluded with a daily exit ticket, which assessed the math content objective and writing language objective. The researcher provided written corrective feedback on the daily exit slips. The language objective remained the same for the duration of the week, and there was a posttest every Friday. Data were collected through quantitative and qualitative methods. The writing samples were assessed on a rubric

based on linguistic complexity, vocabulary usage, and language control. The researcher then performed an error analysis for each individual student, as well by location of error, and error type. Lastly, the researcher analyzed the writing samples to gather qualitative data by reading the corrective feedback given, and looking for evidence of improvement on the posttests. The researcher recorded field notes throughout the intervention to record lesson reflections and her thoughts regarding the integration of language in mathematics instruction.

Summary

This chapter outlines the problem of low written English language proficiency of ELL students and introduces a research-based solution of introducing a combination of writing language objectives and written corrective feedback during mathematics instruction. Chapter 2 reviews relevant research in the fields of written corrective feedback, content and language integration, and the impact of teacher mindsets and beliefs on students' language development, in order to set a foundation for the present research study. Chapter 3 outlines the procedures for the study, description of the sample, and a description of the data collection methods. Chapter 4 describes the results of the case study, including writing rubric data, weekly quantitative data from error analysis of the writing samples, and weekly qualitative data from observations of the writing samples. Lastly, Chapter 5 concludes this research study with connections to existing research, an explanation of the results of the study, and recommendations for future research.

Chapter 2 Review of Literature

Chapter 2 examines the current literature on the effect of writing language objectives on language proficiency and is divided into three sections. The first section discusses the literature pertaining to writing development and writing pedagogy of ELLs. The second section considers the available research regarding integrating language instruction in the content areas. The third section examines the role of teacher beliefs in regards to language and writing development. The final section concludes the literature review and presents an argument for the present action research study.

Writing Development and Pedagogy of English Language Learners

The following studies examine the needs of ELLs in regards to writing development and the potential need for a specific second language writing pedagogy, separate from native language writing pedagogy. The studies examine the effect of the length of exposure to a second language, effects of second language (L2) writing pedagogy interventions on the learners' writing development, and the effects of different forms of explicit and implicit corrective feedback on L2 writing.

The first reviewed study by authors Doiz and Lasagabaster (2004) gives a base for the discussion of language development demonstrated through writing. It examines the effects of the length of exposure to a second language on writing proficiency. It is important to note what features of writing are and are not affected by the length of exposure to a language.

Doiz and Lasagabaster (2004) researched the effect of the early teaching of English on writing proficiency. In their study they researched “the level of proficiency acquired in written production of the foreign language by two groups of students who are at the same cognitive stage of development but who have had a different amount of exposure to the foreign language” (Doiz

& Lasagabaster, 2004, p. 527). The authors had three hypotheses: (1) The length of exposure will affect the holistic evaluation of the students' written production; (2) The length of exposure will affect the areas of fluency, complexity, and accuracy; (3) The students with longer exposure to English will make fewer errors (Doiz & Lasagabaster, 2004). Data were collected by prompting the students who participated in the study to write a friendly letter to an English host family describing themselves in English to establish a baseline. The letter was then analyzed quantitatively for frequency of errors, for different kinds of errors, as well as holistically (Doiz & Lasagabaster, 2004).

The sample included 38 students ages 15-16. The students attended a dual language model school, and all students were Spanish-Basque bilinguals. The curriculum was conducted solely in Basque, with Spanish language and Spanish literature conducted only in Spanish. None of the students in the sample participated in English classes outside of the school system. The students were chosen from two separate schools that shared the same cultural and linguistic backgrounds. The 18 students in the experimental group started English instruction when they were eight years old and had received 792 total hours of English instruction. The control group of 20 students started English instruction at the age of eleven and received 660 hours of English instruction (Doiz & Lasagabaster, 2004).

The authors administered a baseline writing prompt to both groups of students and analyzed the writings for a holistic score, a quantitative analysis on the number of occurrences of different linguistic features, and a third evaluation of the type of errors made by each group. The holistic score was based on 30 points for content, 20 points for organization, 20 points for vocabulary, and 25 points for mechanics. The evaluators' two scores were then averaged. The quantitative analysis used the Wolfe-Quintero, Inagaki, and Kim (1998) measures of fluency,

accuracy, and complexity. Fluency assessed the total number of sentences, subordinate clauses, total number of words, and total words per sentence. Complexity assessed the complexity of the composition of the sentence based on the type of verbs, nouns, clauses, and tenses used. Lastly, accuracy was measured by percentage of error-free sentences, percentage of spelling mistakes, and the percentage of errors (Doiz & Lasagabaster, 2004). The third analysis described the errors made by the two groups and focused only on a sample of the most frequent errors made. These errors included omission of: articles, possessive pronouns, main/auxiliary verb, and the preposition *to*; misformation of: number, gender, and verb tense; misordering, spelling mistakes, and code switching into Spanish or Basque (Doiz & Lasagabaster, 2004).

The results of this study confirmed only one of the three hypotheses originally stated by the authors. The first hypothesis, that the length of exposure will have an effect on the students' holistic evaluation, was confirmed. The students in the experimental group, with three years more exposure to English, obtained higher scores than the control group in all five domains of the holistic score including: overall score, content, organization, vocabulary, language use, and mechanics. The differences were statistically significant in overall score, vocabulary, language use, and organization. This could be explained by the students' better grasp on expressions, use of grammar structures, and clarity of main ideas and details. Comprehension, spelling, punctuation, and use of capitalization were not affected by the earlier teaching of English (Doiz & Lasagabaster, 2004).

In the quantitative analysis, the experimental group scored higher in the fluency measures, and showed a significant difference in the total number of sentences. There was no significant difference with the number of words per sentence or the number of subordinate clauses. In the complexity measure, the experimental group scored higher in five of the nine

measures of complexity, but only scored significantly higher in one of the five measures, different verb tenses. The control group scored higher in the remaining categories, with a significant difference in the number of non-finite verbs. There were no significant differences in the accuracy measures, and therefore the second hypothesis, the length of exposure will affect the areas of fluency, complexity, and accuracy was not fully confirmed (Doiz & Lasagabaster, 2004).

The third hypothesis, students with longer exposure to English will make fewer errors, was also not confirmed. The experimental group made more errors in the misformation of words at the semantic level and more spelling mistakes. The experimental group more often used Basque, and the control group more often used Spanish, when they did not have the word in English. The lowest percentage of errors with the experimental group was with the omission of the preposition *to*. There was a significant difference in this category with the control group. Since the majority of the error analysis categories did not show significant differences, the third hypothesis was not confirmed.

The findings in this study support Cummins (1980) theory of a Central Operating System, with Common Underlying Proficiency. This theory states that there is a Central Operating System that is shared by both languages, and then surface features of first and second languages. The areas in this study that showed no significant differences, such as capitalization and punctuation for example, are common in both languages, and therefore would be represented in the Common Underlying proficiency. If students have a certain level of proficiency in these areas in one language, that knowledge will transfer to equal levels of proficiency to their second or third language. Other areas that are specific to one language, such as vocabulary, are represented in the surface features of the language. More exposure to a language would therefore

lead to more vocabulary in this language, since it is not shared in the Central Operating System (Doiz & Lasagabaster, 2004).

Students in the experimental group also were part of an English curriculum that focused more on oral communication, and less on written communication, which explains the high number of spelling mistakes. Overall, the students with earlier exposure to English holistically outperformed students with less exposure to English, but there were no major differences with regards to areas of complexity, accuracy, or error analysis (Doiz & Lasagabaster, 2004). This study could be an example of how some areas of writing, such as mechanics, are not affected solely by the length of exposure to English, and require direct instruction of the skill in L2.

The previous study suggests that while the length of exposure to a second language improves a learners' writing proficiency holistically, areas such as accuracy and errors were not affected. The next study by Evans, McCollum, and Wofersberger (2010) offers one example of a writing intervention for ELLs that led to improvements not only in their holistic writing scores, but also showed significant improvements in the analytical measure.

Evans, McCollum, and Wofersberger (2010) investigated the affects of dynamic corrective feedback within the context of L2 writing pedagogy. The authors' researched the question: "Does linguistic accuracy improve in student paragraph writing over a 13-week semester when dynamic written corrective feedback is used?" (Evans et al., 2010, p. 456).

The authors conducted the research study during two separate semesters in an English as a Second Language (ESL) Applied Grammar (AG) class. There were 27 ESL students between the ages of 18 and 33. All students enrolled in the class to improve their English for academic purposes and most planned to enroll in universities upon completing this course. Classes met four times a week for 65 minutes for 13 weeks. The course goal was to improve the students'

ability to recognize and correct grammar errors in their own writing (Evans et al., 2010).

Motivation to write and learn was considered to be high among the students because they rarely missed classes or assignments. Their language levels, measured by the Test of English as a Foreign Language (TOEFL) exam, averaged at the advanced-low level (Evans et al., 2010). The same professor taught both classes and had over 20 years writing experience with ESL writing and first language (L1) writing; and had five years teaching the AG course (Evans et al., 2010).

Students wrote approximately 31 paragraphs over the course of the semester. The instructor scored each paragraph using two scoring systems. First, the professor scored using a holistic score. In the holistic score, 75% of the points were for linguistic accuracy and 25% was graded for content (Evans et al., 2010). To create a more accurate picture of the students' writing ability, the paragraphs were then grouped in groups of four and averaged to give a more holistic view of the students' writing development. Paragraphs were then scored for accuracy using the error-free clause method. Two raters first established the number of clauses in a given sample, then individually rated the number of error free clauses based on syntactic, punctuation, spelling, or lexical errors. The sample was then given a percent score, the number of error-free clauses divided by the total number of clauses (EFC/C). This study reported error-free clauses to be the most precise measure of writing accuracy that we have today (Evans et al., 2010).

The intervention consisted of providing dynamic written corrective feedback (WCF) to the students on a daily basis. Students wrote a ten-minute long paragraph at the beginning of each class. The instructor would then provide dynamic WCF, which was described as being feedback that is manageable, meaningful, timely, and constant (Evans et al., 2010). The procedure for dynamic WCF was six steps. Step 1) students wrote a 10-minute paragraph at the beginning of class. Students were given a topic, and they could write how they pleased. Step 2)

the instructor collected the paragraphs after 10 minutes of writing and marked lexical and syntactic errors using an error symbol key. If there were any errors that were due to language development over time, such as preposition use, these were directly corrected by the instructor. The teacher assigned the holistic score as described earlier. Step 3) students were handed back their papers and they first recorded their errors. Each student had a chart divided into the different categories of errors. Students record their errors into their appropriate categories and then edited and typed their paragraphs. Students resubmitted their corrected paragraphs to their professors. Step 4) the professor then marked the second paragraph using a check, circle, or underline. Specific error symbols were used where needed. Paragraphs were returned to the students. Step 5 and 6) steps 3 and 4 were repeated until an error free paragraph was produced. Students had one week to complete the cycle for each paragraph (Evans et al., 2010).

Students in both the winter and the summer course made significant improvement in their writing. Average scores increased in every set of data for both courses in both holistic measures and the analytical measure. In the holistic measure, the winter class first set averaged a score of 7.39 and the fourth set averaged a score of 7.86. In the summer course, the first set averaged a score of 7.45 and the fourth set averaged a score of 7.69 (Evans et al., 2010). In the analytical measure, the winter course averaged an EFC ratio for the first set of .45 and the fourth set of .55. For the summer course, the average EFC scores for the first set was .418 and the fourth set was .54 (Evans et al., 2010). When looking at the research question, in the holistic and the analytical measures, students did improve their writing accuracy when dynamic Written Corrective Feedback was implemented. The authors recognized, however, many constraints to this study. Some of these constraints included the fact that there was no control group used. Also, the

writing used was only one paragraph in length. It is uncertain if results would transfer to any type of authentic writing task.

The purpose of this study was not to prove or disprove one way or the other that written corrective feedback is to be beneficial in all situations, but rather to show that it is the duty of researchers and teachers to continue to experiment and research different writing pedagogies for second language learners (Evans et al., 2010). This study was a snapshot of one type of intervention that showed positive results in helping L2 learners improve their writing accuracy. Feedback that is manageable, meaningful, timely, and constant seems to be feedback that would help any learner improve in a given skill over time. The next study by Falhasiri et al. (2010) provides evidence for the use of explicit and implicit corrective feedback on students' second language writing to decrease errors caused by the heightened awareness of the learner of the differences between L1 and L2.

Falhasiri et al. (2010) investigated the effectiveness of explicit and implicit corrective feedback on interlingual and intralingual errors. The following research questions were asked: "Q1. Does inductive explanation (implicit feedback) of intralingual errors students make in their writings decrease errors? Q2. Does deductive explanation (explicit feedback) of interlingual errors students make in their writing decrease errors" (Falhasiri et al., 2010, p.256)?

To answer these questions, Falhasiri et al. (2010) conducted a case study with 23 low intermediate English students who were enrolled in a non-prerequisite English course at the University of Isfahan in 2009. The sample was comprised of 16 girls and 7 boys ages 19 to 25. The course met twice a week for 50 days.

In the study, students wrote a 180-word composition, every other session for the first four weeks. The writings were then analyzed by their errors, which were categorized into interlingual

errors and intralingual errors. Interlingual errors were defined as those errors that stemmed from their native language, Farsi, and intralingual errors being those that stemmed from structures and words in the target language, English. The researchers then planned and conducted 45 minute-long lessons to teach the students the errors they had made. For interlingual errors, the researcher used oral meta-linguistic explanations and explained the rules and differences between L1 and L2. The researcher would sometimes use L1 to explain L2. For intralingual errors, the researcher taught the students the error and the appropriate structure in the target language. Explicit corrections involved the metalinguistic feedback and correct form, while the implicit correction only provided students with the correct form. Students then wrote four more compositions, which were analyzed for error frequencies in order to see any changes in the number of errors as a result of the intervention (Falhasiri et al., 2010).

After the intervention of explicit feedback, the frequency of interlingual errors decreased from 127 to 73. Misuse of preposition, using double subject in relative clauses, misplacing adverbs, adjectives used after nouns, omission of personal pronoun, omission of subjects, and double negative errors all decreased in frequency. Omission of dummy “it” and misuse of reciprocal verbs increased in frequency. The errors with significant change were misuse of preposition, Farsi with Persian Lexicon, and misplacing adverbs of frequency in case of modal verbs (Falhasiri et al., 2010).

After the intervention of implicit feedback, the frequency of intralingual errors decreased from 324 to 274. Intralingual errors that decreased in frequency after implicit feedback were: A for an, disagreement of subject and number, failure to attach 3rd person “s”, omitting “to”, misusing parts of speech, omission of articles, omitting “to be” verb, use of to be verb plus simple form of verb, use of do and does before main verb, use of relative pronoun that for who,

another for other, and irregular plurals. Intralingual errors that increased after feedback was: use of wrong tense, “to” before object, and addition of “the.” None of the changes in intralingual errors had a significant change (Falhasiri et al., 2010).

Overall, both forms of corrective feedback resulted in fewer errors made by students. Intralingual errors decreased by 8% while interlingual errors decreased by 27%. The researchers concluded that explicit feedback on interlingual errors was more influential than the implicit feedback on intralingual errors, and that explicit oral feedback resulted in greater written accuracy in the students’ second language (Falhasiri et al., 2010). The researchers extended their conclusions to say that the awareness of the differences between L1 and L2, helped students reduce their frequency of errors because they were attentive to the structural differences between the two languages. The explicit feedback helped students become aware of gaps between their native language and L2. Students then used this feedback to help them reconstruct their current understanding of L2 (Falhasiri et al., 2010).

It was recommended by the researchers that teachers address student errors to the whole class with a brief discussion pointing out the differences between the students’ native language and the target language. Falhasiri et al. (2010) also recommended that teachers become aware of the type of errors students make, as some are easier to correct with explicit feedback. Teachers should also not expect explicit feedback to be uniformly successful, as the results of this study show that some error types decreased more than other error types as a result of feedback (Falhasiri et al., 2010).

The previous study builds the case for the use of explicit written feedback to help improve the writing accuracy for second language learners due to the students’ awareness between the differences in L1 and L2. The following study by Bitchener et al. (2005) supports

these findings with more evidence of the benefits of providing students with explicit corrective feedback in order to improve the accuracy in new pieces of writing. In this case study, Bitchener et al. (2005) found that explicit feedback is more instrumental in improving the accuracy of some linguistic features more than other linguistic features, due to the fact that second language acquisition happens in stages, as a process.

Bitchener et al. (2005) investigated the effect of different types of corrective feedback on ESL student writing. The research question of their study was “to what extent does the type of corrective feedback on linguistic errors determine accuracy performance in new pieces of writing” (Bitchener et al., 2005, p. 195)?

The study consisted of 53 post intermediate English for Speakers of Other Languages (ESOL) migrant students who had recently enrolled in a post intermediate ESOL program. The participants were between the ages of 20 and 60, the majority of which were in their late 20s and early 30s. The majority of the participants were from Mainland China, but there were also participants from Sri Lanka, Romania, Iran, Turkey, Serbia, Russia, Korea, Indonesia, Taiwan, Japan, and India (Bitchener et al., 2005).

The participants were divided into three groups, based on what program they were enrolled in at the University. Group one consisted of 19 full time students, group two consisted of 17 participants who received 20 hours of instruction per week, and group three consisted of 17 participants who received four hours of instruction per week. In the study, group one received direct, explicit, written corrective feedback and 5-minute long student participant-researcher conferences. Group two received direct written corrective feedback only, without conferencing. Group three received no written corrective feedback, but did receive oral feedback on the organization and content of the writing for ethical reasons (Bitchener et al., 2005).

Direct written corrective feedback consisted of the researcher underlining the error and writing the correct form above the underlined error. During conferences, the participant was able to ask questions and discuss errors that they did not understand. The researcher offered more examples and oral explanation of the error forms. The researcher did not teach the classes, and the teacher did not discuss the writing samples during class time. It is possible that the teacher covered some of same material, but this input was not accounted for or controlled during the study. After the first writing task, the researcher calculated the percentage of the frequency of each error, and focused all forthcoming feedback on the three most frequent errors types. The three most frequent errors were preposition use at 29.23%, simple past tense at 11.96%, and the definite article at 11.45% (Bitchener et al., 2005).

For the remainder of the study, the participants completed four 250 word writing tasks during week 2, 4, 8, and 12 of the course. Each of the writing tasks was a friendly letter, in order to attempt to elicit the same linguistic features in each writing task. The researcher measured each of the writing tasks quantitatively for percentage of correct usage of each of the targeted linguistic forms.

The results of the study showed that group one, receiving direct written corrective feedback and conferencing, had statistically significant improvement in accuracy from week 8 to week 12 of the study. Average levels of accuracy overall were not significantly different between the three groups. There were differences, however, between the targeted linguistic forms. Preposition errors did not vary according to the type of feedback provided, but group one did improve in preposition use over time. Simple past tense errors differed based on feedback type. Group one had a significantly higher accuracy average than group two in this category. The three groups did not improve in simple past tense accuracy over time. The definite article errors also

differed on feedback type, where group one had a significantly higher performance average than group three. The accuracy of the definite article error rate of the three groups did not improve over time. No individual improved in linguistic accuracy over time (Bitchener et al., 2005).

Bitchener et al. (2005) concluded that feedback and conferencing does make an impact on some individual features, while it may not improve linguistic accuracy as a whole. This may be due to the fact that different linguistic features are acquired through different processes at different rates and stages. This can explain why written corrective feedback and conferencing led to higher accuracy rates in group one with simple past tense and the definite article compared to groups two and three. Because there were not improvements of individual L2 learners across time, the researchers concluded that L2 learners do not perform with accuracy in the same ways every time while learning new linguistic forms. They may perform with accuracy in some occasions, but not in others. Also, the researchers discussed how it is possible for L2 learners to avoid linguistic forms that they may not feel comfortable with in their writing. Overall, the researchers concluded that L2 writing teachers should provide students with written and oral feedback on errors that follow more consistent rules, such as simple past tense and the definite article, as opposed to spending time on feedback and conferencing over structures, such as prepositions, that are less influenced by written corrective feedback and conferencing (Bitchener et al., 2005).

In review, these studies show that ELLs' writing development is a unique process that requires a writing pedagogy different than L1 writing pedagogy. For example, Doiz and Lasagabaster (2004) presented a strong example of how longer exposure to the second language does not translate to higher proficiency in writing in all domains of writing. While students did perform higher holistically, areas such as comprehension, punctuation, spelling, and

capitalization were not affected. It stands to reason that ELLs would benefit from direct instruction to improve their writing complexity and accuracy due to the fact that extended exposure to English has not been proven to be sufficient on its own.

It is possible that an intervention, such as the dynamic Written Corrective Feedback (WCF) method described and studied by Evans, McCollum, & Wofersberger (2010) would be one possible component to pedagogy for L2 writing instruction. While the methods in this study do not prove that dynamic WCF will show improvement in authentic writing, it shows positive results in all subsets of the data and provides a sound foundation for further research regarding dynamic WCF and L2 writing pedagogy. Studies by Falhasiri et al. (2010) and Bitchener et al. (2005) provide more evidence for the use of explicit written corrective feedback to improve L2 writing accuracy. Overall, these studies show that ELLs need more than extended exposure to the English language, but rather specific instruction and explicit feedback in order to improve their writing proficiency.

Language Instruction in the Content Areas

Taking into consideration the importance of providing ELLs with direct and specific writing instruction specific to a L2 writing pedagogy, it is worthwhile to consider all opportunities within a student's education to provide them with direct instruction in order to improve their writing. The following studies examined the integration of content area instruction and language instruction through the use of language objectives specific to writing. The following studies show the merit of integrating language and content learning, as well as using language objectives within the content areas, and provide meaningful conclusions for the parameters of imbedding language instruction within the content areas.

Hoare and Kong (2008) conducted a case study of the planning and implementation challenges of using language objectives to integrate language and content instruction. The authors “provide a case study of an English language teacher education program in Hong Kong Institute of Education, where an attempt has been made to develop an integrated program to achieve both second language and content learning” (Hoare & Kong, 2008, P.2). The authors described challenges and constraints of both the planning and implementation stages of the program in order to better understand how similar programs can be made to be more successful in the future.

The sample included the first two cohorts of the teacher education degree program, which was a Bachelor of Education for prospective secondary teachers of ESL. The program was for Chinese speaking students, and thus provided students with extensive English language preparation, as well as teaching pedagogy necessary for a teaching degree. The time frame of this program was the same as teacher preparation programs conducted in the first language of the speakers. Students in this program had a relatively high level of English language proficiency upon entering the program, typically scoring a 5.5-6 on the International English Language Testing System (IELTS) proficiency measure. Students were required to have a 7 IELTS level at the time of graduation (Hoare & Kong, 2008). The program was developed from 1999-2001 by a team of teacher education specialists from the English department of the university. In the first two cohorts comprised of 69 students, all but one student graduated with the required levels of teaching proficiency and language proficiency and obtained teaching jobs after graduating. Exact correlation between language objectives and the proficiency of the students was not analyzed in this study, but rather the challenges and constraints of planning and implementing a language integrated content program were examined (Hoare & Kong, 2008).

The program design team chose the Content Based Language Teaching (CBLT) approach due to the fact that students needed to simultaneously learn the content and master a certain level of English language proficiency. Program developers first decided on the subject content objectives needed for the program. The objectives related to knowledge and skills needed for second language teaching pedagogy. Developers then looked at the Language Proficiency Assessment for Teachers of English (LPATE) language syllabus that included the language skills and objectives required for proficiency. For each content objective, language objectives were considered as either obligatory or compatible. Obligatory language objectives were objectives that needed to be mastered in order to achieve mastery of the content objective. Compatible language objectives were those that were not needed in order to master the content objective, but the content being studied lent itself to practicing the specific language objective (Hoare & Kong, 2008).

The program developers wanted students to practice all areas of language that were included in the LPATE syllabus, so all language objectives were integrated into the program. The program developers then looked at the curriculum map as a whole and made sure that all language objectives were used and that there was not excessive repetition of language objectives (Hoare & Kong, 2008). Language objectives were then included in course assessments, along with content objectives, to make sure there was the expected level of mastery for the end of each course (Hoare & Kong, 2008).

Within the findings of this case study, the following challenges and constraints emerged during the curriculum development stage. First of all, some courses lent themselves more to obligatory language objectives than other courses. For example, a course in Phonology had language objectives that were necessary to master in order to master the content. On the other

hand, with courses such as English Language Curriculum, it was more difficult to find obligatory language objectives to be paired with them. Secondly, some language objectives were so imbedded in the content that they did not seem like language objectives. For example, learning topic specific vocabulary was so imbedded in the content; there was not additional language learning on top of the content. Also, some language objectives, mainly in the listening and reading domains, were so general and broad that they were difficult to pair with any course, and when they were included, it seemed as though they were being forced into the course. Lastly, it was difficult for program developers to decide how often to repeat language objectives, as many language objectives seemed to fit many courses. It was finally decided that content obligatory objectives were given first priority over language compatible objectives (Hoare & Kong, 2008).

Challenges and constraints also emerged during the implementation stage of the program. Broadly written objectives were poorly implemented in the course during the planning and development stage. Professors did not have a specific focus with these language objectives, and therefore could not conquer teaching them in the time frame of the course. Secondly, the language objectives that seemed very similar to the content objectives, such as content specific vocabulary, did not improve the students' language development more than the content objective alone would have achieved. Lastly, objectives that seemed to be forced into the content during the planning stages, because they were not obligatory for learning the content, were generally ignored during the teaching of the course. This also tied into the perceptions of the professor regarding his or her role in the course. For example, many writing language objectives were paired with content objectives that had written content assessments. Some professors did not address many of these objectives, such as organization of writing, because they felt this was not

their primary responsibility. These views were discovered through interviews with the professors (Hoare & Kong, 2008).

In general, when professors found it difficult to teach a language objective, the language objective was ignored. This usually happened because the professor felt that addressing the language objective would take time away from teaching the content, or because the professor did not feel a commitment to the language objective while teaching (Hoare & Kong, 2008).

There were four large lessons that were learned from this case study, which should be taken into consideration during future Content Based Language Teaching curricula planning and implementation. First, in order for the language objective to be taught, it needed to be achievable and manageable in the time allotted and context of the course. Secondly, if in the planning stage, the language objective did not seem to be a reasonable fit with the content objective, it should not have been forced. Language objectives should have only been included in contexts where it made sense for them to be reasonably implemented. Thirdly, in order for students to commit to mastering the language objective, the language objectives needed to be genuinely included in the assessments. If not, the students would likely put forth effort in learning only the content required of them in the assessment. Lastly, staff development around the language objectives should have been included before the courses began. Without sincere professor buy-in of the language objectives, it was likely they would not be taught with the same level of commitment as the content objectives (Hoare & Kong, 2008).

The previous study focused on challenges and constraints of imbedding language objectives within a content area curriculum that should be considered while creating a language objective writing intervention in the content areas. The following study shows a different example of how writing instruction can happen concurrently with content instruction. In this

study, the effects of content based writing intervention on the students' writing were analyzed and the students' perceptions of learning language in the content areas were represented in the data analysis.

Wingate, Andon, and Cogo (2011) conducted a case study on the effects of a writing program that was imbedded into a content area linguistics class in an undergraduate program at a United Kingdom university. The authors investigated the effects of the intervention on the teachers' instructional methods, their impact on student learning and teaching, their impact on the workload for the teacher, and on the progress of students' writing during the course. The authors also studied the teacher and student perceptions of the program. Data were collected by interviewing student and teacher participants, collecting voluntary course questionnaires from students using a five-point Likert scale, and evaluating student written work by looking at the students' written work at the beginning of the course and then again at the end of the course (Wingate et al., 2011).

The sample consisted of 68 students in an undergraduate social sciences applied linguistics first year module in the United Kingdom. In previous years the course had been presented as a two-hour lecture, but this was changed significantly for this year due to the structure of the intervention. Data were collected from the three teachers who participated in the intervention and from forty-nine of the sixty-eight students on a voluntary basis through questionnaires. Fifteen students also participated in interviews on a voluntary basis, and their achievements represented the range of writing achievements represented in the course. Samples of students' written work were evaluated based on the progress they made on their final assignment. Five students' work was analyzed in each category based on their progress. The categories included: (1) students who had improved their grade by at least 10%, (2) students

who made no progress and received low grades on both assignments, and (3) students who received high grades on both assignments. The authors evaluated the students' writing over the course of the year to measure progress in writing development. The researchers measured progress by looking at growth in writing scores given by the teachers, as well as coding the comments teachers had given and looking for improvement in those specific domains across a students' writing (Wingate et al., 2011).

The intervention included four different instructional methods. First there were mandatory readings and specific focus questions to follow to give the readers a purpose for reading and to find meaningful arguments. Students were required to write a summary on their required readings and submit them online in order to receive feedback from teachers. It was also encouraged that peers leave each other feedback on an online forum. Second, there was a thirty-minute period of group discussions and writing in class for open-ended questions to practice critical thinking and discourse. Formative feedback was given on these short writing assignments. Thirdly, teachers explicitly taught writing and discourse in the course through writing lessons. Lastly, teachers provided formative feedback on weeks five, seven, and twelve of the course through written comments and ten-minute one-on-one conferences.

The researchers found that 44% of the students made progress of 5% or more on their week twelve assignment when compared with their week seven assignment. There was also an overall positive evaluation of the program by both teachers and students.

The teachers' evaluation of the intervention concluded that while it was time consuming to prepare for discussions and reading tasks, the benefits of the students' progress were well worth the extra work. The instructional method of providing individual feedback for students' online submission was concluded to be the most unreasonable of the interventions. It was an

unreasonable workload for the three teachers and lead to inconsistent amounts of feedback for the students. Teachers recommended that the online submissions not be part of future programs unless additional support is provided to respond to students' writing. Teachers reported that the intervention was useful and that all content could be covered despite the additional focus of writing to the course (Wingate et al., 2011).

Based on student interviews and questionnaires, 41 of 49 students rated the program as useful or very useful. Students valued the direct communication of the marking criteria and the direct feedback on the writing structure. Students did not value the in class discussions and class presentations as highly as the teacher did. Eight students found these 'not useful,' 15 were 'unsure,' and 26 found them 'useful' or 'very useful.' Comments regarding these in class discussions included students unsure of the purpose of the group work, not feeling included in the group, and occasionally not given the chance to present their work. There were some positive comments regarding in-class discussions (Wingate et al., 2011).

Students also evaluated the online submission portion of the course as a negative aspect. Only 20 of the 49 students found the submissions, as useful or very useful, 20 were not sure or found it not useful, and 9 never submitted. Some students left comments stating they stopped submitting after they never received feedback after their first submission. Students also commented on their discomfort with peer assessment (Wingate et al., 2011).

The evaluation on the students' writing showed that 24% of all students improved at least 10%, 15% of all students received low grades on both assignments and made no progress, and 23% of students achieved consistently high grades. Students' comments were recorded in the earlier text, and then tracked in the final assignment to see if there was evidence of improvement or lack thereof. Students who improved, or achieved high both times, showed that attention was

paid to the feedback they received. This was evident because in their final writing assignment there was no evidence of the weaknesses that were commented on in the earlier piece. Students from these categories who were interviewed commented that they used the comments to help improve their writing. When students who were in the category that showed no improvement were interviewed, they had a hard time recalling the comments they had received as feedback. Two students interviewed in this category said they had not read the comments. These students were the same students who had commented on feeling not a part of group discussions (Wingate et al., 2011).

Overall, the findings suggest that the program did improve students' writing, and there were overall positive perceptions from both students and teachers. This case study shows that embedding writing instruction into a content area at the university level can be a positive experience for both students and teachers and contribute to increased quality of students' writing. The following study by Lorenzo et al. (2009) analyzes the Content and Language Integrated Learning (CLIL) framework used in a primary and secondary bilingual program. This study provides evidence of enhanced second language acquisition in primary and secondary students, due to the CLIL framework. It builds a case for benefits of using content as a means of facilitating L2 acquisition, as learning content provides more meaningful and authentic language exposure and usage for the student.

Lorenzo et al. (2009) investigated the effects of CLIL in European education by conducting an evaluation on the Andalusian bilingual system. The research team analyzed and reported on four metaconcerns in this study. The research questions Lorenzo et al. (2009) analyzed and discussed were:

1. Linguistic outcomes and competence levels: How do the language competences of CLIL students compare with those of their mainstream peers? If the CLIL learners do show increased gains, to what extent do these differences appear to be the result of language learning based on academic content processing? 2. Acquisitional routes and individual differences in CLIL programs: How do entry points in CLIL programs affect acquisition? Does CLIL affect conative factors? If so, how? 3. L2 use in CLIL classrooms: How can the CLIL language environment be characterized on the basis of different instructional actors' and practitioners' use of L2 (content teachers, language CLIL having any visible effect aside from that observed in L2 learning? To what extent is the integrative nature of CLIL impacting on L1 language education? How does a component integrated in school subjects involve language sensitive organizational patterns in the wider school context? (p. 425)

The researchers studied the posed research questions by using questionnaires, interviews, and diagnostic tests. Questionnaires were distributed to teachers, CLIL students, and their parents. The focus of the questionnaires was research metaconcerns 2, 3, and 4, curricular organization, classroom praxis, and levels of satisfaction. The interviews were conducted with the CLIL program coordinators and a random sample of primary and secondary CLIL learners. Interviews with the program coordinators analyzed their perceptions of the strengths, weaknesses, opportunities, and threats of the program. The interviews with the students were to measure oral linguistic control. The series of diagnostic tests assessed the language competences amongst the CLIL and control groups. Data was collected over a three-month period over the spring of 2008 (Lorenzo et al., 2009).

Out of a possible 403 schools across eight provinces, 61 schools were chosen to participate. Three variables were considered when choosing the schools: urban/rural, primary/secondary, and L2 of English, French, and German. Once the schools were chosen, bilingual and control classes of primary students ages 9-10 and secondary students ages 13-14 were chosen. Students who participated in the Andalusian bilingual project were not pretested or prescreened to gain admission (Lorenzo et al., 2009).

The results of the study were discussed according to their respective metaconcerns. In the category of linguistic outcomes and competence levels, based on the results of language evaluations, CLIL students outperformed their mainstream peers with an average score of 62.1% of language competence compared to 38%. The only difference between the control group and the CLIL group was 1.5 years in the CLIL program. In an Individual Differences analysis in CLIL Programs, French L2 learners scored higher for receptive skills and English L2 learners scored higher in productive skills. L2 in CLIL Classroom data analysis showed that content teachers were more likely to use the L2 during the activities, and consolidation and revision portion of the lesson cycle. They were less likely to use L2 during an introduction to a topic. Language teachers were more likely to use L2 for feedback and evaluation than Content teachers, and across all teachers, the area least likely to involve the use of L2 was during clarifying and dealing with problems. Overall, teachers reported using L2 in error correction 50% of the time (Lorenzo et al., 2009).

With regards to CLIL Educational Effects beyond the L2, survey results showed that teachers, students, and parents agreed that CLIL is beneficial to learning and educational processes. Results also showed that teachers believed CLIL enhanced cohesion within schools, and caused a need for greater collaboration between L2 and content teachers. Survey results also

showed there was also a greater appreciation for the connection between language and content (Lorenzo et al., 2009).

The researchers concluded that CLIL gave students more authentic exposure to L2 since students were using L2 in a meaningful way to learn content. There was not only an increased exposure to L2 in CLIL, but also the depth of processing within L2 was higher as there was more meaningful input. This occurred because L2 was embedded in contextualized content area subject matter, so students had a higher degree of comprehensible input, and there was more scaffolding of language. The researchers also suggested there was a positive transfer from their native language to their L2 through the content knowledge, and the positive responses from students, teachers, and parents support the positive effects of using L2 as a means of teaching content (Lorenzo et al., 2009).

These studies provide different examples of how it is possible to imbed language instruction within the content areas. Hoare and Kong (2008) delved into the major lessons that were learned with regards to planning and implementing Content Based Language Teaching curricula, while Wingate, Andon, and Cogo (2011) provided a framework for how to insert more writing opportunities within a content course. Both studies provide examples of direct instruction of writing within a content context, but they approach this goal in different ways, one with mapping out language objectives across curricula, and one by providing forums to improve writing through cooperative learning and one-on-one conferencing and feedback. It is reasonable to extend that both are important aspects of writing in the content areas and could be both molded together in a classroom setting to help improve the written language proficiency of ELLs. Language objectives would provide the content teacher with a specific goal for her students' language acquisition for that lesson, and creating forums for more writing within the

content area would provide the students with the necessary practice and opportunities to master the language objective.

Lorenzo et al. (2009) provided more evidence and rationale for the benefits of imbedding language learning with content by using the CLIL framework at the primary and secondary level. The study suggested that the content areas were a prime location to facilitate and promote L2 acquisition due to the students' authentic exposure to L2 while learning content. L2 learning is scaffolded by the content and the students' prior knowledge in the subject matter. Also, the need to learn the content causes the language input to be more comprehensible, therefore causing more L2 learning to occur. These studies provide rationale for teaching language through the content areas, such as mathematics, at the primary level in a systematic way, by means of language objectives and more writing opportunities.

Teacher Beliefs Regarding Language and Writing Development

The following studies examined the large effect that teacher beliefs and mindsets can have in the classroom with regards to language and writing development. While previous studies showed that ELLs require specific and tailored writing instruction, and that language development can occur during the content areas, the beliefs of the teacher can also largely impact the extent of language development and writing development that occur. The following studies examine the effects of teacher beliefs and mindsets on students' language and writing development. The first study by Ballinger and Lyster (2011) suggested the strong impact teacher beliefs have on the language students choose to speak in a Dual Language Immersion Spanish/English K-8 school.

In this study, Ballinger and Lyster (2011) explored the language choice of students and teachers in a two-way immersion setting. They also explored if the students' language choice is

altered by factors such as home language, grade level, and teacher language. Ballinger & Lyster (2011) examined three research questions:

- 1) What is the language of choice among two-way immersion students with their teachers and peers?
- 2) Is language choice related to students' first language, grade level, and the content or context of their interactions?
- 3) How do two-way immersion teachers encourage their students to communicate in the non-English language? (p. 292)

The sample consisted of first, third, and eighth graders and teachers in an urban, east coast, K-8, two-way immersion school called La Comunidad. The students were from diverse ethnic, cultural, and socio economic backgrounds. Students had a variety of home languages. Many students came from bilingual homes and some were learning a third or fourth language. The school's two-way immersion program combined an equal proportion of language minority students, usually Spanish, and language majority students, usually English, in the same classroom. Language and content instruction occurred in both languages, and time was equally divided between the two languages. The goal of the program was to help both groups of students achieve high levels of academic and bilingual proficiency. La Comunidad was an immersion school that shared a building with a non-immersion school. Students participated in gym, music, and chorus in English. They also shared a lunchroom and busing with the non-immersion students who spoke in English.

Qualitative data were collected from classroom observations, student questionnaires, teacher interviews, and student focus group interviews. Data were collected for four weeks, from mid January to mid February. Field notes were taken during observations, questionnaires regarding language history and language preferences, and interviews about their language use

were all used as data. Attitudes toward language use by students and teachers, and the actual language used in different settings by teachers and students were analyzed.

Regarding the research question: What is the language choice among two-way immersion students with their teachers and peers?, the authors found that in first grade, the two teachers observed allowed English L1 children to speak and ask questions in English (Ballinger & Lyster, 2011). The teacher was observed speaking in English to accommodate English dominant students, and only pushed Spanish L1 or bilingual students to ask questions in Spanish. She did not encourage or require any students to speak a given language during unsupervised activities. Both teachers believed that providing English support to students who did not yet master Spanish skills would help prevent students from tuning out during a lesson. One observed teacher consistently used English for a clear purpose, and then returned back to Spanish, while the other first grade teacher would speak English without such structure or purpose.

In third grade, both teachers were observed using the language of instruction all of the time. Spanish-dominant students almost always chose to speak to the English dominant teacher in English. If they did choose to ask a question in Spanish, the English-dominant teacher would respond to them in Spanish. The Spanish dominant teacher always required that all students speak to her in Spanish and but did not require that they speak with each other in Spanish (Ballinger & Lyster, 2011).

In eighth grade, the teacher observed required his students to speak Spanish with each other. He pushed his students to speak Spanish during all work activities in his Spanish language arts classes. The other eighth grade teacher observed taught math, and while math was initially intended to be taught in Spanish, English was used as the main language of instruction due to

specific English math terms that were used. The teacher did not set any specific guidelines for what language should be spoken, or for how much that language should be used.

In regards to the first research question (Is language choice related to students' first language, grade level, and the content or content of their interaction?) the authors found that, in general, students at La Comunidad preferred to communicate in English, regardless of their language background (Ballinger & Lyster, 2011).

In first grade, the English L1 students were only observed speaking Spanish during whole group unison activities such as songs, chants, or other memorized responses. There were only two observed times when an English L1 student spoke in Spanish with a classmate. Also, according to student interviews, students also seemed to realize that their teachers were not requiring them to speak in Spanish.

In third grade, English L1 students were observed speaking with their Spanish teacher almost solely in Spanish. English LI or bilingual students were observed using English more often than the Spanish-dominant students with their teacher. More third grade English L1 students were speaking Spanish than first grade English L1 students.

First grade Spanish L1 and bilingual students were observed speaking Spanish during whole group activities, but would sometimes start their sentences in English until reminded to speak in Spanish. They were rarely observed speaking Spanish with their classmates (Ballinger & Lyster, 2011).

Third grade Spanish L1 and bilingual students were observed speaking Spanish actively during Spanish instruction with their peers and with their teacher. When it was not part of instruction time, however, they were observed speaking in English regardless of their peers' language background.

In eighth grade, Spanish L1 and bilingual students spoke both languages freely in the Spanish language arts class. Observations showed that English was still the dominant language at the grade level but students were able to gracefully switch between languages with their teachers and classmates. In the math class, students preferred English, and were observed speaking English more than Spanish, even those students who were seen speaking Spanish in the Spanish language arts class.

In regards to the second research question (How do two-way immersion teachers encourage their students to communicate in the non-English language?) teachers at La Comunidad witnessed a positive shift in the students' willingness to speak Spanish over the years (Ballinger & Lyster 2011). Teachers said this could be attributed to efforts such as taking students on Spanish field trips, encouraging parents to speak Spanish at home, and having Spanish local figures come visit the school. Teachers also made an effort to support Spanish language culture and language through projects such as family trees and focusing on literature from Spanish speaking cultures. Overall, the teachers' reinforcement of second language use matched the amount of Spanish language use by the students. When teachers did not require students to speak in Spanish, students did not speak in Spanish, and when teachers required students to speak in Spanish, the students matched their expectations.

This study shows an example of how the teacher's language choice and language expectations affect the student's choice of language. It also shows a case for why it is important for teachers to encourage students to speak the second language with each other and with the teacher during second language instruction in order to offset the majority language. It also shows an example of how efforts in a school to increase L2 exposure can affect the willingness

of students to speak the second language. Results from this study show how essential teacher language and expectations are for students' L2 use.

The previous study shows how teacher beliefs about language usage strongly affect student language usage and development. In the next study, Tan (2011) extended this idea into language development pedagogy. This study provided an example of how teacher beliefs regarding their role in language development can affect their language development pedagogy in the content areas.

The study conducted by Tan (2011) explored the role of Malaysian mathematics and science teachers' beliefs about their pedagogic role regarding teaching of English in the content areas. The author asked three questions, "1) What are Malaysian mathematics and science teachers' beliefs about a) their pedagogic role? b) The role that language plays in the learning of their respective subjects? 2) How do these beliefs translate into linguistic practices during teaching? 3) What are language teachers' beliefs about language in content learning, and what role do they see themselves playing in supporting the teaching and learning process within PPSMI" (Tan, 2011, p.328)?

The author used a mixed methods approach and both quantitative and qualitative data were collected in this study, but only qualitative data were analyzed and discussed in this article. Qualitative data were collected by teacher interviews, teacher observations, and analysis of curriculum and training guides, and conversations with staff and students at the schools.

The sample consisted of four secondary science teachers and three secondary math teachers from a rural school, and three secondary math and three secondary science teachers at an urban school. Both schools were in an environment of high stakes testing and affected by a countrywide switch in 2003 to English being the mandated language of instruction. The schools

were chosen because of their differences in English proficiencies; the more English proficient school being urban. All teachers were volunteers and gender was not controlled. The majority of the teachers in both schools were male.

Data were collected over the course of one school year. There were three cycles of data collection, one at the beginning of the year, middle of the year, and again at the end of the year. During each data collection cycle, teachers were first interviewed and then observed. Interviews focused on their experience, training, and beliefs. In most cases, observations were conducted after the interview and were recorded. During observations, the author was looking for evidence, or lack of evidence, of the best practice to enhance language development. The author also observed and took notes on various professional development sessions for the staff.

In regards to research question 1a (What are Malaysian mathematics and science teachers' beliefs about their pedagogic role?) the authors found that content teachers view themselves as first and foremost as content teachers. Some teachers did express a belief in the importance of language, but they believed that content needs to be mastered first, especially given the high stakes testing environment of the school.

In regards to research question 1b, what are Malaysian mathematics and science teachers' beliefs about the role that language plays in the learning of their respective subjects, the authors found that beliefs differed between math and science teachers. Math teachers believed that language was not important for learning subject matter. They believed that math was mainly expressed in numbers; therefore, students should be evaluated with facts, speed, and accuracy at solving problems. Science teachers, on the other hand, believed that content should come first, but language is important. Consequently, linguistic resources played a critical role in their

pedagogy. Their evaluation was not solely on numbers, but more so, asking “is he able to express himself correctly and use the key words of the content” (Tan, 2011, p. 333)?

Regarding research question 2 (How do these beliefs translate into linguistic practices during teaching?) the researchers found that teacher practices were consistent with their beliefs. In math classrooms, there was no evidence of practices to support language development. Teachers modeled a specific skill in English, and students were given work time while the teacher walked around and provided additional support in the students’ native language as needed. In science classrooms, there was time for students to engage with the content in English. Students were able to speak in English; they were given corrective feedback and more linguistic support. Examples of linguistic support evident in the Science classroom include students pairing and sharing a report to the class, using music to promote discussion, and impromptu mini language lessons.

In regards to research question number 3 (What are language teachers’ beliefs about language in content learning, and what role do they see themselves playing in supporting the teaching and learning process within the school?) the researchers found that English teachers taught language as their first priority. Most did not interact with math and science material because they did not feel comfortable doing so. English language learning was done outside of any context. For example, to practice steps in a process, students would use a recipe instead of a scientific process.

The results of this study show that teacher beliefs can impact teaching practices, which then impact student learning. When a teacher places importance on language development, his/her pedagogy is likely to reflect some evidence of linguistic support. Without a clear plan for language development in the content areas, a systematic approach for the school will be less

likely to exist. If students are not able to write and talk, they might construct less meaning in the content areas. It is possible that students will continue to be less English proficient and will construct less content meaning than if they were more English proficient.

In the previous study, Tan (2011) showed how beliefs of teachers regarding their role as language teachers in the content area could affect their pedagogy towards language development. In the study there was a difference between the beliefs of math and science content teachers. Science teachers generally shared the belief that language was important to their content pedagogy, and math teachers did not share the belief that they are language teachers. In the next study, Silver (2008) brings this thought to the trainee teacher level and examines trainee teacher beliefs concerning the role of language development in primary math lessons.

Rita Silver (2008) investigated the understandings of trainee teachers regarding content and language connections. Silver (2008) studied the following questions:

- (1) Would trainees develop a different understanding of the role of language in subject teaching?
- (2) Would they see any similarities/differences between what they already knew of thematic teaching and a content-based approach?
- (3) Would they demonstrate heightened language awareness and greater ability to analyze language within planned lessons and proposed teaching materials? And would they feel that it was worthwhile to do so?
- (4) Would this project help me to better understand the point of view of the teacher trainees at the final stage of their training program? (p. 112)

Silver hoped answering these questions would benefit future teacher trainees as well as instructors of trainee teachers.

The sample consisted of three groups of 21 to 22 teacher trainees who worked with the researcher as their course professor. The trainees were training in the National Institute of

Education (NIE), the only accredited teacher preparation program in Singapore. The trainees were participating in the two-year diploma program offered at the NIE and were eligible to continue on for their four-year bachelor degree if their grades were sufficient in the two-year program. Trainees were preparing to teach in Singapore's bilingual primary schools, where students were taught in English and in their mother tongue from Primary 1 and on. Their mother tongue was one of three languages: Mandarin, Malay, and Tamil. There were some students who had different mother tongues but were required to choose one of these languages for schooling. At the time of study, trainees had three methods courses including, English, mathematics, and one other course. All courses were part of separate courses and no cross collaboration happened (Silver, 2008).

Silver (2008) created and implemented an interdisciplinary project through which she investigated the research questions. In the project, trainees developed five sequential primary math lessons; identified crucial English Language (EL) connections within the lessons; recognized appropriate ways to use and teach the EL features within the math lessons; and collaborated with a partner in the planning of these lessons. The goal of the project was for trainees to have an awareness of the role of English when teaching other subjects; the role of English in the students learning other subjects with reading, writing, speaking, and listening; the language skills in other subjects; and opportunities for language learning in all academic subjects (Silver, 2008).

The project was submitted twice, and was graded for mathematical content by the math department and for EL content by the EL department. During the semester, the author kept notes of project discussions, her lesson plans, and any other preparation related to teaching material related to the project. Thirty-one students wrote and submitted an essay connected with the

project and 56 wrote and submitted a reflection at the end of the course. The data for this study were comprised of these essays, reflections, and research notes (Silver, 2008).

The research procedure changed throughout the course of the semester based on reflections of students and professor considerations after each session. There were five key stages in the project that affected how the course was conducted. There was the first initial introduction of the project, and based on student reactions, there was a follow up session introducing Content Based Learning Instruction (CBLI) and an ungraded homework assignment where students explored this topic. Based on reactions of the students, the author then changed her lesson plans and created a two-hour session that studied one problem from a primary math lesson while keeping both language and content in mind. Based on reactions from this session, the author assigned an essay exploring the pros and cons of CBLI, thematic teaching, and Language Across the Curriculum and the author's opinions of the methods. There were no other lessons regarding this project specifically and the remaining instruction and guidance was done when trainees scheduled individual appointments. These appointments mainly focused on EL structures and less about how language was used in the lesson (Silver, 2008).

The findings of this study are summarized by trainees' reactions and the author's reflections after each step in the project. When the project was first introduced, Silver (2008) described the initial reactions of her trainees as "bewilderment, fear, and even anger" (p. 112). In general, trainees felt that studying language in the context of Mathematics was unnecessary, irrelevant, and possibly detrimental to student learning (Silver, 2008).

After the author introduced more information on CBLI, many felt that CBLI was just the same as thematic units. Other comments included that thematic units were 'the same' as well. Opinions of trainees were not majorly swayed after analyzing the math lesson together in class.

When the trainees turned in their essays, after more reading on the various teaching methods and working on their own lesson plans, new opinions began to emerge. In the essays, many trainees stated that “class discussions, going over the assignment guidelines, and reading some articles related to content-based language teaching and language across the curriculum, had helped them develop a better understanding of the purpose of the project” (Silver, 2008, p. 115). Many trainees also showed a more positive attitude toward teaching English in the content areas. There were, however, still eight trainees who expressed many problems based on their own experiences with this approach. These included time constraints, lack of resources, conflicts with school culture, not mastering the math needed, and problems with various levels of English of students, and that there would be a potential lack of focus in the topic taught (Silver, 2008).

Upon reflecting on the trainees’ essays, in particular the concerns brought up by these eight trainees, Silver (2008) was forced to reflect on the potential pitfalls of teaching language within the content areas. Silver (2008) reflected on just how delicate the balance is between content and language, and how trainees who continued to voice concerns possibly had a greater understanding of the pedagogical issues related with this method, as opposed to less understanding.

When the project was completed, no students failed. In the final reflections, the trainees’ comments “showed a greater awareness of the role of language in learning other subjects, as compared with our initial class discussions” (Silver, 2008, p. 117). One trainee commented, ‘as I was doing the assignment, I observed and finally conceded [sic] that the use of English in Mathematics lesson is essential’ (Silver, 2008, p. 117). Another trainee reflected, ‘I was quite apprehensive at first as I felt there isn’t [sic] much English in a Math lesson... When I was going through the process, however, I realized that there are many opportunities for me to incorporate

English' (Silver, 2008, p. 117). Yet another trainee commented, 'I noticed that by integrating the two subjects together, pupils are able to link what they know to what they can express using language' (Silver, 2008, p. 117). Silver's (2008) overall reflection was that trainees who participated in this interdisciplinary project began reflecting on lessons as teachers of language, and they were looking for language teaching opportunities.

As a teacher of trainees, Silver (2008) reflected that it might not be possible to teach abstract aspects of EL teaching, and it might be best to set up discovery opportunities, and allowing trainees to express their opinions. Allowing this was more effective than forcing trainees to think a certain way. Silver (2008) also expressed that there is a fine balance between helping trainees see new possibilities in classroom teaching and having them adopt a new point of view.

When looking at the four research questions, Silver (2008) concluded that her trainees did develop a different understanding of the role of language teaching. She also could see similarities and differences between what they already knew in other language teaching methods. Her trainees also demonstrated heightened language awareness and a greater ability to analyze language within a lesson. Overall, this study helped her to better understand the point of view of the teacher trainees at the final state of their training program.

While this was a relatively small study, it shows an example of how teacher perceptions and beliefs can alter teaching planning and pedagogy. At the start of the program, when there was a negative perception to teaching language in the content areas, it is less probable they would have planned for language learning even during opportune moments in math lessons. The reflections of these trainees at the end of the program show how some of their perceptions have altered, and it is more probable that they will consider language teaching and learning outside of

the EL class.

Seeing in the previous studies how teacher beliefs are an important factor affecting language and writing development, it is reasonable to suggest that teachers need to be active reflectors on their own beliefs in order to be as aware as possible of how their own beliefs are affecting their practice. The following study by Shin (2003) provides an example of how teachers, and specifically L2 writing teachers, can use journal writing as away to reflect on their own interactions with L2 writing pedagogy and as an opportunity to refine and develop their own practices and beliefs.

Shin (2003) studied the affect of the use of writing journals by prospective English for Students of Other Languages (ESOL) teachers in a Masters of Teachers of Students of Other Languages (MATESOL) program. The sample consisted of ten MATESOL students, four non-native English speakers and 6 native English speakers. The teacher candidates were enrolled in Education 655: Teaching Writing to ESOL/Bilingual students, which was an elective course in the MATESOL program. The teacher candidates were taking a total of 36 hours of methodologies and second language acquisition as part of their Master's program. Many of the students had had prior teaching experience but few had received specific writing instruction for ELLs prior to this course (Shin, 2003).

Data were collected in the form of writing journals kept by the teachers, as well as copies of student writing draft samples. Each teacher was assigned to an adult ELL for the semester. The teacher met with his/her student every other week and held a writing conference. Teachers were asked to write a total of five to seven journal entries 1-4 pages in length. In the journal entries, teachers described how they identified and addressed writing problems, as well as

difficulties and or successes. They were also asked to reflect on how their writing conferences went, what they learned, and what they would do differently the next time (Shin, 2003).

Conferences with students differed depending on the student and teacher pair. Some pairs revisited the same writing multiple times, while other pairs looked at a new writing piece every time they conferenced. Teachers were told to engage in a conversation with the student about their writing, and not to address every error. Teachers chose one to three areas of focus for the conference based on the student's need. Teachers were instructed to start with errors dealing with content, then organization, and lastly grammatical errors (Shin, 2003).

Reflections from the journals showed that teacher expectations and beliefs changed over time (Shin, 2003). In the initial journal entries of these teachers, almost every teacher showed frustration with being unable to identify improvements in their students' writing. Shin (2003) concluded that the frustration seemed to come from unrealistic expectations on the part of the teacher. One teacher for example wrote in her fourth journal entry that she had become:

Somewhat disappointed and helpless. Because of the ambiguity of his sentences, I could hardly understand what he tried to tell me. Even though he and I discussed organization and rhetoric last session for such a long time, he still showed the same problems this time. (p.6)

Later in the same journal entry, the teacher's expectation changed, stating, " Even though the process of my tutee's writing in its improvement is invisible and quite slow, I want to strongly believe that he is in the process of learning and improving his writing" (Shin, 2003, p.7). Through her reflections in her journal entries, the teacher revised her expectations with her tutee's writing, and her expectations were eventually made with small improvements. This was evident her last journal entry:

Most of all, I felt so happy to see some improvement in his writing. Even though he still has problems with verb tense, word order, some awkward expressions, and mechanics, I did not have any problem understanding what he wanted to express through the writing. (p.7)

The process of reflection and journaling helped this teacher see improvements that might have otherwise gone unnoticed.

Another teacher also showed evidence in his belief changing with regards to his role as a writing teacher. He reflected that his role was not so much to produce writing without errors, but rather to help students learn that writing is a process:

After reviewing the ‘final product,’ and discussing what the last 3 sessions had provided in terms of discovery of oneself, and improvement in expressing oneself in writing, I soon realized that the most important thing was not for Christine to write a perfect paper, but rather to rejoice about the fact that she was now (more) aware of the writing process, and she could use this process on her own in the future. (p.7)

The reflection process allowed the teacher to think critically about his role and adjust his expectations as teacher of writing.

The journals also showed evidence of personal reflections for teacher as a writer and learner themselves. One teacher reflected that, “ I am not a master at the craft of writing but I can be if I take the time to redraft, evaluate critically, and revise often enough” (Shin, 2003, p.8). Another teacher reflected, “...This spawned a conversation about procrastination-something I can relate to. We agreed that lots of time is needed to make a paper good” (Shin, 2003, p.8).

This study showed an example how conferencing and journal writing can play an important role in teaching L2 writing and L2 writing teacher preparation. It showed evidence

how reflection can lead to modified expectations for students and can refine teacher beliefs, resulting in teachers developing skills as writers, writing teachers, and learners (Shin, 2003).

The following study by Rodriguez et al. (2010) shows how teachers of ELLs require professional development surrounding teaching strategies for ELLS that are adaptable to match their own unique teaching styles, and not a prescriptive instructional model or program.

Rodriguez et al. (2010) investigated the evolution of teacher perceptions regarding effective instruction for ELLs. Rodriguez et al. (2010) studied the following research questions:

Will significant differences be observed in an ELL methods course between pre- and post course measures regarding subject/teachers' perceptions of (a) the value of learning strategies implemented in coursework, (b) personal knowledge changes in ELL education, (c) professional attitude changes, (d) anticipated student academic achievement, and (e) course satisfaction? (p. 133)

Rodriguez et al. hoped that answering these research questions would provide more information needed to prepare teachers to become highly qualified teachers of the growing population of ELLs across the country.

The sample consisted of eleven teachers from a rural school district in Eastern North Carolina. All of the teachers were enrolled in a Methods of Teaching ELLs course for eight weeks. Out of the teachers, 90% were women, 90% had not taken previous course work towards ESL certification, and the majority had between four and ten years experience teaching (Rodriguez et al., 2010).

Data were collected through means of a pre and post course survey. The survey was administered at the beginning and the conclusion of the eight-week long training course for teaching ELLs. The survey investigated the attitude changes of the participants with fifteen

statements completing the sentence frame “I believe it is important to understand/know/learn...” using a four-point scale from strongly disagree to strongly agree. The survey also measured the participants’ estimates of the student educational achievement of ELLs. Course perceptions were also measured based on whether the participants felt they learned more or less in this course than in other university courses they had taken. Lastly, the survey investigated the participants’ views on the instructional strategies for ELLs they had implemented in their classrooms as a result of this course. Thirty-five learning strategies were investigated in the survey, and participants only rated the strategy if they had attempted to implement the strategy. Participants rated the strategy on a five-point scale from very dissatisfied with the learning strategy to very satisfied with the strategy (Rodriguez et al., 2010).

Out of the eleven participants in the study, eight completed both the pre course and post course surveys. Results of the study showed that in the category of attitude changes, participants agreed significantly more strongly with one statement at the end of the course than at the start of the course: “I feel it is important to know instructional strategies that support the way I teach” (Rodriguez et al., 2010, p. 137). No other attitude statements changed significantly throughout the course of the study. In regards to student educational achievement estimates, the participants’ estimates were not significantly different at the end of the course than at the beginning of the course. Mean estimates were, however, higher at the end of the course, suggesting that participants had an increased belief in the educational success of their culturally language diverse students (Rodriguez et al., 2010).

The results of the course perception portion of the survey indicated that 50% of the participants agreed or strongly agreed that they learned more by meeting with members of the group than they did in a lecture setting or distant learning environments. Out of the learning

strategies implemented in the classrooms of the participants, no participant was very dissatisfied, or dissatisfied with any of the strategies. All of the strategies implemented received a rating of neutral, satisfied, or very satisfied (Rodriguez et al., 2010).

The authors realized and expressed the limitations of the study; it was a small sample size with lack of randomization and lack of a control group. Because of these limitations, the authors were cautious with their generalizations and conclusions. The authors believed that it was important to note that teachers reported to be interested in strategies that support the way they teach. They discussed how teachers do not want to discredit their own personal teaching styles and professional experience. Strategies learned in professional development must then be adaptable by educators to their specific classrooms and teaching styles. The authors also concluded that the fact that estimates of achievement levels did not significantly change from the pre course to post course survey indicates that teachers are aware of larger social challenges ELLs face, and it may be necessary for school districts to make an effort to advertise educational opportunities to families of ELLs. Lastly, anecdotal notes taken by the authors throughout the study revealed that teachers felt there was a lack of time to implement the strategies in their classrooms. The authors therefore suggested that schools should develop professional development focused on the ways educators can integrate ESL strategies in their mainstream courses (Rodriguez et al., 2010).

In review, these studies show the impact that teacher beliefs can have on the key components that influence the language proficiency and development of an ELL. Ballinger and Lyster (2011) showed how oral language choice and development is largely determined by the expectation, choice, and the inherent beliefs of the teacher. Tan (2011) showed how teachers' beliefs also come into play in the content areas, and can even differ depending on what content is

taught. Math teachers were even more likely to believe that language development was not important in the content area, and thus their pedagogy reflected that. Silver (2008) then examined teacher beliefs of teacher trainees within the context of math drew similar conclusions to Tan (2011). Shin (2003) provided an example of how journaling by the teacher can be a way for the instructional leader to reflect on his or her own beliefs and biases in order to develop his/her thinking, beliefs, and pedagogy.

Lastly, Rodriguez et al. (2010) discussed the importance of teaching strategies for ELLs that are adaptable for teachers based on their own professional style, and the importance of schools providing professional development for teachers on how best to integrate these adaptable ELL instructional strategies into their instruction. If teachers believe that certain ELL instructional strategies do not match their professional teaching style, it is reasonable to conclude that they will be less likely to make an effort to practice these beneficial teaching strategies and incorporate them in a meaningful way into their instruction.

ELL language development is dependent upon all of these factors. The oral language they chose to practice in the classroom; how much language support they receive from their teachers in the various content areas; how much time they are given to practice various forms of language during the day, including in the content areas; and the expectations that are set for them by his or her teacher. Knowing that teacher beliefs impact multiple components of language development, it is therefore important to keep teacher beliefs and mindsets in mind while preparing to incorporate language development goals for students in the content areas.

Conclusion

When teaching ELLs, it is necessary to keep in mind multiple aspects of language development and pedagogy. It is the teachers' responsibility to identify and implement L2

pedagogy to help students develop their language to the highest degree possible. One way language development is reflected is through writing proficiency, and ELLs require a specific writing pedagogy, different than L1 learners, in order to improve. According to Doiz & Lasagabaster (2004), extended exposure to English will not directly translate to higher proficiency in writing for ELLs. While more English exposure will result in higher holistic writing scores; some domains, such as accuracy and complexity, are not affected. The importance is two fold: to provide ELLs with direct writing instruction to help address areas that are affected by lack of exposure to the language, such as vocabulary; as well as instruction in areas that will not be affected by more exposure, such as punctuation and spelling. Evans, McCollum, and Wofersberger (2010) provided an example of a possible protocol for providing manageable, meaningful, timely, and constant feedback to students on their writing, known as dynamic Written Corrective Feedback. Studies by Falhasiri et al. (2010) and Bitchener et al. (2005) provide more evidence for the use of explicit written corrective feedback to improve L2 writing accuracy, especially when considering specific linguistic forms that follow more systematic language rules, such as simple past tense and the definitive article. It stands to reason that providing ELLs written corrective feedback that is both dynamic and explicit, will help improve their written language proficiency more so than not.

Once it is understood that ELLs need specific writing instruction and can benefit from language feedback, it is imperative to look at the possible opportunities throughout an ELLs' school day to benefit from these language components. If language instruction only occurred during the Language Arts block, there would be numerous missed opportunities for language development in the content areas. Students would also miss out on content specific language development that most likely will not be addressed during the Language Arts block. Using

language objectives in the content areas is one approach to imbed language and content instruction. When this approach is implemented, it is essential to make sure language objectives are essential to learning the content, and that they are manageable in the time allotted for the lesson. If language objectives are not carefully planned according to these factors, it is likely they will not be taught (Hoare & Kong, 2008). In order for students to be able to demonstrate mastery on language objectives, it is important for them to have ample time during the lesson to write.

Language learning can also occur across the content areas without hindering content area learning (Wingate et al., 2011). Lorenezo et al. (2009) provides more evidence and rationale for the benefits of imbedding language learning with content by using the CLIL framework at the primary and secondary level. The study suggests that the content areas are a prime location to facilitate and promote second language acquisition due to the students' authentic exposure to L2 while learning content. It is reasonable to conclude that providing targeted L2 learning opportunities within the Mathematics block, and providing students with explicit and dynamic feedback on their written language, will help students improve their written L2 proficiency.

Students' language development, even in the content areas, can be affected by the beliefs of the teacher in the classroom. Even more basic than written language proficiency, students base their oral language choice on the beliefs and expectations of their teacher (Ballinger & Lyster, 2011). Language is also affected differently depending on the content area and the beliefs of the teacher. Language development is even more stifled in math classes if teachers believe that language is not necessary for math proficiency (Tan, 2011; Silver, 2008). In order to maximize language development in the primary grades, it is crucial for teachers to reflect on their own beliefs and practices in order to set reasonable language expectations for their students (Shin,

2003). Professional development for content area teachers focused on specific ELL strategies to teach language, and how teachers can effectively incorporate these strategies into their instruction, is also very important for the implementation of content area language instruction. It is also important that strategies presented to teachers are easily adaptable, so teachers are able to use and adjust these strategies to match and support their own unique professional style (Rodriguez et al., 2010).

The reviewed studies provide information on the multiple components of language development and language teaching. These findings provide rationale to create a cohesive plan for language development, comprised of using writing language objectives and explicit dynamic feedback during mathematics instruction, in a primary two-way dual language classroom, for the purpose of improving L2 writing proficiency.

Chapter 3 Procedures for the Study

The purpose of this study was to implement an intervention of daily writing language objectives during math instruction in order to improve the written English language proficiency of fourth grade ELLs. The goal of Chapter Three is to provide a detailed description of the study. Section one includes a description of the sample. The second section includes a description of the procedures of the intervention. The third section contains an explanation of the data collection methods. Lastly, the chapter is concluded with a transition to the results and analysis of the data discussed in Chapter Four.

Description of the Sample

This study took place in a fourth grade classroom in a dual language bilingual elementary school. The school is in a large urban public school district in Wisconsin. According to the 2010 United States Census Bureau data (United States Census Bureau), the city had a population of 594,833. According to the Census, 44.8% of the population identified as White, 40% identified as Black, .8% identified as American Indian, 3.5% identified as Asian, and 17.3% identified as Hispanic or Latino origin. Nineteen percent of people reported having a language other than English spoken at home. Eighty and four tenths percent of people reported having graduated from high school and 21% of people reported having a Bachelor's degree or higher. While 11.6% of Wisconsin reported to be below poverty level, 26.3% of the city reported to be below poverty level (United States Census Bureau).

The school in which the intervention took place, according to the school profile on the 2010-2011 school report card, identified itself as a citywide two-way bilingual school with an enrolment of 371 students. The school reported that their goal was to enable students to become bilingual and bi-literate in Spanish and English. It was identified in the district as a School in

Need of Improvement. According to school reported 2010-2011 data, 96% of students identified as Hispanic, 3% identified as White, and 1% identified as African American. Twelve percent of students received special education services, 70% identified as English Language Learners, and 96% of students received Free/Reduced Lunch. There was also a 79% stability rate and an 8% mobility rate of the student population (Report Card Milwaukee Public Schools, 2011).

The classroom in which the intervention took place had twenty-four students. One hundred percent of the students in the classroom identified themselves as Hispanic and twenty-three out of twenty-four students identified Spanish as their first language. Twenty-three out of twenty-four students were classified as receiving Free/Reduced lunch.

Of the five students who participated in the research study, all five identified themselves as Hispanic and all five students spoke Spanish as a first language. Each of the five students spoke Spanish in the home and their parents spoke Spanish as their primary and dominant language. All five students also received Free/Reduced lunch. Each of the students varied in his or her level of proficiency of their second language as measured by the Assessing Comprehension and Communication in English State-to-State for English Language Learners (ACCESS for ELLs) English Language proficiency test (World-Class Instructional Design and Assessment (WIDA) Consortium, 2012).

According to the 2012 ACCESS Student Roster Report, Student 1 had an overall score of 3.1 out of a possible six points. In each of the measured domains, Student 1 scored a 5.0 in listening, 3.3 in speaking, 2.6 in reading, and 2.8 in writing. Student 2 had an overall score of 4.1. In each of the domains, Student 2 scored a 5.0 in listening, 5.3 in speaking, 4.2 in reading, and 3.5 in writing. Student 3 did not have data on the Student Roster Report because as a third grader she received a 5.9 overall score. Student 4 had a 4.6 overall score. In the domains, Student

4 scored a 5.0 in listening, 3.3 in speaking, 5.0 in reading, and 4.7 in writing. Lastly, Student 5 received a 4.1 overall score. In the domains, Student 5 scored 4.2 in listening, 3.9 in speaking, 5.0 in reading, and 3.9 in writing (WIDA Consortium, 2012). Based on this data, the researcher concluded that the majority of the students' written English language proficiency fell below the students' listening, speaking, and reading abilities. In three out of five students, writing was the lowest scoring domain. Out of the remaining two students, one student was not tested, and the last student's second lowest scoring domain was writing.

With respect to writing levels, based on classroom writing assessments in Spanish and English, Student 1 wrote at a proficient fourth grade level in Spanish and below grade level proficiency in English. Student 2 wrote at a proficient fourth grade level in Spanish and below grade level proficiency in English. Student 3 wrote above fourth grade level proficiency in Spanish and below grade level proficiency in English. Student 4 wrote at grade level proficiency in Spanish and at grade level proficiency in English. Student 5 wrote at grade level proficiency in Spanish and at grade level proficiency in English. Based on this data, the majority of the students' English writing skills also fell below their comparable writing skills in Spanish. For this reason, the following intervention was developed to target and develop the written English language skills of the students outside of the English writing block of the school day. This sample was analyzed in the study in order to see the effects of the intervention on a variety of students with different written English language proficiency levels.

Description of the Procedures

The intervention began in May of 2012 and lasted for four weeks. It occurred on a daily basis during the sixty-minute math block of the school day. The researcher created four language objectives based off of the WIDA Consortium English Language Proficiency Standards

(2011). The researcher used English Language Proficiency Strand 3: The Language of Mathematics, Formative Framework for grades 3-5 (WIDA Consortium, 2011) to create the language objectives. Language objectives changed on a weekly basis, one language objective was covered during each week of the intervention. The language objectives progressed in WIDA Consortium Levels Standards, beginning week one of the intervention with Level 2: Beginning, and developed to Level 5: Bridging, in the fourth week of the intervention, as shown in Appendix A.

The language objectives based on this framework were as follows: Week 1: I will *describe* the daily math concept in my own words. Week 2: I will *give a step-by step process* of how to solve today's problem using a diagram. Week 3: I will *describe a strategy or tip* for solving today's problem in paragraph form. And lastly, Week 4: I will *create* an original problem involving a real life situation using today's topic, as shown in Appendix B.

The language objectives changed on a daily basis based on the daily math objective, but the skill, or verb, of the language objective remained the same. For example, during week one of the interventions, the language objective of the week: I will *describe* the daily math concept in my own words, remained the same, while the daily math objective changed. This meant that on Monday students *described* how to estimate weight using grams and kilograms, and on Tuesday students *described* the attributes of a rectangular prism. Students continued to focus on the written language skill of *describing* during week one of the intervention, but *what* they described changed daily according to the daily math objective.

The researcher planned for the lesson by taking into consideration both the daily math objective, as well as the daily writing language objective. While planning for each lesson, the researcher planned all phases of a daily lesson plan cycle to reach both the math objective and

the writing language objective. For example, on Tuesday of week one, the math objective was: I will be able to identify the attributes of a rectangular prism. The writing language objective was: I will describe a rectangular prism in my own words. In addition to the daily formative assessment portion of the lesson, the researcher planned to reach each objective during her modeling, guided practice, and independent practice portion of the lesson.

During this lesson in particular, the researcher began by modeling both how to identify the attributes of the rectangular prism and how to describe the rectangular prism in written form. The researcher introduced appropriate vocabulary and modeled identifying the features of three-dimensional rectangular prisms. Then, the researcher modeled how to describe these features in written form. She modeled writing this information in a paragraph and followed appropriate grammar structures and used the math vocabulary already introduced. She thought aloud during this process using a commentary not only on what math concept she was using, but also thinking aloud about how to indent, use capital letters, periods, correct spelling, and any other specific writing features that occurred.

During the guided practice portion of the lesson, students worked in teams constructing rectangular prisms out of straws and twist-ties while orally identifying the attributes of the three-dimensional figure. Students then worked on “partner writes” where the students shared the responsibility of writing a paragraph describing the rectangular prism. During the independent practice portion of the lesson, students completed an assessment that measured both their ability to identify the features of a rectangular prism, as well as describe in written form the attributes of the rectangular prism.

During the intervention, lessons throughout the four weeks followed the outline mentioned above. Both the math objective and the writing language objective were posted on

the chalkboard and discussed at the opening of the lesson. Modeling of both the math lesson and of the writing language objective occurred on a daily basis. Guided practice provided opportunities for students to practice both the math objective and writing language objective. The researcher used different writing strategies during the guided practice portion that included: quick writes, where students wrote independently for two to three minutes mid lesson; partner writes, where students shared the responsibility of completing the language objective; tag-team, where students would pass one pencil back and forth after every sentence to complete the language objective; and collaborative projects, where students worked together on a presentation or project that included a written portion that aligned with the language objective. The independent practice portion of the lesson was usually additional individual writing practice. The lesson concluded with an “exit slip” or formative assessment of both the math content objective and the writing language objective, as shown in Appendix C.

The researcher collected the exit slips at the end of each lesson and first assessed the exit slip for the math concept, indicating with a star or an “X” if the student was correct in the definition of each concept or skill. The researcher then provided written corrective feedback for each student based on the students’ writing. Feedback was limited as to not overwhelm the students. The researcher chose the most outstanding and most repetitive errors to correct. The researcher occasionally gave a written comment about the students’ writing or modeled sentence frames or sentence starters for the students. The exit slips were returned to the students during the following lesson, and the students were instructed to read the comments and to pay attention to both the math feedback and the writing feedback. All exit slips were on the same sheet of paper and were focused on the same language objective, as to allow students to reference

previous corrections and previous feedback while writing.

Description of the Data Collection Methods

This study used both a quantitative and qualitative methodology to answer the posed research question. The quantitative approach included collecting pre and posttest writing samples on a weekly basis, as well as daily exit tickets that evaluated the students' writing proficiency. The qualitative approach included field notes taken by the researcher during both weekly planning of the lessons as well as after the lessons had concluded. Qualitative notes were also taken during the analysis of the writing samples.

Quantitative methods. Writing samples were the primary quantitative data collection method. On the first day of the intervention, the researcher administered a pre-test that measured the first writing language objective. The math concept used in the writing prompt was the last concept studied by the students. The first week's writing language objective was: I will describe the daily math concept in my own words. The first week's pretest question was: Describe what a reflection, rotation, and a translation are. The researcher prompted students to write the best that they could and describe the terms that they had learned the previous week. The students had approximately five to seven minutes to describe the three listed terms.

The researcher collected the pretests and began the math lesson for the day, focusing on both the math objective and the language objective following the description of the intervention procedure detailed in the previous section. At the end of the lesson students received an exit slip assessing both the math objective and the writing language objective, as shown in Appendix D.

For the remainder of the week, the researcher administered exit slips that measured both the math objective and the language objective at the end of each lesson. The researcher continued to collect the exit slips and provide written feedback for both the math concept and the language

objective on a daily basis. On the last day of the week, students were given the exit slip for that day during the independent practice portion of the lesson. After the students completed the final exit slip of the week, the researcher administered a posttest. The posttest was on the same sheet of paper as the pre-test of the week, as shown in Appendix E.

The data collection process continued in this manner for the duration of the four weeks. A pre-test was administered on the first day of the week, exit slips concluded every lesson, the researcher provided written corrective feedback on the exit slips and returned them to the students the following day, and students completed a posttest at the end of the final math lesson of the week. The next week repeated the process with a new writing language objective.

The researcher analyzed the pre and posttest-writing samples using the Writing Rubric of the WIDA Consortium Grades 1-12 found in Appendix E (WIDA Consortium, 2007). The researcher analyzed the writing samples using three categories: linguistic complexity, vocabulary usage, and language control. Linguistic complexity referred to the discourse level of the writing and applied to a student's quantity and quality of written discourse; vocabulary usage referred to the word and phrase level of the writing and captured the student's use of general, specific, or technical language; and language control referred to the sentence level of the writing and demonstrated consistency in conveying meaning, including grammar (syntax), word choice (semantics), and mechanics (spelling, punctuation, and capitalization) (WIDA Consortium, 2007).

The researcher rated the writing samples on a scale of 1-6 according to the rubric. Level one proficiency showed the student knew and used minimal social language and minimal academic language with visual and graphic support. Level two proficiency showed the student knew and used some social English and general academic language. Level three showed the

student knew and used social English and some specific academic language with visual and graphic support. Level four showed the student knew and used social English and some technical academic language. Level five showed the student knew and used social English and academic language working with grade level material. A level six, according to the rubric, was reserved for students whose written English was comparable to that of their English-proficient peers (WIDA Consortium, 2007).

In order to analyze specific errors, the researcher then recorded each error that appeared on the students' pre and posttests and assigned a code for the type of error. The codes used represented the type of spelling error made, punctuation error, capital letter error, or Spanish usage error. The researcher then calculated the percentage of errors made each week's pre test and posttest. To find the error rate for each pre and posttest, the total number of errors was divided by the total number of words in the sample, and then the percentage was found. The researcher then grouped weeks one and two together, and then weeks three and four together, and calculated the percentage of errors for each coded category. For example, the percentage of errors that were punctuation related was calculated for weeks one and two together, and then percentage of punctuation related errors were calculated for weeks three and four together. The purpose of this was to capture changes in error percentages from the beginning of the intervention window to the end of the intervention window.

Qualitative methods. Throughout the course of the intervention, the researcher documented field notes found in Appendix F. Notes were taken during the planning of lessons, as well as at the completion of lessons. The researcher also wrote a written reflection at the end of each week, recording observations about the students' progress, thoughts about how the lesson

was conducted, and personal mindsets in regards to language teaching during the math block. The researcher also recorded field notes during the analysis of the writing samples.

While analyzing the writing samples, the researcher compared each student's language exit slips for the week with the student's pre and posttest for that week. The researcher noted the written feedback given by the researcher to the student on the exit slips for the week and then looked for improvements, or lack thereof, on the posttest based on the specific feedback given. The researcher then recorded in her field notes any examples where the student received feedback and followed the feedback to improve their writing on the posttest that week. The researcher also recorded any examples where the student received specific feedback, and later repeated the same error, or did not follow the feedback on the posttests. The researcher then examined all examples from this analysis in order to identify trends of improvement, or lack thereof, across the five students throughout the duration of the study. The goal of this qualitative analysis was to analyze the writing samples with a holistic view and identify any possible trends not captured by the error analysis or WIDA writing rubrics.

Conclusion

This chapter detailed a description of the research study. The first section provided a detailed description of the sample, including relevant census data of the city where the study was conducted, demographic and academic data of the school where the study was conducted, as well as the students' academic and language background information. The second section included a description of the procedures of the writing language intervention including the planning of the language objectives used, the implementation of the writing language objective in the math lesson, the feedback process, and the assessment procedure of each writing language objective. The final section described the quantitative collection methods including the ratings on the

writing rubric of the WIDA Consortium, error rate per week, and error analysis comparing the first half of the intervention window with the second half the intervention window. This section also included a description of the qualitative data analysis including an analysis of the feedback given by the researcher to the students and overall trends of improvements, or lack there of, based on this feedback.

The next chapter will present the results and analysis of the collected data. It summarizes the results of the students' writing samples and examines the students' written English language proficiency levels throughout the intervention to determine the effectiveness of the intervention plan.

Chapter 4 Results

The previous chapter outlined the research design of the intervention, including a detailed description of the sample, a report of the procedures used, as well as an explanation of data collection. Chapter Four summarizes the results of the intervention with a presentation and analysis of data. First, the researcher presents the results of student writing samples using the Writing Rubric of the WIDA Consortium Grades 1-12 (2007) (see Appendix F). Areas of linguistic complexity, vocabulary usage, and language control were assessed on the students' weekly pre and posttest writing language assessments. Next, the researcher describes the weekly quantitative data collected from the error analysis of daily student writing samples and weekly pre and posttests. Errors were analyzed based on percentage of errors per writing sample, location of error (word level/sentence level), and the type of error made. The following section describes the weekly qualitative data for each student in the study based on comparisons of feedback given to students on daily writing samples and their weekly posttest writing language assessments. The final section concludes this chapter with a transition into the researcher's conclusions from the study in Chapter Five.

Writing Rubric Data

Rubric data was collected for the linguistic complexity, vocabulary usage, and language control of the writing samples for the pre and posttests on a weekly basis. This section includes the rubric data for each student in these three areas.

Linguistic complexity (Table 1) referred to the discourse level, including sentence length, cohesion, detail, clarity, and organization. On a six-point scale, students ranged from level 1 to level 5 throughout the course of the four weeks. Student 1 scored at a level 3 at the beginning of the intervention and ended week four on a level 2. Student 2 began at a level 3, rose to a level 4

twice during the intervention, and ended the intervention on a level 2. Student 3 began at a level 3, rose to a level five on two assessments, and ended the intervention at a level 3. Student 4 scored at a level 3 during the week 1, scored at a level 1 in week 2, and scored at a level 2 in week 4. Student 5 scored a 3 during week 1, rose to a level 4 on the pre-test of week 4, and scored a 3 on the posttest of week 4. As shown, there were no evident trends of improvement in linguistic complexity according to this rubric as a result of the intervention.

Table 1

Linguistic Complexity

	WK 1 PRE	WK 1 POST	WK 2 PRE	WK 2 POST	WK 3 PRE	WK 3 POST	WK 4 PRE	WK 4 POST
Student 1	3	3	3	3	2	3	3	2
Student 2	3	4	2	3	3	3	4	2
Student 3	3	3	3	5	3	3	5	3
Student 4	3	2	3	1	2	3	3	2
Student 5	3	3	3	3	3	2	4	3

Vocabulary usage (Table 2) referred to the usage of high frequency words, general vocabulary, and technical language relating to the content area. Student 1 scored at a level 2 and 3 throughout the course of the intervention. Student 2 scored at a level 4 during week 1 of the intervention and ended week 4 with a score of level 2. Student 3 scored at a level 4 during week 1, and consistently scored at a level 5 throughout the remainder of the four weeks. Student 4 began at a level 3, scored at a level 1 at the end of week 2, and finished week four at a level 2. Student 5 scored a 3 on the pretest of week 1, and fluctuated between a level 2 and 4 throughout

the intervention. Student 3 was the only student who showed a consistent improvement based on the vocabulary usage rubric. The remaining students showed no consistent improvements between weekly pre and posttests, or from the beginning of the intervention to the end of the intervention.

Table 2

Vocabulary Usage

	WK 1 PRE	WK 1 POST	WK 2 PRE	WK 2 POST	WK 3 PRE	WK 3 POST	WK 4 PRE	WK 4 POST
Student 1	2	2	3	2	2	2	3	3
Student 2	3	4	2	3	3	2	3	2
Student 3	4	4	5	5	5	5	5	5
Student 4	3	3	3	1	2	2	2	2
Student 5	3	2	3	2	4	2	3	3

Language control (Table 3) referred to the comprehensibility of the passage including grammar, word choice, and mechanics. Student 1 scored at a level 2 during week 1 of the intervention, a level 3 during week 3, and at a level 4 during the final week of the intervention. Student 2 wavered between a level 3 and 4 throughout the intervention. Student 3 scored between a level 4 and a level 5 throughout the intervention, Student 4 inconsistently scored between a 1 and 3 throughout the intervention, and Student 5 scored between a level 2 and 4 throughout the intervention. Student 1 did show evidence of consistent improvements in language control from the start to the end of the intervention, while the remaining students showed no obvious improvements.

Table 3

Language Control

	WK 1 PRE	WK 1 POST	WK 2 PRE	WK 2 POST	WK 3 PRE	WK 3 POST	WK 4 PRE	WK 4 POST
Student 1	2	2	2	2	3	3	4	4
Student 2	3	4	3	3	4	3	4	3
Student 3	4	5	4	5	5	4	5	5
Student 4	3	2	3	1	2	3	3	2
Student 5	3	3	3	3	4	3	4	2

Overall, based on the Writing Rubric of the WIDA Consortium (2007), Student 3 improved in her vocabulary usage and use of technical language, and Student 1 improved in her comprehensibility of her writing. With the remainder of the other students, all other rubric scores inconsistently changed throughout the course of the intervention, without evidence of the effects of the intervention. The next section presents the weekly quantitative data collected by the researcher.

Weekly Quantitative Data

To analyze the error rate (Table 4) on each pre and posttest, the researcher identified all errors in the pre and posttest assessments. Errors were considered to be any spelling, punctuation, word order, wrong word, use of Spanish, or verb tense mistake. Weekly error rates were calculated by dividing the total number of errors by total words per passage. Student 1 had a 23% error rate in week 1, highest error rate of 33% in week 4, and ended with a 9% error rate in week 4. Student 2 began with a 27% error rate in week 1 and ended week 4 with a 46% error

rate. Student 3 began with a 17% error rate in week 1 and a 28% error rate in week 3. Student 4 began with a 38% error rate in week 1 and finished with a 50% error rate in week 4. Student 5 had an error rate of 38% in week 1, their highest error rate of 40% in week 2, and finished week 4 with a 20% error rate. Student 1 was the only student to show a decrease in error rate on a weekly basis. Table 4 shows that with the remainder of the students, there were no consistent decreases in error rates from pre tests to posttests, nor decreases from week 1 to week 4 as a result of the intervention.

Table 4

Weekly Error Rate (Errors/Total Words) by Student

	WK 1 PRE	WK 1 POST	WK 2 PRE	WK 2 POST	WK 3 PRE	WK 3 POST	WK 4 PRE	WK 4 POST
Student1	23%	19%	33%	19%	33%	30%	17%	9%
Student 2	27%	10%	28%	39%	25%	16%	19%	46%
Student 3	17%	5%	21%	7%	16%	16%	5%	28%
Student 4	38%	19%	32%	20%	22%	6%	24%	50%
Student 5	38%	14%	16%	40%	30%	16%	22%	20%

In an attempt to see an overall decrease in error rates, the researcher analyzed the cumulative error rates of all five students, grouping together larger periods of time. Table 5 indicates the error rates on the pretests and posttests in weeks 1 and 2 versus the error rates on the pre and posttests in week 3 and 4. This analysis shows there was no change in cumulative error rates from the beginning to the end of the intervention, both of which were 21.6%. Error rates at the word and sentence level were also calculated to identify any shifts in where the errors

were occurring. Table 6 shows that during weeks 1 and 2, the error rate was 68% at the word level and 32% at the sentence level. During weeks 3 and 4, the error rate was 62% at the word level and 38% at the sentence level.

Table 5

Cumulative Error Rates by Week

	Weeks 1/2	Weeks 3/4
Total Words	690	476
Total Errors	149	103
Error Rate	21.6%	21.6%

Table 6

Cumulative Word and Sentence Level Error Rates

	Weeks 1/2	Weeks 3/4
Word Level	68%	62%
Sentence Level	32%	38%

Results of the cumulative error rate analysis by error type are presented in Table 7. Error types that showed a decrease from weeks 1 and 2 to weeks 3 and 4 were w/wh, d/th, vowels, -ing, double consonants, initial vowels, numbers, capital letters, insertions, omissions, word order, and wrong words used. Error types that showed an increase over the course of the intervention were consonants, plurals, final letters, inverted letters, apostrophes, Spanish words used, punctuation, tenses, and prepositions. Errors coded with (w) in Table 7 indicate word level errors, while those coded with (s) indicate sentence level errors.

Table 7

Cumulative Error Rates by Error Type

Error Type	Weeks 1/2	Weeks 3/4
w/wh (w)	4.02%	0.97%
d/th (w)	2.68%	0.00%
Vowel (w)	20.13%	11.65%
-ing (w)	2.01%	0.00%
Double Consonants (w)	5.36%	0.97%
Consonants (w)	8.72%	9.70%
Initial vowel (w)	2.68%	0.97%
Plural (w)	2.68%	13.59%
Final letter (w)	5.36%	8.73%
Inverted letters (w)	6.04%	6.79%
Apostrophe (w)	0.67%	0.97%
Number (w)	0.67%	0.00%
Spanish (w)	0.00%	11.95%
Capital (w)	6.71%	5.82%
Punctuation (s)	5.36%	23.30%
Insertion (s)	2.01%	1.94%
Omission (s)	8.05%	4.85%
Word order (s)	5.36%	1.94%
Wrong Word (s)	12.75%	3.88%
Tense (s)	0.67%	0.97%
Preposition (s)	1.34%	2.91%

Weekly Qualitative Data

In this section, results of the weekly qualitative data analysis of exit slips and pre/posttests are presented for each student.

Student 1. Student 1 showed evidence of improving her writing as a result of the researcher's written corrective feedback on the exit slips as well as teacher modeling during the lessons (Table 8). During week 1, Student 1 received feedback to improve her description of a three dimensional figure by adding the number of edges, faces, and vertices. On the posttest, while she did not include the number of vertices, faces, and edges, she did include each of these vocabulary words in a logical syntactical framework. While on her first attempt Student 1 stated that the prism "is a number of flat faces or a number and the edges," on the posttest the student stated "a triangular pyramid is a shape that has vertices, faces, edges." During week 2, Student 1 improved her use, and spelling of the word "finally," from her first attempt of "final."

During week 3, while Student 1 did not respond to any written corrective feedback, the student did improve her explanation of the strategy she used. On her exit slip, the student explained how to find the volume by multiplying various numbers, without explaining why you multiply these numbers. The researcher modeled throughout the week how to improve your writing by describing a strategy and explaining *why* you are doing what you are doing. On the posttest, Student 1 explained why she multiplied specific numbers to solve the problem. The student stated, "You know there are 12 month a year and the caches 9 mice por month. They neet to catch por month then you multiplia 9 and 12= 108." On the final posttest of the intervention, Student 1 improved her syntax of a question. On the student's first attempt she wrote, "Better to buy?" The researcher gave written corrective feedback and modeled the sentence frame, "Which

is better to buy?” While there were still spelling errors on the posttest, the student’s syntax was correct in, “Wich is the better buy?”

Overall, Student 1 improved each week based on written corrective feedback and teacher modeling of the writing language objective. Weeks 1 and 4 the student improved her syntax, week 2 the student improved in spelling and word choice, and week 3 the student improved in providing evidence and showing her thinking in her writing.

Table 8

Student 1 Response to Written Corrective Feedback and Teacher Modeling

	Exit Slip	Written Corrective Feedback and Teacher Modeling	Posttest
Week 1	A rectangular prism is a number flat faces or a number and the edges and you tell like a story to describe the shape.	<i>How many edges? How many faces? How many vertices?</i>	“A triangular pyramid is a shape that has vertices, faces, edges. And is a shape that has a triangular shape on two sides. And all the shapes are not the same.”
Week 2	Final	<i>Finally</i>	“Finally”
Week 3	You, first multiply $9 \times 10 = 90$. Then you multiply 90×3 that is equal $= 270$ in 3. That's how you get the volume that it was 270 in 3. Or you can do it more faster like $90 \times 3 = 270$ in 3 and that is the answer.	Teacher modeled explaining your thinking.	“You know there are 12 months a year and the catches 9 mice per month. They need to catch per month then you multiply 9 and 12 = 108.”
Week 4	Better to buy?	<i>Which is the better buy?</i>	“Wich is the better buy?”

Student 2. Student 2 improved in providing details, spelling, syntax, and cohesion of his writing. On the first exit slip, Student 2 described a rectangular prism by saying, “A rectangular prism is made from edges, vertices and rectangular so all the faces are all most the

same because two are tinior then the oder four.” The researcher provided written corrective feedback on the spelling of the word “four” and prompted the student to include the number of vertices, edges, and included faces. Student 2 responded to this feedback and described a triangular pyramid on his exit slip by writing, “A triangular pyramid has 4 faces or bases. Also a triangular pyramid has 4 vertecis one on the top and three on the botem and it makes four. Finally, it has 3 more on the bottom and that makes 6 edges in total” (Table 9).

Week 2, the researcher provided feedback to start with “To estimate,” or to restate the question in your answer. The student improved from his first attempt of saying “You fist do is see the big G,” to their posttest where the student wrote, “The add positive and negative you firt see...” (It can be assumed that the student miswrote the word “to” as “the.”) During week 3, students focused on providing a strategy to solve a problem. On Student 2’s first exit slip, his strategy was to “divide and add buy two’s.” On the student’s posttest, he used the writing language objective from the previous week (step-by-step process) to describe their strategy, “To find the ansewer you fist, divide or you see if there a half in the number. Next, you can also make a in and out table to find the ansewr and that is what you do.” Student 2 was absent during week 4.

Overall, Student 2 showed evidence of improvement based on teacher modeling and written corrective feedback. He showed evidence of improving spelling, syntax, using details to describe, and providing a strategy to solve a problem.

Student 3. Student 3 showed evidence of improvement with providing details, explaining her thinking, correct syntax, and increased technical vocabulary use. On the exit slip in week 1, Student 3 wrote, “The base is rectangular.” Throughout the week, the researcher modeled providing more details in when you describe and explaining your thought process. On

the posttest in week 1, Student 3 used more details regarding the base of the figure and, in the process, used a more complex sentence structure. On the posttest the student wrote, “You know that the pyramide is a triangular pyramide, because the base is a triangle.”

Table 9

Student 2 Response to Written Corrective Feedback and Teacher Modeling

	Exit Slip	Written Corrective Feedback and Teacher Modeling	Posttest
Week 1	A rectangular prism is made from edges, vertices and rectangular so all the faces are all most the same because two are tinior then the oder four	<i>How many? Faces? four</i>	A triangular pyramid has 4 faces or bases. Also a triangular pyramid has 4 vertecis one on the top and three on the botem and it makes four. Finaly, it has 6 edges 3 on the sides and 3 more on the bottom and that makes 6 edges in total.
Week 2	You fist do is see the big G...	<i>Start with “To estimate...”</i>	The [To] add positive and negative you firt see...
Week 3	Divide and add buy two’s	Teacher modeled Step-by-step process.	To find the ansewer you fist, divide or you see if there a half in the number. Next, you can also make a in and out table to find the ansewr and that is what you do.
Week 4	absent	absent	One big chaire is 1.00 a pack of 5 big chaire is 3.99.

During week 2, the student gave very detailed descriptions of step-by-step processes throughout the week and received no written feedback from the researcher. On the exit slip in week 3, Student 3 did not explain why she was performing the mathematical operations when

they wrote, “To find how many dollars did Sally earned. First, I divide 3 and \$6.00 = \$2.00. Know, I need to add \$2.00 to each hour.” Throughout the week the researcher modeled explaining your thought process and providing an explanation of your work. Student 3 showed evidence of improvement in explaining her thinking on their posttest when she wrote, “To find how many mice does a cat catches pey year. First you need to know how many months are in a year. They are 12 months per year. Then you multuply $9 \times 12 = \underline{\hspace{2cm}}$. Because if the cat catches 9 mice a month, and they are 12 months in a year.” The student provided rationale for her multiplication.

During week 4, Student 3 included more details on their posttest than their exit slips. The student included the sentence frame, “what is the better buy?” that was modeled by the researcher throughout the week, as opposed to the question the student initially used on their exit slip, “ Witch brand is better? Student 3 also used the technical vocabulary term, “unit price” that was modeled throughout the week on their posttest. Student 3 also provided evidence, and explained her rationale more thoroughly on their posttest, when she wrote, “A pack of 50 napckins is 11c cheeper.” On the exit slip the student initially wrote, “Brand B is cheeper,” but did not specify by how much.

Throughout the course of the intervention period, Student 3 began to include more details, evidence, and rationale in their writing. The student improved the syntax of her sentences and showed evidence of using more technical vocabulary.

Student 4. Student 4 showed improvement in providing details, evidence, and rationale for her problem solving through their writing. The student also improved her spelling of technical vocabulary words. During week 1, Student 4 misspelled the technical vocabulary words “congruent” and “vertices.” After receiving written corrective feedback on the correct spelling of

each of these words, Student 4 was able to correctly spell them on her posttest. During week 2, the student showed a lack of understanding of the math concept, and for that reason did not receive language feedback, and did not show improvement of her writing.

Table 10

Student 3 Response to Written Corrective Feedback and Teacher Modeling

	Exit Slip	Written Corrective Feedback and Teacher Modeling	Posttest
Week 1	The base is rectangular.	Teacher modeled providing details and explaining.	You know that the pyramide is a triangular pyramide, because the base is a triangle.
Week 2	<i>Detailed step-by-step process</i>	No feedback given	<i>Detailed step-by-step process</i>
Week 3	To find how many dollars did Sally earned. First, I divide 3 and $\$6.00 = \2.00 . Know, I need to add $\$2.00$ to each hour	Teacher modeled providing details and explaining.	To find how many mice does a cat catches pey year. First you need to know how many months are in a year. They are 12 months per year. Then you multuply $9 \times 12 = \underline{\hspace{2cm}}$. Because if the cat catches 9 mice a month, and they are 12 months in a year.”
Week 4	A: 7 kisses (chocolates) $\$1.50 = .21c$ B: 10 kisses (chocolates) $\$2.00 = .20c$ Witch brand is better? Why? <u> </u> B! <u> </u> Brand A has 7 chocolates for $\$1.50$. Bran B has 10 chocolates for $\$2.00$. I you divide how much chocolates are for the amount. Brand A is $.21c$, Brand B is $.20c$, per chocolate. Brand B is cheeper.	Teacher modeled the usage of the vocabulary word “unit price” and the sentence frame “what is the better buy?”	What is the better buy? One napckin cost $.15c$. A pack of 50 napckins cost $\$2.20$. One napckin cost $.15c$. The unit price of the pack of 50 napckins is $.04c$. A pack of 50 napckins is $11c$ cheeper.

During week 3, students were to describe a strategy to solve a problem. On the exit slip, Student 4 wrote, “first divide then put it on the number 1.” While this made sense to the student, it did not provide a strategy or a clear understanding of the problem to the reader. Throughout the week, the researcher modeled providing details and explaining your thought process. On the posttest, Student 4 explained why she was multiplying in order to solve the unit rate problem. The student wrote, “I multiply 12 x 9 because it catches 9 a month and there are 12 months in a year so multiply 12 x 9 = 84.”

In the final week of the intervention, the researcher modeled how to create and solve a math problem. On the exit slip Student 4 created a problem asking, “Wich is the better buy? Why?” The student explained that Brand A was 2 packets of bracelets for \$4.99, and Brand B was 4 packets for \$6.58. When the student solved the problem she wrote, “ Brand B because is less and cheaper.” The student did not provide any work to solve the problem and provide evidence. On the student’s posttest, while she did not ask a question, and only wrote “Bran A: A box of pencils cost \$0.50; Bran B: Tow box of pencils cost \$1.20,” the student did solve the problem, showing her work with “1.20 / 2 = 0.60.” Student 4 provided more evidence of her thought process on the posttest than on their exit slip. Overall through the intervention, Student 4 showed improvement with providing rationale and details in her writing and the spelling of technical vocabulary words.

Student 5. During week 1 of the intervention, Student 5 did not show improvement in her writing based on the feedback provided. The student provided fewer details than their first attempt at describing a three-dimensional figure on the exit slip, used less technical vocabulary, and wrote sentences that were incomprehensible. During week 2, the student followed the written corrective feedback provided on her exit slip, telling them to restate the question in her

explanation. Initially the student wrote, “ $V = \text{base} \times \text{height}$. First you multiply...” On her posttest Student 5 wrote, “To comert [convert] measurements, firs you...” Even though the student misspelled “convert” and “first,” they did show improvements of sentence structure and syntax on the posttest.

Table 11

Student 4 Response to Written Corrective Feedback and Teacher Modeling

	Exit Slip	Written Corrective Feedback and Teacher Modeling	Posttest
Week 1	cungruent vertece	<i>congruent</i> <i>vertices</i>	congruent vertices
Week 2	Lack of understanding	No language feedback given	Lack of understanding
Week 3	I first Divide then put it on the number 1.	<i>Include: “this gave me the unit rate.”</i> Teacher modeled providing details and explaining.	I multiply 12×9 because it catches 9 a month and there are 12 months in a year so multiply $12 \times 9 = 84$.
Week 4	Brand B because is less and cheaper.	Teacher modeled creating and solving your own math unit rate problem.	$1.20 / 2 = 0.60$

During week 3, Student 5 showed a lack of understanding of the math concept for the week. In the final week of the intervention, the researcher modeled showing your work to solve your own math problem. On the exit slips, the student did not solve the problems she created. On the posttest, while the math was incorrect, the student did provide an attempt at long division work to provide evidence for her answer. Student 5 demonstrated improvements of her sentence structure and provided evidence of problem solving on the posttests of the intervention.

Table 12

Student 5 Response to Written Corrective Feedback and Teacher Modeling

	Exit Slip	Written Corrective Feedback and Teacher Modeling	Posttest
Week 1	The rectangular has 6 flat faces. There are 12 edges. There are 8 vertices. The are congruent by the flat faces.	<i>4 of the flat faces are congruent. The bases are also congruent.</i>	A triangular pyramid is a triangular that has a vertaglam and the shape of the base has a triangular square. A triangular pyramid has the pointe thing that is on the top and shape lake a square.
Week 2	$V = \text{base} \times \text{height}$. First you multiply...	<i>To find volume, first you...</i>	To comert [convert] measurements, firs you...
Week 3	Lack of understanding	<i>Do what? Explain.</i>	Lack of understanding
Week 4	Did not show long division to provide evidence for solving the problem.	Teacher modeled showing your work to solve your own math problem.	Student provided her long division work to show evidence of her answer.

Teacher Field Notes

Throughout the intervention, the researcher's field notes (see Appendix G) on lesson planning and lesson reflections show an overall trend of being language conscious throughout the math instructional blocks. During week 1, the teacher was concerned about modeling explaining their math thinking in written words as much as orally. The teacher also reflected after a lesson that they found themselves focusing on modeling correct writing in sentence and paragraph form and saying things they typically did and said during Writing. For example, reminding students to use capital letters, periods, and to check spelling. The teacher felt more conscious of their writing. During week 2, the teacher also reflected that they felt more

conscious of modeling writing and giving language frameworks for speaking and writing in class.

The teacher also showed evidence of reflecting on writing practice for students during the lesson planning process. During week 3, the teacher reflected on different ways to incorporate writing in lesson plans for upcoming math lessons, as well as strategies to show students exemplar writing samples in math contexts. The teacher also reflected that, “I really feel like I’m pushing math rigor at the same time as improving writing” (personal communication, May 22, 2012) Overall, the teacher found herself more conscious of her oral and written language during math, providing more modeling of writing language during math, as well as planning more opportunities for students to write during the math instructional block.

Conclusion

This chapter detailed the results and analysis of the data from the intervention. The first section detailed the writing rubric data for each of the five students, focusing on linguistic complexity, vocabulary usage, and language control. No students showed consistent improvement in linguistic complexity, Student 3 improved in her vocabulary usage scores, and Student 1 improved in her language control scores. The second section presented the weekly quantitative data from the study. Error rates of the pre and posttests were analyzed according to student by week, cumulative error rates from the beginning and the end of the intervention, the sentence level versus the word level, and according to error type. Student 1 decreased her weekly error rates from pre test to posttest, and the majority of errors moved from the word level to the sentence level from the beginning of the intervention to the end. When looking at specific errors, the largest decreases in error were vowel errors and wrong word errors. The next section presented the weekly qualitative data collected during the study. Each student was discussed in

terms of their exit slip work, feed back received from the researcher, and their posttest writing samples. Overall, three students improved their writing by including more details, based on written corrective feedback and teacher modeling. All five students improved explaining their thinking in their writing and providing rationale for their math explanations. The researcher's personal reflections and field notes were also presented as data in this section, stating her heightened awareness of language during math instruction, and her search for opportunities to provide students with more occasions to write during mathematics instruction.

The next chapter will present the conclusions drawn by the researcher, connecting the results of this study to existing research. The chapter will include an explanation of the results, the strengths and limitations of this action research study, as well as recommendations for future research of the use of language objectives during math in order to increase the written English language proficiency of ELLs.

Chapter 5 Conclusions

This chapter offers final conclusions for the present study that investigates the effects of language objectives on written English proficiency. The first section connects the current study to existing research in the field of ELL writing pedagogy, corrective feedback, integrating language learning in the content areas, and the impact of teacher mindsets on their students' writing and language development. Section two is an explanation of the results of the present study and section three discusses its strengths and limitations. The next section offers recommendations for future research, and the final section concludes the study.

Connections to Existing Research

Accuracy and vocabulary. The present research study analyzed new student writing samples over the course of four weeks of a language intervention to measure improvements in accuracy. The researcher measured accuracy by finding the percentage of errors. Doiz & Lasagabaster (2004) stated that accuracy could be measured by percentage of error-free sentences, percentage of spelling mistakes, and the percentage of errors. In the present study, the majority of students did not show consistent improvement in accuracy as a result of the intervention. Doiz & Lasagabaster (2004) also found that students with increased exposure to L2 instruction did not have significant differences in accuracy in their writing when compared with comparable students with less cumulative L2 instruction. If increased L2 exposure over time, as well as a targeted intervention of corrective feedback on a daily basis, did not improve accuracy measures, it is possible that accuracy measures require consistent long-term writing intervention for ELLs.

Data of the current study showed that capitalization, spelling, and punctuation were also not affected by more teacher-modeling of writing and daily written corrective feedback. Doiz &

Lasagabaster (2004) also found that spelling, punctuation, and use of capitalization were not affected by the earlier teaching of English as L2. They also found that students with a longer exposure to English instruction as L2 made more errors in the misformation of words at the semantic level. Cummins' (1980) theory of a Central Operating System, with Common Underlying Proficiency (CUP), can explain the results of both the present research study and these results of Doiz & Lasagabaster (2004). This theory states that there is a Central Operating System that is shared by both languages, and then surface features of first and second languages. Linguistic features such as capitalization and punctuation, for example, are common in both languages and therefore would be represented in the CUP. While it was hypothesized that a targeted intervention would improve accuracy in these areas, this was not proven in the current study. It is possible that an extended intervention coupled with continued writing instruction in the students' native language would improve accuracy of features that are part of the CUP. An extended writing intervention focused on improving these linguistic features in the CUP would address the Common Core Standard L.4.2: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

In the current study, students improved holistically with their writing. Qualitative data showed the students improved in their ability to use descriptive language, provide evidence and details in their writing, as well as an increased use of technical vocabulary in their writing. Students 1, 2 and 3 improved their descriptions of three dimensional figures in week 1; Students 3 and 4 improved their use of technical vocabulary: congruent, vertices, and unit rates. All five students provided more evidence of their thought process during weeks 3 and 4. Doiz & Lasagabaster (2004) confirmed that increased exposure to English would have an effect on the

students' holistic writing scores, measured by content, organization, vocabulary, language use, and mechanics. The present study supports these findings, showing that increased exposure to L2 will increase the students' writing holistically. The intervention in this study therefore addresses standard L.4.3: Use knowledge of language and its conventions when writing, speaking, reading, or listening (Common Core Standard, 2012).

In the present study, Student 3 improved her technical vocabulary usage as measured by the writing rubric. Student 4 also improved her use of the technical vocabulary words “congruent” and “vertices,” as measured by the qualitative data analysis. These findings support Cummins' (1980) CUP Theory; other areas that are specific to one language, such as vocabulary, are represented in the surface features of the language. More exposure to a language would therefore lead to more vocabulary in this language, since it is not shared in the Central Operating System (Doiz & Lasagabaster, 2004). The increased exposure, teacher modeling, and feedback on technical vocabulary words in the current study resulted in improvements in technical vocabulary usage as supported by this theory.

Written corrective feedback. The written corrective feedback in the current study was manageable, meaningful, timely, and constant as described by Evans et al. (2010). With the use of written corrective feedback in the present study, the overall error rate did not decrease from the beginning of the intervention to the end of the intervention. The error rate in weeks 1 and 2 was 21.6% and stayed constant in weeks 3 and 4 with an error rate of 21.6% (Table 5). Also, error rates for all students, apart from Student 1, fluctuated from pre to posttests and from week to week. This can be explained because L2 learners do not perform with accuracy in the same ways every time while learning new linguistic forms. Also, it is possible for L2 learners to avoid using linguistic forms in their writing with which they may not feel confident and

comfortable. Lack of linguistic error does not signify competence in the use of the linguistic form (Bitchener et al., 2005). While errors did not decrease consistently with written corrective feedback, it is possible that with an extended intervention students will continue to become familiar with the linguistic structures and improve. Increased practice of linguistic features in language addresses standard: L.4.1: Demonstrate command of the conventions of Standard English grammar when writing or speaking (Common Core Standard, 2012).

In the present study, Student 1 consistently decreased her error rate from pre-test to posttest on a weekly basis (Table 4). Student 1's improved command of English was also demonstrated through her increased Language Control rubric scores from a 2 to a 4 from start to finish of the intervention (Table 3). Written corrective feedback seemed to help Student 1 improve her language control in L2. This can be explained by Student 1's awareness of the differences between L1 and L2 due to explicit feedback. These findings support the findings of Falhasiri et al. (2010) who concluded that explicit feedback helped students become aware of gaps between their native language and their target language, and they used new knowledge of their current interlanguage to help them reconstruct their interlanguage, making it closer to the target language.

When looking at the percentage of specific linguistic errors in the current study, the majority of linguistic forms did not decrease from the start to finish of the intervention. Errors that did decrease were "w for wh," "d for th," vowel errors, double consonant errors, omissions, and the wrong word used. Falhasiri et al. (2010) concluded from his study on corrective feedback that teachers should not expect explicit feedback to be uniformly successful as some error types decrease more than other error types as a result of corrective feedback. Evans et al. (2010) found that students improved their writing accuracy when dynamic corrective feedback

was provided, however, students in this study revised their writing after receiving feedback. The students in the present study did not revise their writing based on feedback. It is plausible that written corrective feedback works more effectively if students revise their writing based on the feedback, and linguistic forms might be affected.

Language instruction in the content areas. In the current study, the researcher continued to cover all mathematics content, even with an added focus on language instruction during the math block. This supports previous research where teachers reported that interventions involving language instruction in the content areas were useful and that all content could be covered despite the additional focus on writing (Wingate et al., 2011).

In the present study, students showed improvements in their written language used to describe, use details, and provide evidence of their thinking. Lorenzo et al. (2009) found that Content and Language Integrated Learning (CLIL) gave students more of an authentic exposure to L2 since the students were using L2 in a meaningful way to learn content. They found that there was not only an increased exposure to L2 in CLIL, but also the depth of processing within L2 was higher as there was more meaningful input in L2. The findings of Lorenzo et al. (2009) support why students in the current study improved their language skills in describing because doing so was meaningful for the math task at hand, and it was an authentic L2 experience.

The language skill of “describing” happened to be obligatory for the math content objective for several days in week 1. The math content objective was to describe three-dimensional figures. Students were not just focused on learning the attributes used to describe a three dimensional figure, but with the language objective they were also focused on learning how to effectively write a descriptive paragraph describing a three dimensional figure. Students 1, 2, and 3 all showed evidence of improvement in their descriptive writing skills. The language

objective became obligatory for mastering the content objective. These results support the findings of Hoare & Kong (2008) who found that for each content objective, language objectives were considered either obligatory or compatible. Obligatory language objectives were objectives that needed to be mastered in order to achieve mastery of the content objective. Compatible language objectives were those that were not needed in order to master the content objective, but the content being studied lent itself to practicing the specific language objective. Using obligatory language objectives during math instruction addresses writing Common Core Standard W.4.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

The language objective of “creating an original problem” would be an example of a compatible language objective. Studying unit rates during week 4, lent itself to creating original problems, but it was not necessary to master “creating a problem” in order to master unit rates. Students made improvements in week 4 with syntax and showing more evidence of their work. There were not outstanding improvements in the skill “creating” because it was not obligatory. While it is important skill, it is possible that there was not enough time within the one-week timeframe of the intervention to master the math content and a compatible language objective.

In the present study, improvements in writing were shown through qualitative data analysis. The researcher measured progress by looking at feedback given to the students on their daily exit slips and looking for improvement in those specific domains across the students’ writing, as was done by Wingate et al. (2011) in their study of incorporating writing instruction in the content areas. Analyzing exit slip data for language and content was congruent with the current teaching style of the researcher. The teacher used daily exit tickets before the study; so

the students were used to this structure. Rodriguez et al. (2010) found that teachers feel that it is important for new instructional strategies to support the way they currently teach. If not, it is less likely they will be implemented effectively by the teacher, and thus less received by the students. Using language objectives and assessing them on a daily basis matched the current structure in the classroom. It is reasonable to conclude that students in this classroom were looking at feedback on their daily exit slips and had a desire to improve just as they had with math content exit slips previous to the present study. Hoare & Kong (2008) found that in order for students to commit to mastering language objectives, the language objectives needed to be genuinely included in the assessments. If not, the students would likely put forth effort in mastering the content required of them, and not the language.

Because of the integration of language and content in the present study, the anecdotal field notes show the researcher acquired a new and deeper awareness of the presence and role of language while teaching math. This is supportive of the findings of Lorenzo et al. (2009). Their study concluded that survey results of CLIL schools showed there was a greater appreciation by teachers for the connection between language and content. With this new awareness of the presence and importance of language during math, the researcher in the present study also reported having to find a balance between content and language during lessons. Silver (2008) also reflected on possible pitfalls of teaching language within the content areas and reflected that there was a very delicate balance between content and language. Those who are aware of this balance have a greater understanding of pedagogical issues related to incorporating language in content, as opposed to less understanding.

Teacher mindsets and beliefs. Field notes from the researcher in the current study indicate a new awareness of the connection between language instruction and math instruction.

This is consistent with previous research conducted by Tan (2011), who found that content teachers view themselves as first and foremost as content teachers. Math teachers in particular believed that language is not important for learning subject matter. Math is mainly expressed in numbers and therefore, students are evaluated with facts, speed, and accuracy at solving problems, not language. Throughout the intervention in the present study, with a heightened awareness of language during math, the researcher reflected that as the intervention continued she cared more about modeling writing, her students writing, and improving her writing for her students. Shin (2003) found similar reflections of teachers who used journals to reflect on their writing pedagogy. Shin (2003) found that reflection can lead to modified expectations for students and can refine teacher beliefs, resulting in teachers developing skills as writers, writing teachers, and learners.

The researcher in the present study reflected and believed that language was important during her math instruction. This belief was a possible contributor to her students' holistic writing improvement, as the opposite belief has been found in existing research studies. For example, Tan (2011) and Silver (2008) found that language development is typically even more stifled in math classes if teachers believe that language is not necessary for math proficiency. Tan (2011) also found that teacher practices were consistent with their beliefs. In the current study, the pedagogy of the researcher matched her belief that language was important. This was evident as writing was modeled, assessed, and revised, alongside teaching and assessing math content. As Silver (2008) found, teachers who understand and believe in the connection of language and content are constantly looking for opportunities to teach language throughout lessons. The intervention in the current study, of writing for a math audience, therefore addressed standard W.4.4: Produce clear and coherent writing in which the development and organization

are appropriate to task, purpose, and audience (National Governors Association Center for Best Practices, Council of Chief State School Officers, 2010).

Students in the current study also matched the researcher's language expectations. Even though English was L2 for all students, all students completed their math assessments in English regardless of their English language proficiency level. Ballinger & Lyster (2011) found that teachers' reinforcement of L2 use matched the amount of L2 used by the students. Lastly, the researcher reflected that even though the students did not improve in accuracy as was hoped, their writing holistically did improve. Shin (2003) also found that reflection and journaling done by writing teachers helped teacher see improvements in student writing that might have otherwise gone unnoticed.

The previous section offered connections between the present study and existing research in the field of L2 writing pedagogy, corrective feedback, language and content connections, and the impact of teacher mindsets and beliefs on the language development of students. The following section contains explanations for the results of the present research study.

Explanation of Results

Rubric data. When looking at the Writing Rubric of the WIDA Consortium Grades 1-12 found in Appendix E (WIDA Consortium, 2007), linguistic complexity varied from pre test to posttest, and from week to week, for every student. Linguistic complexity looks at the use of a variety of sentence lengths and the cohesion of the text. Throughout the intervention, math content objectives changed on a daily basis. While students were practicing the same language skill for the duration of one week, they were practicing the skill in different contexts.

Assessments therefore did not provide students with the exact same language opportunities on a daily basis. For this reason, the complexity of students' writing varied depending on what the

math content objective was for that day. It is possible that complexity would improve if the intervention was extended, or if the same content objective was studied throughout the course of the intervention.

Student 3 showed improvement in vocabulary usage rubric scores throughout the intervention. This student also had the highest English proficiency of the students in the intervention. It is possible that because the student had a greater proficiency in English, she could focus her writing improvement on utilizing new vocabulary that she was exposed to in L2 from teacher modeling. Vocabulary is also specific to L2, so increased teacher modeling of writing the vocabulary, and corrective feedback of the spelling of these technical vocabulary words, could also explain why Student 4 improved her spelling of the words “congruent” and “vertices” during the intervention.

Student 1 was the only student to show consistent improvement in language control rubric scores. Student 1 had the lowest English proficiency out of the students in the intervention. It is possible that Student 1 improved based on errors that were corrected by the researcher’s written corrective feedback. It is probable that Student 1 used the corrective feedback to slowly change her interlanguage to become closer to the target language.

While there was evidence of improvement in vocabulary usage and language control, not all students improved. Linguistic complexity was constrained by the length of the intervention. With a longer intervention window, it is probable that sentence length and variety would improve. Language control was also difficult to measure in a four-week time frame due to complexity of L2 acquisition. Students in the intervention were able to avoid linguistic structures at any given time. Seemingly more controlled language is not absolute evidence for increased

linguistic knowledge and language control. It is possible the students were avoiding the structures they were not confident in using.

Error analysis. Error rates from weeks 1 and 2 did not decrease in weeks 3 and 4. In both subsections of the intervention, the cumulative error rate was 21.6%. There are several explanations for the lack of improvement in the error rate. First, L2 learners are not consistent with their use of linguistic forms. Students in the intervention correctly spelled words on some assessments, and misspelled them in other areas. This was also the case with capitalization, punctuation, and verb tenses. Students are still acquiring the language and their language is not always consistent. Also, some errors are not easily fixed by corrective feedback. Second language acquisition is a process, and some linguistic forms follow rules that can be more easily learned than others. It is also possible that native language similarities with the target language influence how easily the student utilizes corrective feedback. If the corrective feedback makes sense with what the student already knows about language, it is more probable they will utilize this feedback. If the feedback does not match what the student already understands about language, based on their L2 and native language, it seems less likely they will implement this feedback in future writing.

Error analysis based on word level errors and sentence level errors changed between the beginning subsection of the intervention and the later subsection. During weeks 1 and 2, 68% of errors were at the word level, and 32% were at the sentence level. During weeks 3 and 4, the percentage of word level errors decreased to 62% and shifted to 38% of sentence level errors. It seems that students improved their spelling and use of individual words throughout the intervention, causing word level errors to decrease. Sentence level errors are comprised of more complex linguistic features in L2, which would develop slower than word level errors. If the

intervention were to be extended, it is likely that word level errors would continue to decrease and shift to sentence level errors, showing progress in language acquisition.

Some linguistic forms decreased in error rate while others increased during the intervention. This could be explained by the developmental order for second language acquisition, as described by O'Grady et al. (2005). The researchers describe how linguistic forms are acquired in a developmental order and not all at once. For example *-ing* is the first form in the developmental order to be acquired. According to the developmental order, irregular past tense verbs are acquired before regular past tense verbs. It is possible that corrective feedback is more effective for ELLs on linguistic forms that match the learners' current level in the developmental order of acquisition.

Qualitative data. Throughout the qualitative data analysis of the writing samples, there was evidence of holistic improvements in the students' writing. During week 1, the majority of the students improved the content of their descriptive paragraphs of three-dimensional figures. The majority of students also provided more evidence of their thought processes in their writing during week 3 of the intervention when students were practicing writing a math strategy to solve the math problem of the day. These improvements can be explained by the nature of the correlation between the language objective and the math objective. In both of these instances, the language objective was obligatory for mastery of the math content objective. In order for students to effectively describe the dimensional figures, they needed the language necessary to do so. Likewise, in order to solve the unit rate problems introduced in week 3, students needed to first think through an effective strategy to solve. Each unit rate problem was different, so it was obligatory for the students to develop and describe their own strategy in order to be successful with the math objective. Language development is accelerated

when deep processing occurs in L2 and there is an authentic need to work in L2, as there was in these two weeks. These improvements seem to be the result of continued teacher modeling of the language objective, opportunities given to the students to authentically practice the language objective, as well as a daily assessment of the language objective; as opposed to the presence of written corrective feedback.

Qualitative data analysis also showed some improvements in vocabulary usage, syntax structures, and spelling of technical vocabulary words. These improvements were less prevalent and consistent when compared to the holistic improvements previously discussed. These improvements are most likely a result of a combination of teacher modeling and written corrective feedback, but were less consistent because these structures were not obligatory for the students to implement in order to master the daily math objective. These structures were compatible with the math content used, but not essential for math content mastery.

Overall, the implementation of language objectives and corrective feedback during math instruction improves students' L2 writing holistically. Language objective use and written corrective feedback can also improve technical vocabulary use, syntax, and spelling, but to a lesser degree than holistic writing improvements. Language objectives lead to more progress in L2 writing when mastery of the language objective is obligatory for mastery of the math objective. Compatible language objectives can still lead to L2 writing improvements, but they are less effective in improving L2 writing when compared with obligatory language objectives.

Strengths and Limitations

One strength of this study was the consistency of implementation and feedback. Over the four weeks, language objectives were consistently incorporated into the daily lesson plans of the researcher. Language objectives were modeled, practiced, and assessed with feedback on a daily

basis. The language objectives were mapped out as a unit plan covering the four weeks of the intervention. The researcher posted the language objectives on the board every day, and the objectives were discussed with the students at the beginning of each math lesson. The researcher modeled the language objective every day with her writing, and planned time in the lesson for the students to write and practice the language objective. Students were assessed on a language exit slip daily during the intervention and the researcher provided them with feedback on their writing every day. The research methods were upheld with fidelity during the intervention.

A second strength is the ability to replicate the methodology of this study to other content areas. While language objectives were studied in the context of mathematics instruction in this study, language objectives can be incorporated in science, social studies, reading, and even fine arts areas. This study gives educators and researchers a framework, as well as language resources, such as the WIDA Consortium English Language Proficiency Standards (2011), to incorporate into their support for English Language Learners. This study also gives examples of language assessments, or exit slips that could be implemented in any of the content areas to monitor language proficiency and progress.

A third strength was the use and analysis of both quantitative and qualitative data. It is tempting for research to focus on quantitative data, as it can be compared across studies more easily and you can measure growth in a more tangible way. If quantitative data had been solely used in this study, the students' observable improvements in holistic writing would not have been captured. The detailed qualitative data collection and analysis used in this study demonstrated and acknowledged the students' holistic writing improvement and is a major strength of this action research study.

There were several limitations in this study. One limitation was that the researcher and classroom teacher was the same person. It was not possible to know if improvements in students' writing were a sole result of the intervention, or from other input received from the teacher throughout the day. A second limitation was the lack of a control group. Because there were no students who received math instruction without a language objective, it is uncertain how the results of this research study would be without a language objective used during math. A third limitation was the short length of the intervention. Writing is a slow process, and takes time for improvement. While it was encouraging to see some holistic improvements after four weeks of the intervention, a longer intervention window could possibly have captured improvements not observed in this study. A fourth limitation was the small sample size used in this study. The intervention occurred in one classroom with 24 students, 5 of which were analyzed in this study. While results of this study were valuable, generalizations to all ELL students must be made with caution, as each L2 learner is different and acquires language in their own way and at their own pace.

A fifth limitation was there were two aspects of the intervention: teacher modeling and writing practice during math, and written corrective feedback. While hypotheses can be made as to what aspects of the intervention can explain specific results, it was undeterminable by the methods of the study as to which aspect of the intervention led to the results. A sixth limitation of the study was the lack of a student survey to see how they used the written corrective feedback. It would have been beneficial to know if the students read the comments, if they used them, how they used them, and if they thought the feedback was helpful. Lastly, because the researcher was the teacher, and had strong opinions and beliefs regarding the meaningful connection between language and content, it was difficult to know how this intervention would

be replicated in a different classroom, with a different teacher, and if comparable results would be produced.

Based on the results of this study, and taking into consideration the strengths and limitations of this study, more research should be done in the area of improving written language proficiency of ELLs. For this purpose, the next section outlines recommendations for future research.

Recommendations for Future Research

After analyzing and discussing the findings of the present study, there were several unanswered questions that call for future research. Research should be conducted on language objectives without the use of written corrective feedback. It was unclear in the present study the exact effect of written corrective feedback separate from the use of language objectives. In this study language objectives were posted, modeled, practiced and assessed, along with the researcher providing written corrective feedback. It was unclear if the improvements made by the students were a result of the researcher modeling the language objectives or from the students receiving and responding to written corrective feedback.

Research should also be conducted on the use of language objectives in other content areas, apart from mathematics, in order to find how language intertwines differently in each of the content areas. Because this study found that language objectives positively impacted ELLs' L2 writing, future research should be conducted on the effects of language objectives in the domain of speaking, listening, and reading in the content area, making it possible for teachers to more effectively develop all domains of language in their students.

Research should also be conducted on the language objectives over a longer period of time. Because this study was limited to only four weeks, each language objective studied was

only implemented for one week of time. Improvements were seen in the students' holistic writing skills over this relatively short period of time, and for this reason, research should continue studying the impact of language objectives on written language proficiency over an extended period of time. Each language objective should be studied to see the growth in that particular skill over the course of one academic school year.

It would also be beneficial to see the school wide impact of language objectives. It is recommended that research be done on a two-way dual language program implementing consistent use of language objectives in the content areas from K4-5th. This study should also be extended to middle and high school to study the impacts of language objectives on language development in the upper grades. Lastly, research should be conducted on the students' perceptions of language objectives, how often they reference them, how they use them, and what aspects of language instruction they find particularly helpful. This information would help teachers better understand what their students are thinking, and help teachers to tailor their instruction to best meet the needs of their students.

Finally, it is strongly recommended that schools invest in professional development for teachers on how to integrate language objectives in the content areas, due to the delicate balance between language and content teaching. Professional development sessions should focus on how to conquer specific obligatory language objectives while still teaching all necessary content. Professional development sessions should also provide teachers with evidence of the positive effects of language instruction in the content areas, since it is crucial for implementation that the teacher believes language teaching is meaningful in the content areas. Lastly, it is necessary that professional development allow teachers to become very familiar with the language objectives so

they are easily accessible to the teachers during the planning stages of their content areas.

Conclusion

The present study provided evidence that integrating language instruction in the content areas, using writing language objectives and a system of written corrective feedback assisted ELLs in their L2 writing development. In this study, the integration of writing language objectives in combination with written corrective feedback during math instruction helped students improve their holistic writing skills. Students showed the most improvement in their describing skills, providing details, and providing evidence for their math answers through writing. The integration of language objectives and feedback was also effective in improving students' use of technical vocabulary, syntax, and spelling. These improvements were as a result of a four-week intervention, thus it is recommended that future research be conducted to investigate the impact of language objectives over a longer period of time, possibly a full academic year.

This study continues to build on existing research on corrective feedback, language and content integration, and the impact of teacher mindsets and beliefs on students' language development. It sheds new light on possible uses of language objectives in the content areas, the impact of incorporating writing into the content areas, and provides methodology for continued research on the impacts of language objectives used in the content areas. Additionally, the study presents new resources for teaching English Language Learners, such as examples of language exit slip assessments used to monitor language development on a daily basis, and a framework to integrate language objectives into content area lessons.

References

- Ballinger, S. & Lyster, R. (2011). Student and teacher oral language use in a two-way Spanish/English immersion school. *Language Teaching Research*, 15(3), 289- 306.
- Bitchener, J., Young, S., & Cameron, D. (2005). The effect of different types of corrective feedback on ESL student writing. *Journal of Second Language Writing*, 14. 191-205.
- Cummins, J. (1980). The construct of language proficiency in bilingual education. In J.E. Alatis (Ed.), *Georgetown University Round Table on Languages and Linguistics 1980*. Washington, DC: Georgetown University Press.
- Doiz, A., & Lasagabaster, D. (2004). The effect of the early teaching of English on writing proficiency. *International Journal of Bilingualism*, 8(4), 525-540.
- Evans, N., Hartshorn, J., McCollum, R., & Wofersberger, M. (2010). Contextualizing corrective feedback in second language writing pedagogy. *Language Teaching Research*, 14(4), 445-463.
- Falhasiri, M., Tavakoli, M., Hasiri, F., & Mohammadzadeh, A. (2010). The effectiveness of explicit and implicit corrective feedback on interlingual and intralingual errors: A case of error analysis of students' compositions. *English Language Teaching*, 4(3). 251-264.
- Hoare, P. & Kong, S. (2008). Using language objectives to integrate language and content instruction: A case history of planning and implementation challenges. *Language and Education*, 22(3), 187-205.
- Lorenzo, F., Casal, S., & Moore, P. (2009). The effects of content and language integrated learning in European education: Key findings from the Andalusian bilingual sections evaluation project. *Applied Linguistics*, 31(3). 418-442.

National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common core state standards*. National Governors Association

Center for Best Practices, Council of Chief State School Officers, Washington D.C.

O'Grady, W., Archibald, J., Aronoff, M., & Rees-Miller, J. (2005). *Contemporary linguistics (5th edition)*. Boston, MA: Bedford St. Martin's.

Report Card Milwaukee Public Schools. (2011). Hayes Bilingual School. Retrieved from www2.milwaukee.k12.wi.us/acctrep/1011/2011_E_0214.pdf

Rodriguez, D., Manner, J., & Darcy, S. (2010). Evolution of teacher perceptions regarding effective instruction for English language learners. *Journal of Hispanic Higher Education*. 9(2), 130-144.

Shin, S. (2003). The reflective L2 writing teacher. *ELT Journal*, 57(1), 3-10.

Silver, R. (2008). Trainee teachers' understanding of content/language connections. *Language Teaching Research*, 12(1), 105-124.

Tan, M. (2011). Mathematics and science teachers' beliefs and practices regarding the teaching of language in content learning. *Language Teaching Research*. 15(3), 325-342.

United States Census Bureau. (2012). United States Census Bureau: state and county quickfacts. Retrieved from <http://quickfacts.census.gov/qfd/states/55/5553000.html>

WIDA Consortium. (2007). Understanding the WIDA English language proficiency standards: a resource guide. Retrieved from wida.us/get.aspx?id=4

WIDA Consortium. (2011). Search the ELP standards- detail. Retrieved from http://www.wida.us/standards/ELP_StandardDetail.aspx?es=118

WIDA Consortium. (2012). ACCESS for ELLs English language proficiency test student roster report 2012. Retrieved from <http://www.wida.us/assessment/ACCESS/>

Wingate, U., Andon, N., & Cogo, A. (2011). Embedding academic writing instruction into subject teaching: A case study. *Active Learning in Higher Education*, 12(1), 69-81.

Wolfe-Quintero, K., Inagaki, S., & Kim, H-Y. (1998). *Second language development in writing: Measures of fluency, accuracy, and complexity*. Hawai'i: University of Hawai'i.

Appendix A

Grades 3-5

34

ELP Standard 3: The Language of Mathematics, Formative Framework



	Example Topics	Level 1 Entering	Level 2 Beginning	Level 3 Developing	Level 4 Expanding	Level 5 Bridging
LISTENING	Cost/Money	Match prices to goods using visually supported materials (e.g., newspapers or magazines) and oral questions (e.g., "Which one costs a lot?") with a partner	Compare prices of goods using visually supported materials and oral questions (e.g., "Which one costs more, X or Y?") with a partner	Analyze prices of goods using visually supported materials and oral questions (e.g., "Which one is the most expensive?") with a partner	Predict prices of goods using visually supported materials and oral questions (e.g., "Which one do you think costs <i>under</i> \$1,000?") with a partner	Make conditional purchases of goods from oral questions (e.g., "If you had \$1,000, which items would you buy?")
SPEAKING	Basic operations	Repeat information about math operations using realia or manipulatives and teacher models (e.g., "Here are 3 groups of 4.") in L1 or L2	Paraphrase information about math operations using realia or manipulatives and teacher models in L1 or L2	Connect new information about math operations to previous experiences using realia or manipulatives	Explain or discuss uses of information about math operations using realia or manipulatives	Integrate or synthesize information about math operations to create own problems
READING	Scale	Recreate drawings from diagrams and written directions in a small group (e.g., "Make a car like this.")	Create scale drawings from diagrams or models and written directions in a small group	Construct scale drawings from everyday experiences, diagrams or models and written sets of directions in a small group	Reproduce scale models from diagrams and written sets of directions in a small group	Build models to scale based on diagrams and written instructions (e.g., three-dimensional puzzles)
WRITING	Fractions	Label fractional parts of diagrams or realia from number word banks	Describe what the fractional parts mean from diagrams or realia in phrases or short sentences	Give step-by-step process of how to solve problems involving fractions from diagrams using a series of related sentences	Describe strategies or tips for solving problems involving fractions from diagrams in paragraph form	Create original problems involving fractions embedded in scenarios or situations

Level 6 - Reaching

Appendix B

Intervention Plan: Writing Language Objectives

Week of Intervention	Writing Language Objective
One	I will <i>describe</i> the daily math concept in my own words.
Two	I will <i>give a step-by step process</i> of how to solve today's problem using a diagram
Three	I will <i>describe a strategy or tip</i> for solving today's problem in paragraph form
Four	I will <i>create</i> an original problem involving a real life situation using today's topic.

Appendix C

Example of a Language Exit Slip

Unit 11

Name: _____

Week 2

Language Exit Slips

Tuesday: Give a step-by-step process of how to find the volume of a rectangular prism. Draw a diagram to help you explain.

Appendix D

Sample Exit Slips: Week 4

Unit 12 Name: _____

Week 4 Exit Slips

Language objective: I will create an original problem involving a real life situation using today's topic.

Tuesday: Create your own "unit price" problem here. Then solve it.

Dollars				
Pounds	1	2	3	4

Wednesday: Create your own "unit price" problem here. Then solve it.

Dollars				
Pounds	1	2	3	4

Thursday: Create your own "better buy" problem here. Then solve it.

Friday: Create your own "better buy" problem here. Then solve it.

Appendix E

Sample Pre and Posttest: Week 4

Unit 12
Week 4

Name: _____

Language objective: I will create an original problem involving a real life situation using today's topic.

Pre test: Create a your own rate problem and solve it.

Post Test:

Create your own "better buy" problem here. Then solve it.

Appendix F

Writing Rubric of the WIDA Consortium Grades 1-12

Writing Rubric of the WIDA™ Consortium Grades 1-12			
Level	Linguistic Complexity	Vocabulary Usage	Language Control
6 Reaching*	A variety of sentence lengths of varying linguistic complexity in a single tightly organized paragraph or in well-organized extended text; tight cohesion and organization	Consistent use of just the right word in just the right place; precise Vocabulary Usage in general, specific or technical language.	Has reached comparability to that of English proficient peers functioning at the "proficient" level in state-wide assessments.
5 Bridging	A variety of sentence lengths of varying linguistic complexity in a single organized paragraph or in extended text; cohesion and organization	Usage of technical language related to the content area; evident facility with needed vocabulary.	Approaching comparability to that of English proficient peers; errors don't impede comprehensibility.
4 Expanding	A variety of sentence lengths of varying linguistic complexity; emerging cohesion used to provide detail and clarity.	Usage of specific and some technical language related to the content area; lack of needed vocabulary may be occasionally evident.	Generally comprehensible at all times, errors don't impede the overall meaning; such errors may reflect first language interference.
3 Developing	Simple and expanded sentences that show emerging complexity used to provide detail.	Usage of general and some specific language related to the content area; lack of needed vocabulary may be evident.	Generally comprehensible when writing in sentences; comprehensibility may from time to time be impeded by errors when attempting to produce more complex text.
2 Beginning	Phrases and short sentences; varying amount of text may be copied or adapted; some attempt at organization may be evidenced.	Usage of general language related to the content area; lack of vocabulary may be evident.	Generally comprehensible when text is adapted from model or source text, or when original text is limited to simple text; comprehensibility may be often impeded by errors.
1 Entering	Single words, set phrases or chunks of simple language; varying amounts of text may be copied or adapted; adapted text contains original language.	Usage of highest frequency vocabulary from school setting and content areas.	Generally comprehensible when text is copied or adapted from model or source text; comprehensibility may be significantly impeded in original text.

Adapted from *ACCESS for ELLs® Training Toolkit and Test Administration Manuals, Series 103 (2007-08)*

Appendix G

Teacher Field Notes

Week 1

5/9/2012) Yesterday's lesson was interesting to think so much about writing during math, I was concerned about modeling a think aloud of my math thinking in written words as much as orally. The lesson went well and we got in the math and the writing.

End of week 1: Thursday's lesson consisted of writing, but I altered the objective to be a repeat of Wednesday's lesson in order to reteach. Therefore I did not do a premade exit slip. I found myself focusing on modeling correct writing in sentence and paragraph form and saying things I typically do and say during writing. For example, "remember capital letters, periods, check your spelling. I felt more conscious of my writing.

Week 2

5/20/2012) This week was step-by-step processes. In my daily instruction I feel more conscious of modeling writing and giving language frameworks for speaking and writing in class. I have been able to fit in the math lessons the same as always and this week I combined my math and language exit slips into one. It felt good to get a read on math mastery, see them write, and their language progress. Giving language feedback (editing and sentence structure) has been the most time consuming aspect so far, it is an extra 20-30 minutes daily, but I think it has been worth it. I haven't had time to let the language exit slips guide my instruction daily, like I do for math mastery. But I'm hoping that the extra daily writing focus, practice, and feedback will show improvement in the writing by the end

of the intervention. I have seen students put more care into their writing on their exit slips because they are getting feedback and want to improve (my hypothesis). Next week, we are focusing on giving a strategy for solving problems and we are doing rates.

Week 3

5/22/2012) Tuesday: This week we are writing strategies for solving. Again, I have been modeling writing and strategies, but their only time practicing writing has been during the exit slip. I think I'll try sharing the pen tomorrow, and they will partner write. I'll also show an exemplar that I'll make tonight. I really feel like I'm pushing math rigor at the same time as improving writing. I'm "forced" to edit daily for my students.

