The Effect of the Interactive Language Journal on the Academic Spanish Writing of Dual Language Middle School Science Students

Benjamin P. Floyd

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Approval:

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Grace Huerta, Ph.D., member of the faculty

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Abstract

Changing demographics in schools show an influx of language learners at rapid pace in many districts across the nation. Dual language programs teach content in both languages with the goal of achieving biliteracy. This multiple case study researched the effect of the interactive language journal on the academic Spanish writing of two native Spanish speakers and a native English speaker in a middle school dual language program. Participants wrote in weekly journal entries that combined the interactive science notebooks with dialogue journals and reflective interactive journals. Qualitative analysis of writing used the American Council on the Teaching of Foreign Languages writing proficiency guidelines and showed an improvement in each participant's writing of at least one level between the first and last journal entry. Quantitative analysis included the counting of words and sentences in a passage and determining the percentage of complete sentences, noun/adjective agreement, verb conjugation, spelling, and Spanish words. Results reported an increase in the quantity of writing with two participants doubling the number of words, and improving the accuracy of grammar 20% in some categories. This research supported the use of bilingual/dual language programs in showing that content literacy can improve through use of the native language. Additional research needs to be done with the interactive language journal in different school populations. An implication of this study suggests the need to provide an additional class to teach Spanish literacy during intervention classes so as not to compromise the quality and vigor of the content classes.

Keywords: Interactive language journal, dual language, dialogue journal, science notebook, interactive journal, language learner, academic writing

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Acknowledgements

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Chapter 1: Literature Review and Research Question

The Dilemma: Changing Demographics and What to Do About It

In many school districts across the nation the demographics are changing rapidly. I recently taught in a school that only had a handful of Spanish-speakers a decade ago yet today has 50% native Spanish speakers. This school is not alone. How will districts service their changing student body? This afore-mentioned school took a strong English-only approach by discouraging the use of Spanish that devalued that language and insisting using English, the only valued language in the school. Research shows that this is a gross disservice to students (Crawford, J. & Krashen, S., 2007; Huerta, 2009). Another school that I taught at experienced similar demographic changes in a short amount of time. Their solution, as well as that of a few other districts was to embrace the Spanish language and educate their students in bilingual and dual language programs. Research shows that this strategy builds on the native language literacy and aids in English development (Bigelow & Schwarz, 2010; Crawford, J. & Krashen, S., 2007; Gass, S. & Slinker, L., 2001; Huerta, 2009). In fact, these programs give equal value to both languages in the goal of biliteracy. Yet this progressive approach meets with some initial reluctance from the general public. Voices could be heard to say or thoughts remain unspoken to express "Is not this America? Should not we only educate in English?"

There is a myth that says that if a child were to learn two languages in a bilingual or dual language program, beginning to teach in the other language will result in interference with learning English (Freeman & Freeman, 2006). How does a student become language proficient? Research shows that this takes between 5-7 years in ideal circumstances to develop the academic language needed for scholastic success (Suarez-

Orozco, et al., 2008). However, legislation often demands that ELL students demonstrate English proficiency in a much shorter time that this (Wright, 2006). Teachers are then pressured to force ELL students to produce academic language that can be measured and assessed in a short amount of time. Language output is measured in oral and written proficiency tests. Even reading proficiency tests depend on writing as a way to check for understanding because the student is required to write or mark an answer. Classroom writing is often done through use of notebooks or journals. One assumption persists that writing instruction students receive does not necessarily improve their writing. This is seen in students that graduate from high school and yet are not prepared for writing in college (O'Connell & Dyment, 2006). Formal writing is especially difficult for language learners because it demands use of the academic language that takes 5-7 years to develop (Peregoy & Boyle, 2008). Interactive notebooks and journals can help in developing writing proficiency (Full Option Science System, 2011; Peyton, 1987)

What exactly is an Interactive Notebook, and What is an Interactive Journal?

Interactive notebooks are defined as "a collection of notes taken from reading, listening, discussion, and viewing, including corresponding responses, either in graphic or written form (Carter, Hernandez, & Richison, 2009, p.3)." They are also defined as a "daily journal-type recording of student-written class notes from reading, lecture, and discussions, and the reflective and metacognitive responses students make to their own note taking. (Carter, et al., 2009, p.3)" The interactive notebook is more than just notes, however. It takes on a daily learning cycle format of input, engagement, and output that "require[s] students to actively engage with the language (Waldman & Crippen, 2009, p.53)." Interactive notebooks scaffold academic vocabulary, as well as using writing,

sketching, and drawing as a way to demonstrate learning. Inserts of important handouts are attached and used to study (Full Option Science System, 2011; Waldman & Crippen, 2009). In teaching language, parts of speech can be color-coded and a glossary is put in the back. Interactive notebooks are usually found in K-12 science classrooms[1].

In higher education, critical reflective journals, or interactive journals, have gained use as a tool for students in learning (Dyment & O'Connell, 2010; Redmann, 2005). The reflective journals are sometimes the extensions of the lectures and rely on the ability to reflect and connect content to prior knowledge and learned experiences, or field journals. Brain research supports that journal writing aids in transfer due to the reflection on what was newly learned (Sousa, 2006). This fits into the abstraction phase of the four part learning cycle of input, prediction, abstraction, and testing (Zull, 2005). Other ways they are used are for recording travel logs, reading responses, and personal growth (O'Connell & Dyment, 2006). The interactive reading journal was developed for college foreign language students of all levels to help them access literature and prepare for classroom discussions (Redmann, 2005). This journal provided the tool for pre-reading and post-reading strategies to aid in the understanding of target language literature and encourage students to prepare for class discussions (Redmann, 2005).

Further uses include the practice of dialogue journaling. Dialogue journals have been in use since 1980 and have found to be successful in improving the writing of elementary language learners, mainstream K-12 students, and even adult ELLs (Peyton, 1987; Peyton, 2000). The dialogue journal is "written conversation" between the teacher and the student (Peyton, 1987, p.6). Students write about topics of their own choosing

[1] See Full Option Science System, 2011; Miller & Calfee, 2004; Waldman, C., & Crippen, K. 2009; Worth, Moriarty, & Winokur, 2004

and teachers take on the role of participant in the conversation rather than evaluator (Peyton, 1987). The dialogue journal supports language acquisition theory's discussion of language routes in that it supports developmentally appropriate levels of language usage, it can be used to model correct language structures, and can help ELLs focus on meaning rather than form (Mitchell & Miles, 2004; Peyton, 1987).

Introducing the Interactive Language Journal

I propose to use an interactive notebook/interactive journal hybrid to make a notebook that uses best practices of each of the above mentioned tools for the dual language middle school population. This interactive language journal will be composed of vocabulary/learning target sheets and sketching/note taking sheets as the science notebook. It will incorporate a weekly dialogue journal component that provides the low stakes, student-generated and teacher-modeled written conversation entry. Furthermore, this hybrid will incorporate the natural language approach of Stephen Krashen as used by the Teaching Proficiency through Reading and Storytelling (TPRS) method of foreign language instruction[2], by pre-teaching vocabulary, teaching grammar implicitly, and providing reading and writing exercises based on the vocabulary (Gaab, 2006). This hybrid notebook/journal that my students used included the use of what is called a cognitive or picture dictionary. This is one of many Guided Language Acquisition Device (GLAD) strategies that I implemented (Brechtel, 2001). The form that this was expressed in the interactive language journal was that of a loose-leaf "Target" page

[2] TPRS follows the premise of teaching language in context and in a comprehensible input environment. New vocabulary is introduced as gestures or actions and visuals. The words are used in a personalized question and answer session to make the words meaningful to the student. Vocabulary is creatively put into class-generated oral stories and later read in the written stories. Focus is on meaning and understanding rather than on form.

wherein students predicted the meaning of new words, drew a picture, used vocabulary in a sentence, and wrote an analogy.

One reason why I refer to interactive science notebooks is because of my prior experience with them as a science educator and student. As an undergraduate student with a science major, I used field notebooks to record observations and collections. As a science teacher, I required students to use science notebooks to record their experiments. Exposure to the interactive notebook model of input and output in a daily learning cycle has also occurred while I have been a teacher.

What Does the Research Show About the Use of Interactive Notebooks?

The literature suggests that interactive notebooks support content specific knowledge through writing because students develop reflective abilities that help them clarify what they know and do not know because of the direct relationship between forming concepts and expressing them in words (Full Option Science System, 2011). The literature also claims that interactive notebooks promote writing through such content areas as science because science is problem-based and engaging and naturally leads to communicating about inquiry (Worth, Moriarty, & Winokur, 2004). This is not a stretch to think of science class as a place to develop as a writer. The Educational Development Center points out that science and English/language arts standards are connected and further explains that scientific inquiry engages students in a problem that requires language skills to communicate about it (Worth, Moriarty, & Winokur, 2004). Even introductory brain research informs us that the brain is engaged by puzzles, mysteries, and problems (Zull, 2005). Furthermore, interactive journaling is unique

because it enables students and teachers to mix content and writing, and makes thinking visible (Miller & Calfee, 2004).

Beckstead (2008) found science notebooks to be a useful form of assessment. She used writing forms such as essays, poetry, and letters to be a concluding activity at the end of a science unit. Her students would write about their discoveries and publish them in the class's *Beckstead Height's Science Journal* just as read scientists would do. Beckstead used student science notebooks for the more common use of recording information, and used the class science journal as a way to integrate language arts and science throughout the school year. She found value in looking at student writing because in informed her of her students' understanding of the science concepts. Results of this practice included improved test scores, writing ability, science comprehension, and student excitement (Beckstead, 2008).

Shepardson and Britsch (2004), describe how educators can best review a student's science journal. This effective review of notebooks includes an analysis of student understanding and misconceptions in the writing. An important consideration explained by these authors is the amount of structure required in the pages of the science notebook. They discuss that too much structure stifles the ways students can express themselves. They suggest giving the student a space in the notebook, but not limitations of how to use that space in relating personal experiences with a concept. For example, if students are required to use the lines of the page, it might prevent the use of sketching or drawing as a way of drawing on personal experience (Shephardson &Britsch, 2004).

Braxton (1998), in her action research regarding the use of interactive science notebooks, found that her students' writing improved. Braxton had heard about INs from

a colleague and decided to try them in her 4th grade science class. She described the initial effort in implementing the notebooks as a struggle, but that students showed evidence of learning science. Students were able to explain scientific concepts using vocabulary better over time and were able to show understanding of science concepts through writing. Students were able to report this in the focus group interviews they did as part of Braxton's (1998) action research.

Wilkins (2010) also conducted action research of interactive science notebooks. This study focused on middle school students who had scored poorly in state and district science assessments. Many of these students were from disadvantaged groups also (Wilkins, 2010). Wilkins found that students could use the interactive notebook as a place to write, draw, and explain the science they were learning. The students were effectively creating their own personal textbook (Wilkins, 2010). With the use of the interactive notebook, these students significantly improved their 8th grade standardized test scores (Wilkins, 2010).

What Does the Literature Say About Interactive Journals?

O'Connell and Dyment (2006) studied the interactive journal use in college through the lens of the student and the faculty. They found that professors wanted IJs to be a reflective part of their pedagogy. Findings also showed that only about half of the student entries were reflective rather than descriptive. They found that instructors assumed that students already had the reflection skills when in reality they need to be explicitly taught and modeled. They provide an informative plan of answers and responses to student questions to aid in student buy-in and teaching of skills so students will write reflectively instead of descriptively. Students with the proper scaffolding can

be found to write journals that are deeply reflective, highly critical, and insightful (Dyment & O'Connell, 2010).

Redmann (2005) investigates the use of an interactive reading journal to teach college foreign language students how to get the most from target language literature. She observes that most foreign language programs in higher education focus on skills or grammar in the lower level classes and literature in the higher level classes. Students were found to struggle with literature even though they had the grammar skills. The study describes the use of an interactive reading journal and how this is a tool for pre-, during, and post-reading strategies. Students reported that they were more prepared for class because the interactive reading journal gave them a starting point for class discussions (Redman, 2005). Some students even called the interactive reading journal the most positive part of their foreign language experience (Redmann, 2005). Redmann found that the students could see their growing language proficiency and that the interactive reading journal assisted in improving reading and writing (Redmann, 2005).

Nassaji and Cumming (2000) analyzed the dialogue journal of a Farsi-speaking immigrant student and her teacher over two school years at an elementary school in Toronto, Canada. They found that the dialogue journal allowed a personalized zone of proximal development to form as the teacher responded to the natural language production of the 6-year-old. The teacher modeled at a slightly higher level of language and used a lot of questioning in the early entries. The student responded by writing more complexly and incorporating the writing techniques patterned by the teacher. Late entries show the student posing many questions and the teacher responding minimally. The student and teacher maintained this kind of "complementary, asymmetric scaffolding

(Nassaji & Cumming, 2000, p.103)" throughout the dialogue journal experience. The early writings showed a request-response pattern, while later writings developed into questions into deeper meanings.

González-Bueno and Pérez (2000) studied the effect of electronic mail on Spanish writing grammatically and on quantity. The e-mail group of students produced more writing than the pen and pencil group. The accuracy of grammar was seen to be similar in both groups. This study suggests the effective use of interactive journaling digitally, as well as with the hardbound notebook.

Hammadou (1991) explored the interrelationships of prior knowledge, inference, and language proficiency in college foreign language classrooms. The study frustratingly found that prior knowledge is hard to test, although we all know it is good practice to access prior knowledge in learners. Readers were found to give weaker retells of readings they believed they had the most prior knowledge about. I think that this could be due to the lessened attention to a topic that seems familiar. Lower level readers were found to infer more in their reading. Perhaps this is to help the reader make sense of a selection that a person is not familiar with, where a stronger reader does not need to invent as much of the meaning up of what they read. This study causes me to use the power of prior knowledge and inference to aid student writing development just as a Jedi would use the Force.

Pessoa, Hendry, Donato, Tucker, and Lee (2007) studied two teachers in a 6th grade Spanish content-based curriculum program. They found that the teacher talk in this curriculum had a strong effect on the students learning content and language. The teacher whose students did not learn as efficiently focused on explicit grammar

instruction and non-topically related exchanges whereas the "more effective" teacher corrected grammar implicitly, balanced content and language focus, provided opportunities for students to co-construct form, and revealed interpersonal, conversational features. Teacher talk can be effectively done through a dialogue journal approach.

Brown, Solovieva, and Eggett (2011) used argumentation and debate to improve fluent Russian speakers writing ability. They knew that their student population had a strong conversational background of the language, but lacked formal writing instruction. Writing proficiency was measured through use of a nationally recognized written proficiency test as the pre-test and post-test. Furthermore, students produced 8 essays that were analyzed for complexity by identifying the ratio of total error-free attempts versus total words and the total attempts at complexity measures to total number of words. The oral debates and television programs were a scaffolded tool to promote writing of the same topics. Brown, Solovieva, and Eggett (2011) found that their students writing improved grammatically, but was more restricted in the risks taken. They came to the conclusion that the students were "unlearning" their mistakes in transferring oral language to written language. I am interested in this research as a way to use methods in measuring writing proficiency.

What does this research contribute to dual language pedagogy?

Thus we see the literature on using interactive notebooks in content-driven classrooms for children and adolescents, using notebooks for school-aged ELL students, and reflective interactive journals for college students. There is a dearth of research on how notebooks or journals aid in writing proficiency for middle school bilingual science

students. How can notebooks or journals do this? What is the most effective way to use writing for adolescent science students in a dual language classroom? I want to explore the use of interactive notebooks and journals in developing academic writing among this middle school population. I want to incorporate strategies of the interactive notebook used in K-12 science classrooms with the reflective nature of the interactive journal of higher education. This led me to the formation of the interactive language journal.

My essential question becomes: How does the use of the interactive language journal affect academic Spanish writing proficiency among middle school students in a dual language science class? The range of language proficiency varies from the native English speaker enrolled in the district's bilingual elementary school who only uses Spanish in the one dual language class in middle school to the native Spanish speaker who uses it every day to communicate with family and friends. The challenge is to scaffold and build confidence in writing among students that potentially have had little formal training in their native language. Dialogue journals offer a low stakes, developmentally appropriate forum for language development and the total attention of a more capable peer.

Basically, I want to use the research supported strategies of interactive notebooks and interactive journals with middle school dual language learners and see what happens. I suspect that academic writing will improve slowly, but steadily and that the interactive language journal kept as a comprehensive student portfolio will display the growth. I want students to experience the shock factor of seeing writing done in the first week versus the writing done in the last week of a quarter the same way a person who sees how much a child has grown that he has not seen in a while or noticing the drastic change of a

haircut. I want their notebook to be proof of their significant and meaningful academic growth with the English language.

Chapter 2: Methods

Setting

The visitor to the site of research would travel a scenic forest-covered hills drive to arrive at the school. The building commands the respect of the community as one of the newer campuses in the rural district, having been built in the last decade. The grounds are tailored and the sidewalks clean of litter. The walls of the school are free of the wear and tear that is seen in many schools. This was the 6th and 7th grade public middle school that offered dual language Spanish courses in science and social studies. It was the only program like this offered within 100 miles of the school. The student population was under 600, with a free and reduced lunch enrolment of nearly 60%. School demographics were predominantly white (60%) and Latino (23%). Special Education students accounted for about 17 % of the student body. School state test scores showed gradual improvement over the last 8 years with about 60% of students having met standards in reading, 50% in math, and 65% in writing. The school had been labeled as an at risk school due to test scores within the last decade as well.

The Spanish science class was made up of about 75% first language Spanish students and 25% first language English students of the 32 enrolled. This group of students was part of a cohort that began at the bilingual elementary school in the district. Their K-5 schooling was half English and half Spanish. In 6th grade, selected students continued the dual language option by taking science and social studies in Spanish. Math, literacy, and electives were all in English. The same pattern continued in 7th grade. The present cohort was in their last year as dual language students. The class period was

70 minutes long and lasted a semester. It was the only class taken in Spanish until the students switched to social studies at the semester.

Program Model

The Inlet School District had adopted a 50/50 bilingual model at one of their elementary schools, Conifer Elementary. This decision came about first as an effort to transfer all English language learners in a bilingual pre-school offered at that site. This was meant to serve native Spanish speaking families but was open to others. The following year the district decided to bus all non-proficient English students to Conifer Elementary where it taught K-2 in Spanish and operated as a late exit transitional program to an all English grades 3-5. Each following year another grade was added to offer Spanish. Around nine years after the first bilingual pre-school classes, Conifer Elementary had transformed into a 50/50 dual language school for every grade level pre-K-5.

The early design was described by the district trainer as "messy but the intentions were right on (personal communication, November 17, 2011)." There were three classes for each grade level, one in English, Spanish, and either. This model did not seem to work as well as it was determined through study of the extant research that bilingual students associate a teacher or class as language specific. Currently there was still a three class per grade level with one being English, Spanish, and self-contained. Within the last five years, Spanish classes were first offered at Landmark Middle School. By this time, Conifer Elementary had formally structured a 50/50 bilingual school through all the grades and now proudly offered a continuation of dual language at the middle school.

Conifer Elementary's dual language program operated under a document titled, "Integrated Sheltered Instructional Model." This model focuses high amounts of comprehensible input for all four language domains of listening, speaking, reading, and writing. It front loads key vocabulary through pre-teaching, accessing prior knowledge, and building background knowledge. Many strategies come from sheltered instruction including Guided Language Acquisition Devices (GLAD). The GLAD strategies came about through the efforts of a couple of Californian teachers in a language diverse classroom. Their combined research into language acquisition and trial and error resulted in the creation of the GLAD strategies. This is the program model from which my students in the bilingual science class came.

Participants

The participants were selected from the dual language science class I taught. There was a range of language proficiency among the group in Spanish and English. Language proficiency is defined as the ability to communicate with the target language through reading, writing, speaking, and listening. Three students were ultimately selected from this class to be the participants in this action research. I selected 10 students who had shown strong production through journaling to whom to send consent forms. Seven of them returned the forms and I used journaling, survey questions, and classroom observations to select three. I determined to select two first language Spanish students, a boy and a girl, and a first language English student. Josefina was the female first language student and Pablo the boy. Beverly was the first language English student. This was important to have a representative of each gender and also of each native language. This diversity of participants allows for stronger triangulation of the effect of

the interactive language journal. The names I used here are pseudonyms and other identifying information was avoided.

Data Collection

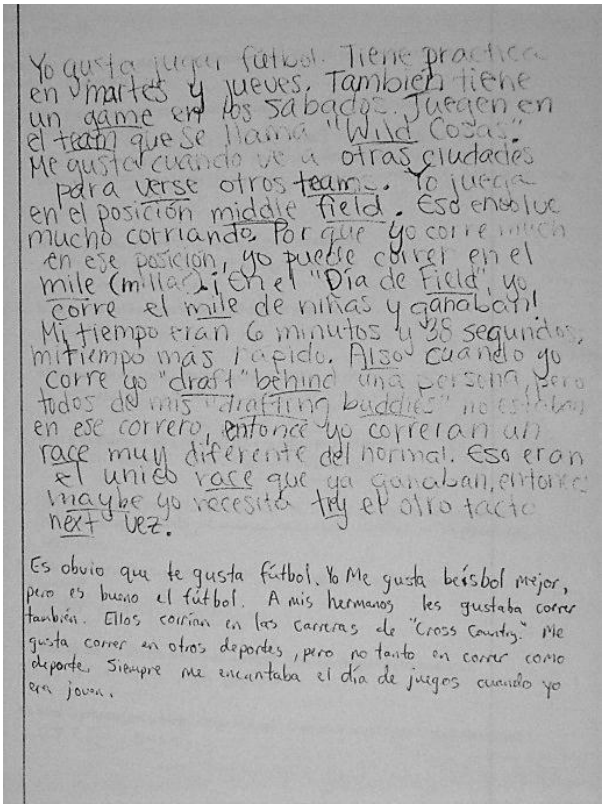
The multiple case study model.

I wanted to see how using an interactive language journal affected use of academic Spanish in writing. The interactive language journal was an organized, scaffolded, and developmentally appropriate tool to foster gains in language proficiency. Analysis of writing samples and determination of writing attitudes and behaviors through survey questions and field observations were employed as the data collection devices to answer the research question. It seemed to me that the most appropriate research model to collect the data to inform my research question was a multiple case study due to the ability to deeply analyze data in the context of the person's academic language experiences. This would put value on the change in writing that was recorded in early entries compared to the later entries with the use of vocabulary building strategies.

A multiple case study allowed me to select a strategic sample of students to study to find effects in academic writing. The multiple case study gave credibility, transferability, dependability, and confirmability to the research. Credibility was established by using data from a prolonged period of 8 weeks for observations, writing, and interviews (Mertens, 2010). Also, triangulation from these data sources spoke to the credibility of the conclusions (Mertens, 2010). The necessity of using a multiple case study over a single case study was due to the transferability of my conclusions as well. The case study format gave the context in a "thick description" type of way. More than one case study also strengthened the validity of the results (Mertens, 2010). The multiple

case study model made my research dependable through documentation of the changes unique in each case and by maintaining a case study protocol in each case of the multiple case study (Mertens, 2010). The ability to track my claims to the specific quotes, observed actions, and writing sample analyses made my research confirmable by providing a "chain of evidence" (Mertens, 2010).

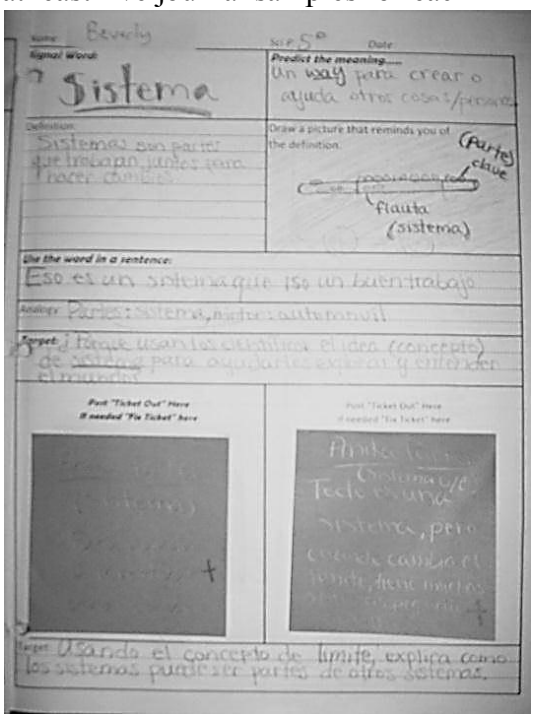
Qualitative and quantitative methods. I chose to collect my data through the methods of observation, writing samples, and survey questions. I benefited from being the classroom teacher in this bilingual middle school science context, and therefore took on a participant-observer (Mertens, 2010) role. I hoped to see, hear, and infer the participants' attitudes, engagement, and interactions with peers through classroom observation. The interactive language notebook lent itself to cooperative speaking, reading, and writing. This was one of the components that I wanted to measure qualitatively. In order to collect data on this in its natural setting, in needed to be observed. Language theory supports the social nature of interaction (Mitchell & Myles, 2004).


Yo gusta juger fútbol. Tiene practica en martes y jueves. También tiene un game en los sábados. Juegan en el team que se llama "Wild Cosas". Me gusta cuando voy a otras ciudades para verse otros teams. Yo juega en el posición middle field. Eso envolve mucho corriando. Por que yo corre much en ese posición, yo puede correr en el mile (milla) ¡En el "Día de Field", yo corre el mile de niñas y ganaba! Mi tiempo eran 6 minutos y 38 segundos, mi tiempo más rapido. Also cuando yo corre yo "draft" behind una persona, pero todos de mis "drafting buddies" no estaban en ese correro, entonce yo correran un race muy diferente del normal. Eso eran el unico race que ya ganaban, entonce maybe yo necesito try el otro tacto next vez.

Es obvio que te gusta fútbol. Yo Me gusta béisbol mejor, pero es bueno el fútbol. A mis hermanos les gustaba correr también. Ellos corrían en las carreras de "Cross Country." Me gusta correr en otros deportes, pero no tanto en correr como deporte. Siempre me encantaba el día de juegos cuando yo era joven.

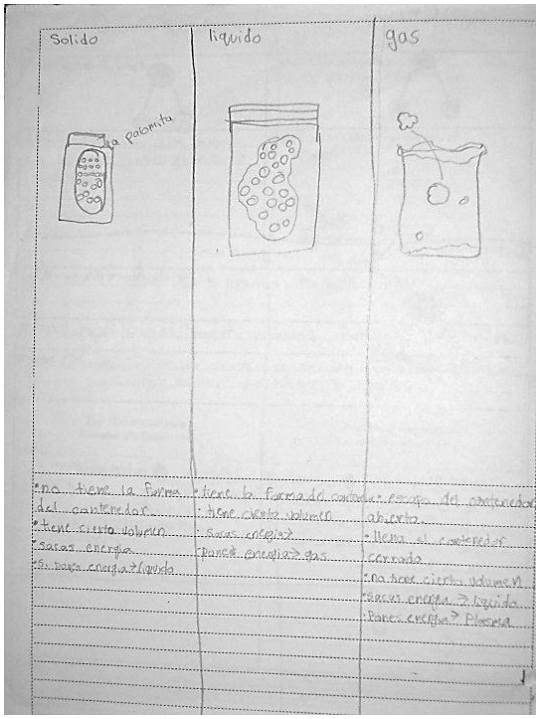
Photograph 2. 1 Sample Dialogue Journal Page

Student artifacts. I planned to analyze at least five journal samples for each participant. See the sample to the left in Photo 2.1. Writing samples also included the "Brain on Paper Science Notebook." Therefore, some samples were reflective writing, while others were vocabulary-based such as the target sheets. An example of the target sheet is to the right in Photo 2.2. This was a page where the vocabulary word of focus would be written as the signal word. Students then wrote a prediction to show me prior knowledge, used the word in a sentence they generated and recorded the target for the day. The next day was to copy the definition, draw a picture, and complete an analogy. At the end of the class students answered the daily target on a sticky note and place it on a bulletin board. I corrected it and the next day students "corrected" their target as needed. Another kind of page in the "Brain on Paper" Science Notebook was the notes page. This page had the top half reserved for sketching or drawing and the bottom half for written descriptions. An example of this kind of page is found on the next page in Photograph 2.4. Writing samples allowed me to measure writing quantitatively and qualitatively. I analyzed writing through counting words, checking several grammar points as a percentage correct in a passage, and writing proficiency based on the American Council on the Teaching of Foreign Languages



Photograph 2. 2 Sample Target or Vocabulary Page

(ACTFL) proficiency guidelines (Swender, Conrad, &Vicars, 2012). Comparison was made of writing over time. Photographs of writing samples enhance the analysis as well since they show the work in the student's own handwriting and style.



Photograph 2. 3 Sample Science Notebook Sketch Page

Through the survey questions, data was collected about attitudes about writing for the participants. The survey questions are included in appendix E. I hoped to explore the participant's prior experience with writing and how this conception changed throughout of the study. I hoped to perceive the implicit knowledge of writing through probing early memories of writing. This should have given voice to the participant and her lived experiences with writing. If there were any change to these attitudes and writing, I wanted to see how the interactive language journal affected it.

Analysis

I planned to use narrative description in my analysis. The use of thick description of my pedagogy and classroom environment aided in a holistic view of the data. I looked for patterns in the field notes to see changes over the 8 weeks. I used clustering to narrow the codes from observations to a few themes. I also used the observations to see how the interactive language journal affected behaviors, attitudes, and interaction by observing change. I anticipated that this change would present itself in the quantity of

words written and quality of grammatical writing over time. This change might have been illustrated in a visible change of behavior toward writing during our eight week study. Other grade level science classes used the "Brain on Paper Science Notebook", but I wanted to compare those classes to the bilingual class that also used the dialogue journal component. Would the journaling inform my instruction? Would the journaling give writer opportunity to use academic Spanish in a way that could not be seen in the science notebook?

I showed the analysis of writing samples through tables and charts. Themes were displayed in a chart. The writing samples allowed me to measure growth in quantity and quality. I wanted to see if the interactive language journals aided in quantity writing, quality writing, both, or neither. The survey questions opened up the participants' lived experiences and attitudes about writing. There is interest in how the interactive language journal affected these. Survey responses were coded to find the big ideas that emerged from the data set. Through clustering, I coded and identified the top 5-7 themes that answered the research question. My goal was to identify specific themes that related to the research question and literature.

Limitations

My research bias was that I hold to the natural language philosophy of teaching language in context, teaching grammar implicitly, and looking for a predictable step-by-step growth in language proficiency. I also identified myself as a social constructivist, so that all students had pre-existing schema, constructed their own meaning, and meaningful learning occured in social interactions of partners, groups, and classes. I admit that I wanted the interactive language journal to be successful, and acting as an informed

educator, I believed that it was a best practice of scaffolding writing. As part of my lived experiences, I had formally studied German, Spanish, and American Sign Language. I lived in a Spanish-speaking country for 2 years, effectively being a language learner in that situation similar to some of my student's language journeys. Furthermore, this was part of my first experiencing teaching in a bilingual classroom.

Due to the qualitative nature of this action research, any growth in the development of English language acquisition could not have been directly attributed to only the interactive language journal, although the research question may have given that impression. The writing prompts used in the writing samples may not have been equal in their ability to prompt writing for the participants. The relative short amount of time of eight weeks was a limitation in this study. A quarter long or yearlong analysis would have given more opportunity to see change over time. Also, by limiting the research to a handful of participants, I potentially missed out on data from the rest of the students.

Chapter 3: Findings

In this chapter, I will present the "big picture" of my findings by analyzing the survey questions, dialogue journals, and field observations. The participants in this study were students in a seventh grade dual language science class. Following this analysis, each participant's data will be analyzed in the context of the class.

Surveys Questions

Each student in the class completed a 10-question survey about writing. The survey is included in Appendix E. Observations from these surveys revealed that the students have been writing in Spanish since they were 5-7 years old. Now as 12-13-year-olds, they have been writing in Spanish for as long as they have been writing in English. Earliest memories seemed to include writing from second grade or younger. Some students wrote that they remembered writing their names. Others reported on a book they wrote in a previous grade in which they were proud. One student reported on a book that was written the previous year. Some participants wrote about everyday life. This took the form of shopping lists, writing letters, taking notes in class, or writing in a journal. Students also remarked on areas they wished to improve in their writing with the most common responses related to spelling, grammar, or handwriting. A few students wrote that they wished to improve their vocabularies. Still, some students wrote one or two word answers to the survey questions such as "everything", "nothing", "IDK."

There were four survey questions put on the end of one of the unit tests. The first pair probed into the presence of literature, books, magazines, or newspapers at home in English or Spanish. The other pair of questions sought out which language(s) was used at home. Interestingly, students that reported using both English and Spanish at home usually wrote that Spanish was used with the parents and English with siblings. This is

an example often seen in immigrant families where the children learn the dominant language of the new community with much greater proficiency than the parents. The normal tension between parents and children is amplified through the language tension of children choosing to use the dominant language which distances them from their parents and moves them nearer to the mainstream culture (Suarez-Orozco, et al. 2008).

Another observation that I made with the literature questions was that students who seemed to have grade-level literacy tended to inform that there were many kinds of literature in the home in one or more languages. On the contrary, students with below grade-level literacy simply answered that there was little or no literature in the home in either language. This dearth of printed language forms in the home reportedly contributes at least partially to the vocabulary deficiency of children from lower socio-economic statuses compared to children of higher SES (Hart & Risley, 1995).

This survey data collected at the end of the test seemed to give support to the necessary learning environment detailed by Krashen's Input hypothesis and Affective Filter hypothesis. These ideas establish the basic premise that the only requirement needed for language learning is comprehensible input that is meaningful to the learner (Mitchell & Miles, 2004). From a teacher perspective, some of the low literacy students did not seem to value the texts available for class. This could mean that the class literature was not comprehensible, not meaningful, or neither to those students. Sometimes a student would be heard to comment during reading activities "I don't do chapter books," or "This book is stupid," and also "I don't understand anything in this book."

Dialogue Journals

Each week, the students wrote in their science journals for 10 minutes. I read the journal entries and provided feedback to the students. This dialogue journal allowed the participants to use academic Spanish authentically and also enabled me to respond to them in developmentally appropriate ways. In addition, use of the journals provided a glimpse into the persona of the students and offered a context to better understand the background knowledge of the participant. The dialogue journals were written on loose leaf notebook paper which were collected at the end of the 10 minutes and returned to the students in preparation for their the next dialogue journal entry. Some students in the class wrote for only a few of the minutes and looked around the class as if they were searching for something else to write. Others would have continued writing if there had been no time limit. The time limit was an effort to establish a control to use as a measurement of growth.

The first prompt for the dialogue journal was "How do you use energy every day?" This was during the energy unit. It was interesting to see that some students in this bilingual class wrote out a bulleted list. Others wrote full paragraphs. Two of the participants for this particular study wrote in paragraphs. Their comfort level in writing in Spanish was high. Participants wrote about electricity in their homes and water in their bathrooms examples of energy usages throughout the day. Many also wrote about physical activity and how that is a use of energy.

The second prompt for the dialogue journal was, "What has been your favorite lesson of any science class?" Participants wrote about the sheep eyeball dissection that was just completed a few days before. Others referred to the GAK Investigation that they

completed a couple weeks prior. This lesson involved the students mixing two liquid solutions together to make a polymer that we called GAK. This substance sometimes acted like a solid by keeping a shape and other times acted like a liquid, like dripping. The majority of the details the participants provided were of lessons from this year. However, some commented on a model made of a volcano or described a science fair project completed in previous years.

The third prompt was: "What do you like about school? What do you not like about school?" The responses to these journal prompts showed a preference for physical education and lunchtime. Many participants wrote about how they valued the time and opportunity to socialize with their friends. Another notable theme throughout many of the entries was an importance on learning. The participants wrote about their favorite classes and what made them wonderful. I noticed patterns of preferences for classes such as art, physical education and science. The reasons students gave for these included the opportunities to be active, use their own talents, or hands-on activities.

Students last wrote about which unicellular organism or one-celled life form that we had studied they would like to be. They had 5 choices including two kinds of bacteria and three kinds of protists. Many students chose an animal-like protist and explained that they liked animals more than plants, fungi, or bacteria. A few students went into great detail using some of the vocabulary we had studied, such as producer, consumer, decomposer, nucleus, multicellular, and reproduction types.

Field observations

The students were observed throughout an eight week period in their bilingual science class. Some students showed great focus and concentration throughout their

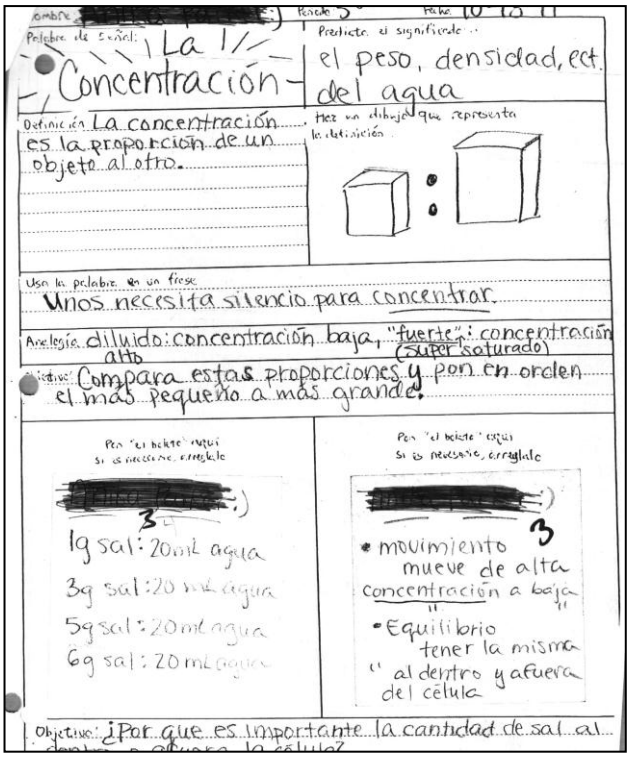
Photograph 3. 1 Research site

observations, as shown by their posture in their chairs and demeanor of their conduct. Some students were more shy and reserved while others could not contain spontaneous bursts of dialogue. Most were between the two extremes, although it became apparent that there was a wide spread of language proficiency among the class. A few students insisted on using English and asked to see copies of the readings or tests in English. Others had strong Spanish literacy.

The classroom was a science lab room with three sinks in the back of the room and counters around the walls with cabinets for storage. Students sat at 2-person tables in chairs on a tile floor with windows along one wall. The enrollment of the class was 32 students with about 75% of them being native Spanish speakers. The other fourth were native English Speakers. A few of the native Spanish speakers were significantly stronger in their English literacy than in Spanish. Evidences of this being a bilingual class were that the whiteboard and projector showed a set of instructions, targets, and information in English and in Spanish. The word wall on one of the walls showed bilingual vocabulary with accompanying drawings. The teacher instructed in Spanish 90 percent or more of the time. Students were expected to respond, read, and write in Spanish.

The average class period of 70 minutes went from Monday to Friday. Students spent the first 15 minutes of class completing and discussing a “target page” which focused on a vocabulary word for 2 lessons. Photo 3.2 shows the target sheet for the word “sistema” (system) of Beverly, one of the case studies discussed below. The first

day of the word was to access prior knowledge. Visible on this sheet of paper is the new vocabulary word in the top left of the page. Next Beverly wrote her prediction of what she thought the word would have meant before she learned the definition in the top right of the page. This student also used the word in a sentence and copied the daily learning target in the middle of the page. The focus of the second day of the new word was identifying the correct conception of the word. In the "sistemas" target page model, she wrote the scientific definition and drew a picture in the top half of the page. Moreover, above the orange sticky notes she completed an analogy and below them she copied the daily target. The daily objective was recorded and discussed, with a review of the prior lesson's objective before moving on with the lesson. Each word had a signal phrase, which was a verbal chant with gesturing (total physical response method). This device was employed as an attention getter during transitions. The 50 minute chunk of time dedicated to the lesson was usually broken up between two or three activities which usually included some type of visual, video, hands-on activity, and writing. The last 5 minutes were spent on completing an "exit ticket" which was answering the daily objective and posting it on a bulletin board on one of the walls. In the photo 3.2, these exit tickets are the orange



Photograph 3. 2 Target or Vocabulary Page

sticky notes on the bottom half of the page. This ticket would be reviewed and modified in the next class period by the student as needed. Let us look now at each participant.

Josefina

Survey and background. Josefina was a native Spanish speaking 7th grader at Landmark Middle School in the dual language science class. Neither her mother nor her father was educated past 6th grade due to the lack of opportunity for schooling in their Mexican town and the need to work. I wondered what it must be like to have more formal education than my parents by 7th grade. Josefina reported that she had literature, books, magazines, or newspapers in both Spanish and English at home although she gave no specific examples. Furthermore, she identified that both English and Spanish were spoken at home "mucho" (a lot). She had been writing in Spanish for 9 years, since preschool. Her preferred language to write in was Spanish. While mentioning that she could be creative if given a topic, she also stated that, "casi no me gusta escribir porque habeces no se escribir unas cosas (sic)." (I almost don't like to write because sometimes I don't know how to write some things.). In answer to the question, "What do you not like about writing?" Josefina simply wrote "todo" (everything). Apparently, she had done some of the writing for the family due to her comment in the survey about using writing in everyday life, "solo la uso cuando mi mamá necesita esribir una palabra correcta." (I only use [writing in everyday life] when my mom needs to write a word correctly). Her goal in writing was to write correctly and with neater handwriting. Interestingly, she was the only student who wrote that she was not sure what her earliest memory of writing was. Most students wrote about kindergarten or 1st grade writing projects.

Field observations. In field observations, Josefina was attentive in class. She usually was paying attention during instruction. She had been seen to be mindful in completing her work. While sitting with a native English speaking classmate, she had been seen helping and translating for her. This was important pedagogically because she often represented a more capable peer in the framework of Vygotsky's zone of proximal development and scaffolding which is a major tenet of Sociolinguistics that states that language learning is a social endeavor (Mitchell & Myles, 2004). Her solid foundation in Spanish allowed her to help others learn. She had a vast Spanish vocabulary of common, every day jargon as well as academic Spanish. In language acquisition theory, it has been shown that most language learners could develop the Basic Interpersonal Communication Skills (BICS) within a six month to two year period (Gottlieb 2006; Peregoy & Boyle 2008). My observations were that she had moved beyond BICS and into Cognitive Academic Language Proficiency (CALP). This mode of language is what is necessary for success in school because it is the academic language. CALP often takes five to seven years in ideal situations to develop (Gottlieb, 2006; Peregoy & Boyle, 2008). This was the start of Josefina's eighth academic year. One thing that could happen in a home like Josefina's was that the children would develop strong casual or oral use of language but be lacking in formal or written language.

In comparison to her classmates, Josefina showed a strong Spanish literacy. She would develop her writing with a beginning, middle, and end as well as use complete sentences often. She seemed to have developed strong writing skills and math skills. She definitely lived up to the role of leader with regards to language proficiency in this class.

Journal entries. Josefina's journal entries showed strong academic Spanish. I placed her in American Council on the Teaching of Foreign Languages (ACTFL) proficiency level of Advanced rather than Superior because her writing was still concrete rather than abstract. This was an age appropriate place to be in writing. She fit best at Advanced rather than Intermediate because she had good control of grammar and would be easily understood by native-readers unaccostumed to reading a language learner's writing. She was writing in paragraph form as well. I matched Josefina's first journal entries to ACTFL proficiency level of Advanced Low. Parts of her grammar were strong such as adjectives matching nouns and conjugating verbs correctly. Weaknesses in grammar came mostly from lack of most accents and misspelling using letters with the same phonetic sound. Overall, Josefina's use of grammar fit best with the Advanced Low description of "minimal control of common structures" while also being clear that she could write in past and present tense, including that her writing was not "substantive" in paragraph form (Swender, Conrad, &Vicars, 2012, p. 12).

Figure 3.1

Quantitative Analysis of Josefina's Journals

Analysis Item	1st Journal	Last Journal
# of words	55	113
# of sentences	5	7
% words spelled right	89	94
% matching nouns/adjectives	100	100
% Verbs conjugated right	100	100
% complete sentences	80	100
% words in Spanish	100	98

Josefina's final entries were Advanced Mid in my judgement. To see a comparison of first to last entries, see figure 3.1 By her final entry, she had taken out the incorrect "H" in words such as "a mi me gusta" and "a veces". In the earlier entries, she had written the same words, "ha mi me gusta" and "habeces". This showed a "good

control of a range of grammatical structures (Swender et al. 2012, p. 12)." This form of phonetic spelling is common in homes where oral Spanish is used, but Spanish reading and writing is less developed. It is also an example of fossilization, meaning that a language learner becomes frozen in her language development and perpetuates errors that she has been taught to correct (Mitchell & Myles, 2004).

In Spanish, every letter has only one sound. A couple letters will make the same or nearly the same sound. When transferring oral language to written language, it is easy to confuse b and v, h and a, ll and y, and finally c , s, or z. Being informed of her parents' educational level this makes sense. At home the family is fluent in oral language. She must be familiar with these words in an oral setting. Yet when it is time to write them, she might use the wrong letter for the sound of the word since she has not read the word often and seen it spelled correctly. I inferred that her written Spanish is stronger than her mother's since she wrote that she writes for her mother to be sure it is written correctly. Even with these conditions, in her last entry she wrote nearly 50 words more than her first entry and four more sentences than her fewest in a journal entry. To me this demonstrated an increase in writing proficiency.

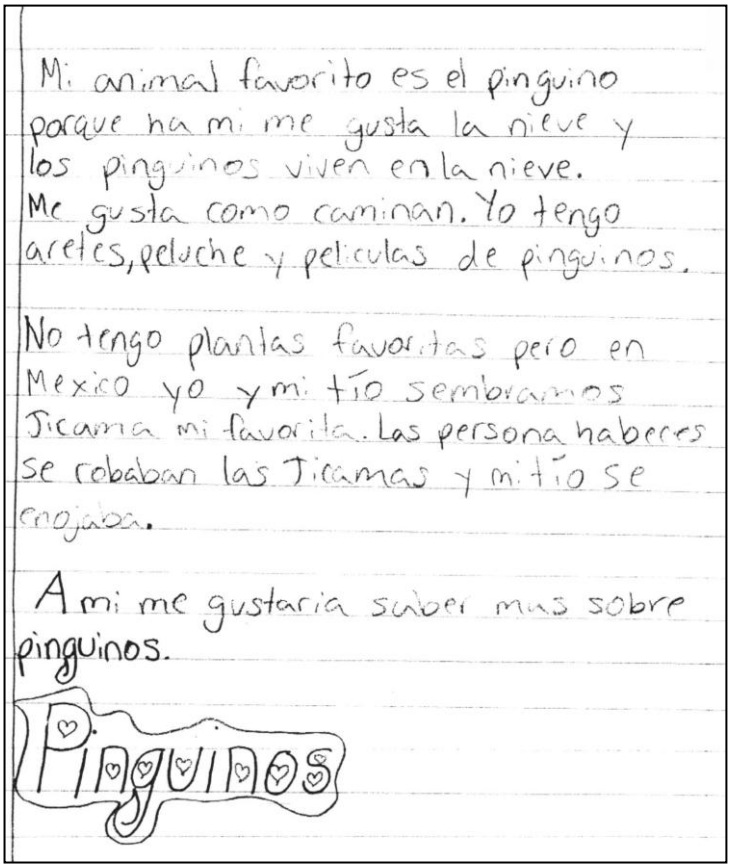
Another description of Advanced Mid was that the writer could write extensively about a topic, an occurance which I did not observe in the first entries (Swender et al. 2012). Her growth of only one level of proficiency fit with her having started in an advanced level of writing and having more rigorous territory to cover in order to improve to the next advanced level.

In answering the prompt of, "How do you use energy every day?" Josefina wrote about the lights in the classrooms, keeping food either hot or cold, running in physical

education class, and moving our bodies. I wrote back to her asking if she had ever eaten food that was not kept cold as it should. She answered no, so I responded that she must not have gotten sick from eating spoiled food then. She also was comfortable with relating her writing to her lived experiences. This is a strength of seeking out funds of knowledge for use in instruction (Gonzalez, Moll, & Amanti, 2006). Her motivation to write will be higher when she can use relevant and meaningful parts of her lived experiences. This was especially important to a writer like Josefina who admitted that she did not like to write. Brain research informs us that relevance and meaningfulness are keys to getting the brain's attention (Zull, 2005). Josefina enjoyed hands-on learning as evidenced in her journal entry on "what is the thing you have like best about any science class?" She enjoyed the cheeto roast. This was a demonstration of energy in food that was measured by burning a cheeto under a beaker of water and measuring the change of the temperature of the water. The chemical energy in the cheeto was transformed to heat energy and light energy as shown in the flame. She wrote of her surprise of what happened to the cheeto when it caught on fire and feeling the heat of it. The value of using several learning modalities in pedagogy is that it allows the language learner various "routes" to acquire language. In this theory, the learner is the one who discovers what the grammar rules are before she follows them (Mitchell & Myles, 2004).

In asking about her favorite animal and plant, she responded that her favorite animal was "el pingüino." (penguin). This journal entry is found in Photo 3.3. She explained that she liked snow and penguins lived in the snow. She also wrote about a plant called "Jicama" from Mexico that her uncle grew. Josefina provided rich funds of knowledge in her journals as previously and following details attest. By allowing and

actively searching for Josefina's funds of knowledge, she was empowered to offer her valuable lived experiences as a resource for others in the class to learn (Gonzalez, Moll, & Amanti, 2006).


Mi animal favorito es el pinguino porque ha mi me gusta la nieve y los pinguinos viven en la nieve. Me gusta como caminan. Yo tengo aretes, peluche y peliculas de pinguinos.

No tengo plantas favoritas pero en Mexico yo y mi tío sembramos Jicama mi favorita. Las persona haberes se robaban las Jicamas y mi tío se enojaba.

A mi me gustaria saber mas sobre pinguinos.

Pinguinos

Photograph 3. 3 **Sample of Josefina's J**ournaling

This 7th grader decided that she would have liked to be a fungus-like protist if she had to be a unicellular organism because she liked mushrooms. She recorded that she liked mushrooms because they come out in the Fall and Winter and her favorite time of year is Winter. This statement allowed use of funds of knowledge also. As an instructor this told me of her prior knowledge of fungi which many of her classmates did not have. Here, Josefina could be an expert and share her valuable lived experiences to inform the class about the Fungi Kingdom (Gonzalez, Moll, & Amanti, 2006). She also added a connection from class into this mushroom discussion by musing if mushrooms were plants or if they needed oxygen. We had studied the process of cellular respiration, by which most organisms use glucose and oxygen to get energy to power their cells. This also convinced me that her last entry was Advanced High due to showing an ability to construct a hypothesis (Swender, et al. 2012).

Pedro

Survey and background. Pedro was a native Spanish speaker in the bilingual science class as well. He did not identify which language he was most comfortable writing in, but wrote in Spanish for only three of the 10 survey questions. This led me to believe that he felt that he was stronger in English than Spanish. However, he wrote all of the answers to the four survey questions on the test in Spanish. Later he did write in answer to what is easy about writing, "I can write in english or spanish (sic)." He identified conventions to be what is difficult about writing for him and had the goal of "do[ing] the conventions right with no mistakes." Pedro remarked that he liked when you know a thing by taking notes. What he did not like about writing was when he did not know what to write and had to think about it. He reported that his earliest memory of writing is when he wrote a sentence on the wall. I believe that this was probably a Guided Language Acquisition Device (GLAD) strategy used in early grades with sentence strips and butcher paper. Many of the teachers in Pedro's elementary school were trained in GLAD strategies. GLAD strategies were developed by two teachers in California who worked in an ultra-language diverse classroom whose intense and comprehensive research coupled with their own trial and error led them to create the framework of GLAD (Personal communication, 2011).

Pedro revealed that language at home was used in the following manner: "hablo [español] con padres y hermanos. Hablo ingles con mi tio." (I speak Spanish with my parents and siblings. I speak English with my uncle). Pedro's home seemed to be a literature rich environment by having literature in Spanish such as "*Hay un fantasma*"

(*There is a Ghost*) and literature in English like *Alien 3*, *Gremlins*, and the *Harry Potter* series.

Journals. Pedro's writing best fit into the proficiency level of Advanced due to grammar usage but by length fit best into Intermediate. He used past and present tense well, which is indicative of Advanced proficiency in writing. However, his first entry was not even written in paragraph form, but in bullets. Advanced level writing exhibits "paragraph length and structure (Swender et al. 2012, p. 12)." He did not produce as much as either of the other participants. Prioritizing the quality of his writing over his quantity I placed him at Intermediate High for his early journal entries. He, like Josefina, lacked most of the accents in his writing. Although I noted that the four times he used the word "energía" (energy) he put an accent on it twice.

His final journal entry had about double the amount of words and was written in paragraph form as can be seen in Figure 3.2. This appeared as a strong indication that by the end of the dialogue journals, he showed strong academic writing. It was interesting that in the middle three entries he had written between 69-84 words which was almost four times as many as his first entry. His last entry had the highest spelling of the five, yet each word that needed an accent did not have it. He would best be placed at Advanced Low in his later entries. His grammar of nouns matching adjectives, conjugation of verbs, and verb tense usage placed him

Figure 3.2

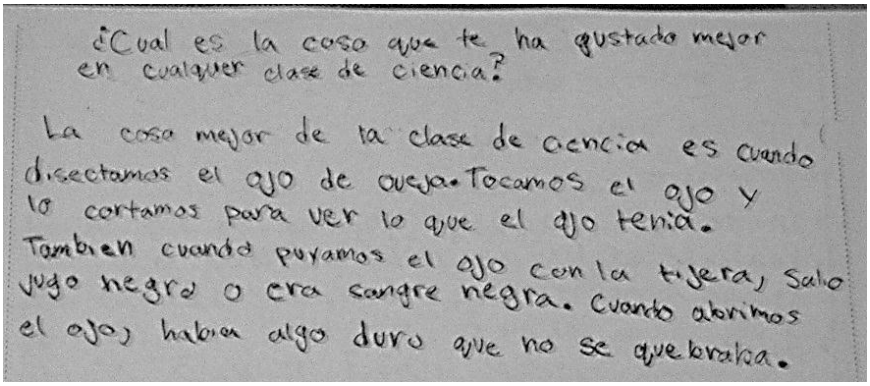
Quantitative Analysis of Pedro's Journals

Analysis Item	1st Journal	Last Journal
# of words	23	49
# of sentences	0	5
% words spelled right	87	98
% matching nouns/adjectives	100	100
% Verbs conjugated right	100	100
% complete sentences	80	100
% words in Spanish	100	98

in advanced. His word production and sentences matched best with the low level. His growth up one level of proficiency fit his situation of being a native Spanish speaker. He had gained a strong casual vocabulary (BICS) and in this class was presumably focused on learning the academic Spanish part of science (CALP) (Gottlieb, 2006).

Pedro's first journal entry surprised me in the sense that he wrote in bullets instead of paragraph form. It had not occurred to me that a student would consider writing a journal entry with bullets. Nonetheless, he presented high quality content in his answers to the prompt, "How do you use energy every day?" I responded back to him about his comment of "durmiendo bien" (sleeping well). He added that he sleept seven and a half hours a night because he woke up early. He also nicely phrased as only a middle schooler can the effect of food on energy by writing "azucar te hace loco y te da energia [sic]" (sugar makes you crazy and gives you energy). I responded to that phrase by telling how I used to eat sugar by itself when I was a kid.

At the time of the second journal entry, we had just finished a sheep eyeball dissection in class. This apparently made a big impression on Pedro since it was the sole object of his entry, "what is the thing that you have liked the best about any science class?" (see Photograph 3.4). He describes in detail the cutting motions and the dark fluid that came out of the eyeball. I felt that the


¿Cual es la cosa que te ha gustado mejor en cualquier clase de ciencia?

La cosa mejor de la clase de ciencia es cuando disectamos el ojo de oveja. Tocamos el ojo y lo cortamos para ver lo que el ojo tenia. Tambien cuando puyamos el ojo con la tijera, Salio jugo negro o era sangre negra. Cuando abrimos el ojo, habia algo duro que no se quebraba.

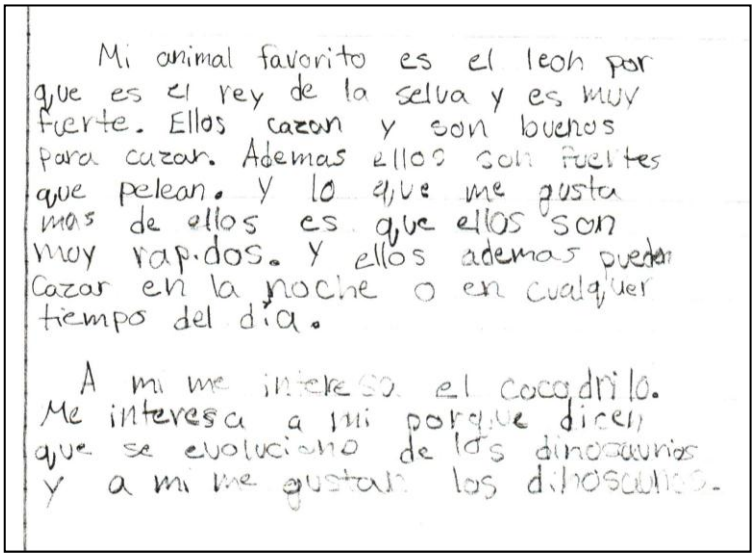
Photograph 3. 4 Sample of Pedro's Journaling

fact that this dissection made such a big impression on him was a direct result of the program model. The dual language science class and the general science classes were deliberately designed to be rich in hands-on activities and labs. This is good for a language learner because the understanding is aided by the additional context of the experience instead of solely on language to understand.

In writing of what he liked best about school, Pedro appreciated science experiments, math projects, and reading in Literacy. Again, these were examples of program models. In the middle school level, students begin to think more abstractly and increase in their ability to think critically. It is also an age where there needs to be a concrete foundation to concepts and highly engaging activities. This also fits with brain research that explains that the learning cycle involves experiential input that is abstracted to a thought, tested against a mental hypothesis, and proven against a conclusion (Zull, 2005). His journal entry for this prompt is shown in Photo 3.4. Pedro also exhibited an error in transfer in his writing. It appeared that if he did not know the word that he would use the English word and make it look Spanish. He wrote that what he liked about school was “leer en litericia” (to read in Literacy [class]). The word for literacy in Spanish is alfabetismo. He transferred what he knew in English, which appeared to be his dominant language into his written Spanish by Latinizing the English word literacy. Pedro continued to not write any accent marks throughout these entries that showed a fossilization of his Spanish. Like Josefina, his Spanish from home likely was mostly oral, and his written Spanish not a major part of home life.

Pedro enjoyed writing about animals and gave specific reasons for the animals he selected as his favorites. I wondered if his journaling of animals such as lions,

crocodiles, and dinosaurs had any cultural or gender implications. He selected as his favorite animal "el león" (the lion), see photograph 3.5. I noticed his use of adjectives as he described the creature, "rey de la selva" (king of the jungle), "muy fuerte" (very strong), "muy rapidos [sic]" (very fast). I pondered on the meaning of these adjectives to a 12 or 13 year old boy of Mexican heritage. I would have liked to explore some funds of knowledge to determine if there were some valuable life experiences he could contribute to the class regarding strength or speed. Perhaps in maintaining the image of machismo seen at this age he included crocodiles and dinosaurs as animals that interested him; other powerful and fearsome vertebrates.


Mi animal favorito es el leon por que es el rey de la selva y es muy fuerte. Ellos cazan y son buenos para cazar. Ademas ellos son fuertes que pelean. y lo que me gusta mas de ellos es que ellos son muy rapidos. y ellos ademas pueden cazar en la noche o en cualquier tiempo del dia.

A mi me interesa el cocodrilo. Me interesa a mi porque dicen que se evoluciono de los dinosaurios y a mi me gustan los dinosaurios.

Photograph 3.5 Pedro's Favorite Animal Entry

It was not surprising to read of Pedro's selection of being an animal-like protist if he had to be a unicellular organism. His entry on animals was his longest entry with 84 words, almost four times as many as his first entry. He chose an amoeba because it lives in water, is a consumer, and reproduces asexually by cloning. However, he uses the apparent made up word of "clamea" which I wondered if he meant "clonea". The verb in Spanish is "clonar" and Pedro wrote what I think was "clonear". Here is another example of transfer. Pedro was familiar with the word and concept in English of cloning.

He went to write about it in Spanish, his perceived weaker academic language of the two. He incorrectly puts a common Spanish ending of "ar"on[3] the English form of "to clone"

Beverly

Survey and background. Beverly was a native English speaker that attended the district's bilingual elementary school. She wrote that she had written in Spanish for "5 years (or less)". I first met Beverly and her mother at the Fall Open house at Landmark Middle School. Beverly expressed some concern before school started that she struggled with all the extra Spanish words in everyday conversation that she did not know. This matched with her answer to the survey question, "What would you change about your writing?" She answered that she would change her Spanish vocabulary, presumably to increase it. It was a goal of Beverly's to write correctly in Spanish. A further ambition for Beverly was to publish a book someday. Her earliest memory with writing was when she wrote informational booklets in 1st grade. She found it difficult when she did not know the verbs or words to write in Spanish. The researcher observed that her journals had these words signaled by writing the word in English and underlining it, as if to say, "This is the word I want, but do not know it."

Beverly enlightened me as to the extent of Spanish literature in the home being limited to a couple of picture books and a chapter book. On the other hand, there was an abundance of English literature of all kinds and in different levels. Her parents were both college graduates and in professional careers. Being a native English speaker and Spanish language learner, she exclusively used English at home.

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[3] Note these "ear" verbs: cliquear (to click-like on the computer), balancear (to balance), bloquear (to block), hornear (to bake), golpear (to hit or strike), zapatear (to stomp or kick)

Journals. I determined that Beverly's first journal was at an Intermediate Low level of the ACTFL proficiency guidelines. The Intermediate level is characterized by "[using] basic vocabulary and structures to express meaning that is comprehensible to those accustomed to the writing of non-natives (Swender, et al. 2012, p. 13)." I observed basic errors in grammar and spelling. There was some repetitive structure and topics were tied to highly predictable content and personal information. Her journals were written primarily in the present tense and could meet practical writing needs that communicated facts and ideas of personal interest (Swender, et al. 2012).

There was obvious growth in Beverly's academic writing when comparing her first and last journal entries such as in figure 3.3. She produced over 20 words more in the same amount of journal time and improved her verb conjugation and more correctly matched her nouns and adjectives significantly. In her final entry she attempted to use past tense once as well. Analysis of the last journal came to the conclusion that Beverly's writing had improved to the Intermediate High level of the ACTFL's proficiency guidelines. She wrote in "paragraph length" and I was confident that "even with numerous and perhaps significant errors [the writing was] generally comprehensible to natives not used to the writing of non-natives, but there [were] likely to be gaps in comprehension (Swender et al. 2012, p. 13)."

Figure 3.3

Quantitative Analysis of Beverly's Journals

Analysis Item	1st Journal	Last Journal
# of words	110	133
# of sentences	9	10
% words spelled right	90	95
% matching nouns/adjectives	71	87
% Verbs conjugated right	40	57
% complete sentences	100	100
% words in Spanish	93	99

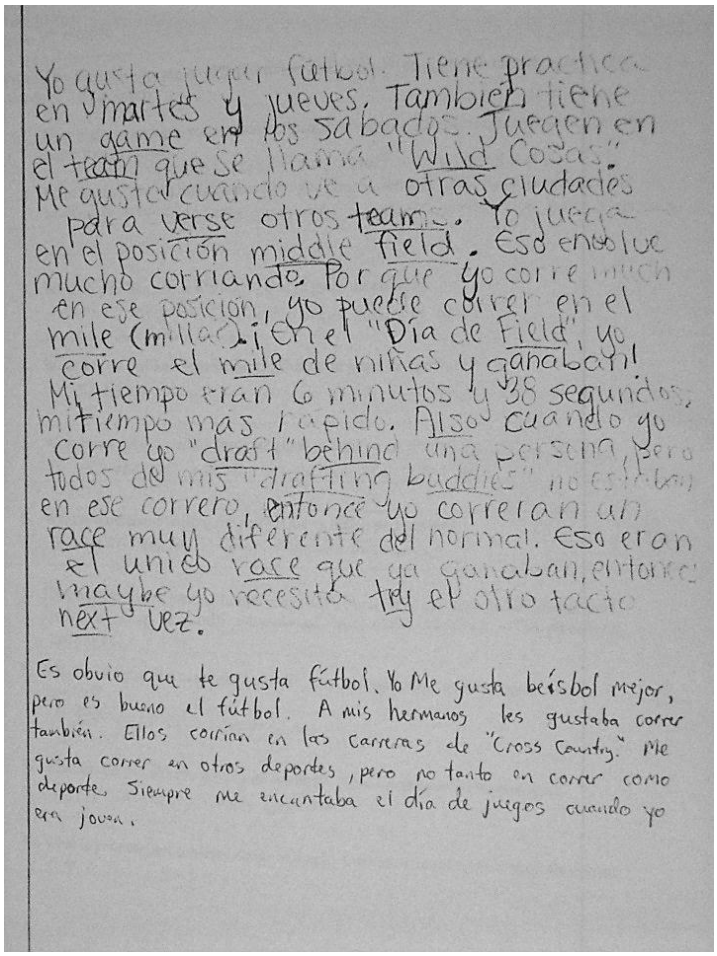
Furthermore, the journal's vocabulary, grammar, and style corresponded to Beverly's spoken language. I believed that she would be able to meet all practical writing needs of this level which included "simple messages, ask and respond to simple questions" and communicate simple facts and ideas in "loosely connected sentences" (Swender, et al., 2012, p. 13).

Beverly's first entry about using energy in everyday life showed a good knowledge of the concept. She wrote that, "tu cuerpo uses energia en todos los movimientos, even cuando nosotros blink o respirar [sic]" (your body uses energy in all its movements, even when we blink or breathe). Her specific examples of using energy included taking out the garbage and "tambien usan energia para piensa y escribir los respuestas de preguntas [sic]" (also it uses energy to think and write the answers to questions). These examples also demonstrated her writing proficiency well. It was clear that she could communicate and show ideas using the Spanish language. It was also clear that verb conjugations were still at a developmentally low level. As a program model, students in the bilingual elementary school were encouraged to develop at their own level. Beverly could clearly communicate well to someone accostumed to language learners and I believed could communicate with those not accostumed to language learners as well.

"What has been the best science class?" elicited Beverly's preference for hands-on experiments. "Gusta actually touching las cosas," (I like to actually touch the things). I wondered if the underlining of words was part of the dual language program model. In a way, especially in a timed writing exercise, it was good to put an English word down

and move on when she did not know it in Spanish, rather than use up time wondering about it.

In this entry, she used past tense twice and future once. "Yo me gusta el Español, porque en el futuro voy a ayuda mas sabian un secundo language [sic]" (I like Spanish because in the future it will help more if you know a second language). This statement was illustrative to me of Beverly's language development because it had two examples of transfer. She capitalized "Español" because in English we capitalize the names of languages. However, this is not the case in Spanish. Also, she misspelled "secundo" (segundo) keeping the "c" that is in the English word. Other transfer items I would expect to find in her writing included using the wrong article, such as el or la, with a noun. In this entire entry she used correct articles with her nouns.


Yo gusta juger fatbol. Tiene practica en martes y jueves. Tambien tiene un game en los sabados. Juegen en el team que se llama "Wild Cosas". Me gusta cuando ve a otras ciudades para verse otros teams. Yo juega en el posición middle field. Eso envolve mucho corriando. Por que yo corre much en ese posicion, yo puede correr en el mile (millar). En el "Dia de Field", yo corre el mile de niñas y ganaban! Mi tiempo eran 6 minutos y 38 segundos, mi tiempo más rapido. Alsoo cuando yo corre yo "draft" behind una persona, pero todos de mis "drafting buddies" no estaban en ese correro, entonce yo correran un race muy diferente del normal. Eso eran el unico race que ya ganaban, entonce maybe yo necesita try el otro tacto next vez.

Es obvio que te gusta fútbol. Yo Me gusta beísbol mejor, pero es bueno el fútbol. A mis hermanos les gustaba correr también. Ellos corrían en las carreras de "Cross Country." Me gusta correr en otros deportes, pero no tanto en correr como deporte. Siempre me encantaba el día de juegos cuando yo era joven.

Photograph 3. 6 Sample of Beverly's Journaling

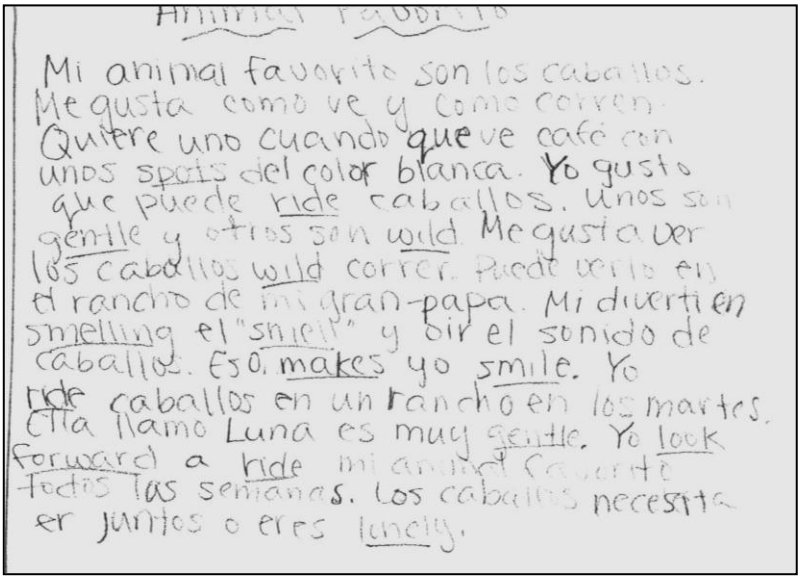
She seemed to get accents just a little better than Josefina and Pedro. She put an accent on the word "también" (also) a few times, but not others. She put an accent on "células" (cells), "fútbol" (soccer),

"posición" (position), "café" (brown), and "día" (day), which the other two participants would probably have not put, even though they were native Spanish speakers. There was a sign of maturity in language development in the sense that Beverly did not put accents on words that did not need them. Sometimes I had observed other Spanish language learners in the class try to compensate for accents by putting them haphazardly on words. Surprisingly to me, I did not notice other signs of transfer that could be common for Spanish language learners such as putting the adjective before the noun instead of after it.

It was fruitful to ask Beverly what she liked best about school of which her journal is Photo 3.5. She wrote the most words, 135, to answer this. She also used the most English in an entry for this one. Presumably, this was an effect of her school day being in English except for science class. Many of the words she was familiar with to describe her many activities were unknown to her in Spanish. The reader can see in the response to her journal that I modeled the correct use of "gustar" (to like). It was interesting to discover that Beverly used "gustar" (to like or to be pleasing to) correctly five of 12 times throughout all her entries. I would deliberately put in a Spanish word for a word that she underlined, such as "carrera" (race). It appeared that this dialogue journal method had an effect on her writing since some of the times she would use a word correctly that she had misused before.

I enjoyed finding funds of knowledge in Beverly's entry about her favorite animal as seen in Photograph 3.7 . She described riding a horse at her great-grandfathers. "Quiere uno cuando que ve café con unos spots del color blanca [sic]" (I want one that I see brown with some white spots). Again she included a word with an accent that the other participants would probably have missed. She also used the past tense in this entry.

"Mi diverti en smelling el "smell" y oir el sonido de caballos [sic]" (I had fun smelling the smell and hearing the sound of horses). One major element to the development of


Mi animal favorito son los caballos. Me gusta como ve y como corren. Quitre uno cuando que ve café con unos spots del color blanca. Yo gusto que puede ride caballos. Unos son gentle y otros son wild. Me gusta ver los caballos wild correr. Puedt verlo en el rancho de mi gran-papa. Mi diverti en smelling el "smell" y oir el sonido de caballos. Eso, makes yo smile. Yo ride caballos en un rancho en los martes. Ella llamo Luna es muy gentle. Yo look forward a ride mi animal favorite todos las semanas. Los caballos necesita er juntos o eres lonely.

Photograph 3.7 Beverly's Favorite Animal Entry

Beverly's Spanish as well as Josefina's and Pedro's is the concept of language learning versus language acquisition. Language learning involves direct instruction about language and grammar whereas language acquisition has indirect instruction on grammar. Krashen explained that acquisition is a "subconscious" process, such as how one learns her first language. Meanwhile language learning is "conscious" and involves "knowing about" a language (Mitchell & Myles 2004, p.45). Each of the students in this class were educated in a dual langauge immersion model of having half of their instructional time in each language.

Beverly's last entry produced her highest quality Spanish grammar and spelling. This was telling because it was a highly academic prompt to pick a unicellular organism that she would want to be. I observed that she was most comfortable with Spanish in the academic setting rather than in the conversational setting. I inferred this due to the production of journal entries and willingness to answer in class. However, when necessity required use of casual or conversational Spanish that we were not studying,

Beverly seemed to instinctively revert to English as the language to ask me questions or explain an answer.

Overall Effect of the Interactive Language Journal

An improvement in academic writing was observed in the journal writings and in the science notebook. Each student had more complete science notebooks, which included the vocabulary target pages, sketching Brain on Paper pages, and homework assignments, in the second unit than in the first. Each student's writing grew when comparing the last journal entry to the first. See figure 3.4 for the qualitative analysis of each participant. Although other factors may have contributed to improvement in both quantity and quality of academic Spanish writing, the interactive language journal gave a place for formal and informal writing, high stakes and low stakes writing. The science notebook component mostly scripted notes and vocabulary for the students to learn. Notwithstanding, the science notebook modeled correct Spanish and gave opportunity for students to produce their own sentences, analogies, and responses to homework assignments. The dialogue journal gave the opportunity for the students to use some of the academic language learned in class in a different context as journal entries. The change over the eight weeks was that each participant began to use a complex grammar structure, such as gustar, or accents correctly where they were seen to

Figure 3.4

ACTFL Writing Proficiency Beginning/End

Participant	ACTFL Writing Proficiency Week 1	ACTFL Writing Proficiency Week 8
Josefina	Advanced Low	Advanced Mid
Pablo	Intermediate High	Advanced Low
Beverly	Intermediate Low	Intermediate High

have done it incorrectly only weeks before. Each produced more written Spanish in the same amount of time and that quantity was marked with significant growth in quality of grammar as well.

Chapter 4: Connections and Considerations

Connections Between Results and Literature

Science notebooks. A common format for science notebooks is a collection of highly scaffolded, written notes (Carter, Hernandez, & Richardson 2009). The student takes guided notes in their notebook including the pasting in of graphic organizers, data tables, and graphs in many current science notebooks. My participants were given their journal/notebook as loose-leaf pages that were stapled together at the end of the unit. The science notebook part of my interactive language journal worked as the guided note taking component of their notebook. The notes were also highly scaffolded to ensure students received accurate and correct concepts.

Worth, Moriarty, and Winokur (2004) affirmed that interactive notebooks promote writing through science content in consequence of the problem-based nature of the discipline. Writing is the natural vehicle to communicate the inquiry process of wondering, investigating, and reflecting. I found that Josefina wrote paragraphs in her journals about mushrooms, winter, and penguins. In her interview question, she stated that she did not like to write. Clearly, the journal write promoted her writing through the medium of science. Also of note was Pedro's three-fourths of a page that he wrote on the sheep eyeball dissection. This turned out to be his longest entry and again, the interactive journal gave him the context to write through the medium of science. Beverly's personal and passionate entries about riding horses, and further her pride in her running races and competing on premier soccer teams found expression in the interactive notebook. Thus, these students' writing developed through the science journaling. I see these phenomena as support for the notion of "writing to learn" rather than "learning to write".

In keeping with the intriguing study by Miller and Calfee (2004), I focused on student journal writing as a means to help make their thinking visible. In the target page where students recorded learning goals, vocabulary words, definitions, sentences, analogies, and drawings, I saw the abstract academic vocabulary become observable from the student's point of view. Beverly gave her understanding of the science concept of adaptation by creating the analogy that related adaptations to DNA as time of year is related to seasons. She gave her understanding of concentration with the drawing of cubes of different sizes. Further science notebook pages (scaffolded notes) in the interactive notebook included sketches and reading strategies that made the student's thoughts on what they read visible.

Braxton (1998) conducted action research on the effect of interactive science notebooks on academic vocabulary development among upper elementary level science students. Her data showed improvement in both the writing and scientific understanding as shown by students' vocabulary usage. Results of my action research revealed that each case study improved their Spanish writing quantitatively and qualitatively. Beverly, for example, used academic science Spanish wonderfully in her journals when she used reproduction, energy role, and habitat.

Research of how teachers can review science notebooks uncovered the problematic nature of over-structuring the science notebook (Shepardson & Britsch, 2004). It turns out that lines on the paper could prevent the creative use of sketches, thereby limiting student journaling. Too much structure, it was argued, can stifle the student self-organization that gives ownership to the student (Shepardson & Britsch, 2004). Certain pages of the interactive language journal my students used had blank

space in the upper half and lines on the lower. This format gave opportunity to sketch and write on the same page. This became a compromise between total teacher-directed note-taking and purely student-generated design.

Worth, Moriarty, and Winokur (2004) wrote about the engaging nature of writing to learn content. I observed this phenomenon throughout the action research. Beverly's entry about choosing to be a plant-like protist showed strong use of content-specific words. The engagement was remarkable in entries that revealed mushroom hills near Josefina's home, and Pablo's writing of how much the dissection was enjoyed. Others in the class were seen to have written a page worth of journaling when it was difficult to get them to participate much in the science learning. Therefore, writing became another tool to engage a few students that did not seem to enjoy the science content as much.

The use of cognitive or picture dictionaries have been shown to aid in the development of language learners (Brechtel, 2001). My students' use of what we termed "Target" pages was a version of this kind of student-generated dictionary. Students demonstrated metacognition through their often inaccurate predictions of new words and in sentence context versus their more accurate drawings and analogies that they made after learning the meaning of the word.

Interactive journals. Journals in higher education settings are becoming common as a reflective writing tool to abstract class discussions or practical experiences. Redman (2005) struggled to lead class discussions of her college language students. She designed the reading journal to scaffold the student's study of literature and be a common starting point for class discussions. I observed that my students also hesitated to participate in classroom discussions. The science notebook component of the interactive

language journal served the same purpose for my students. They had accurate and relevant notes. The journal prompt that asked which protist the student would want to be led most students to re-read their notes about the unicellular organisms we studied. I was impressed with the depth of thought that came from writing those prompts. Each assessment given in class was written with the science notebook to be used as a reference.

A study conducted at Brigham Young University by Brown, Solovieva and Eggett (2011) analyzed the academic writing of language students that had strong conversation and oral proficiency. They came to understand that their students had little formal writing instruction. They had hoped that writing output would drastically increase throughout the study. Instead they found that it maintained or even decreased. However, further analysis showed that writing quality drastically increased. It was as if the proficient speakers needed to unlearn conversation errors in transfer to writing. My first language Spanish students demonstrated strong oral proficiency, although their writing showed consistent errors in use of accents and the letter H. Later dialogue journal entries showed that both Josefina and Pedro were using accents on such words as energía (energy) and question words. Beverly began to use the reflexive verb gustar (to like) correctly by later entries. It was as if these three were unlearning mistakes in the transfer from conversation (in which accents are not seen) to formal writing. This is a resetting of their language parameters (Mitchell & Myles, 2006)

The rather intuitive finding of the use of prior knowledge, inference, and language proficiency in writing development by Hammadou (1991) further cemented the practice of accessing these three concepts when having students write. Our vocabulary target pages extracted prior knowledge and inference through the use of prediction, writing

sentences, drawing the word, and generating an analogy. Students needed to infer the meaning of new words and use them in a sentence. This gave them a chance to draw upon their lived experiences in their writing. Writing proficiency measurably improved as shown in Chapter 3. I purposely selected prompts for the journal entries that would awaken prior knowledge, such as "what was your favorite science lesson? How do you use energy every day? What is your favorite plant or animal?" This practice ensured that each student would have prior knowledge to write about.

The use of interactive journals has become popular in many higher education programs such as science, nursing, and outdoor recreation. O'Connell and Dyment (2006) wondered how to teach their students to write reflectively rather than just descriptively. They found that the reflective skills needed to be explicitly taught and practiced. My students did much of descriptive writing in their science notebook with the taking of notes and filling of target sheets. Even their reading strategies resulted in more of a description of what they wrote than what they were thinking. However, some of the writing from what they read caused them to reflect on what they already knew, what was interesting, and what they still did not understand. They also had reflective writing as seen in their dialogue journals. By making the journal entries a low stakes writing assignment and in the format of a written conversation, I found that students naturally reflected through their writing. This was the part that the students would not normally experience in their science class except it were for the dialogue journal. Brain research supports the practice of using journaling to reflect on what was learned, especially as a closing task. Sousa (2006) suggested reflective writing two or three times a week in a

journal. My students had a reflective writing prompt at the end of each class in the form of an exit ticket that they wrote on sticky notes.

Dialogue journals. Peyton (1987) is recognized as the authority on dialogue journals. This writing strategy is to take the form of a written conversation between the teacher and the student. It is a low-stakes, student-centered, and student-led activity. The teacher takes the role of participant rather than evaluator. Thus, there is no explicit correction of grammar, spelling, or mechanics. The teacher skillfully responds to the student modeling correct conventions but only at a little bit higher level than what the student wrote. I followed this pattern and saw that Josefina and Pablo started putting accents on some of the words, while Beverly started to conjugate more accurately, even with gustar. The fact of being low-stakes writing in a system of high-stakes testing makes a big difference to the student where focus on correct writing stifles the productivity of the activity (Peyton, 1987). This improvement came from only five dialogue journal entries that augmented the science notebook. Imagine the difference with a semester of dialogue journaling! Ample evidence and experience show that the dialogue journal gives the power to the student to write at his level and about things that were meaningful to him. To me, this gives further credibility to its need as part of the curriculum.

Research of language acquisition describes language routes (Mitchell & Myles, 2004) or that each learner comes to understand language structure and grammar in her own way. This would mean that direct instruction on grammar would only aid the student if it fits her language route. Dialogue journals provide the ideal medium for each student to receive indirect instruction of grammar as it fits her language route. I noted

that Pablo wrote in bullets for his first entry. His other entries were in paragraph form. Pablo and Josefina were Spanish first students and they displayed the common errors of mixing up letter with the same phonetic sound, such as b and v; s, c, and z. When I responded to their entries, I used the words they mistook several times correctly. Beverly was an English first student and her Spanish spelling was strong. However, her conjugation of verbs was still developing. Her language route was different than those of her peers. Similarly, I responded to her entries with focus on her weak areas.

Nassaji and Cumming (2000) studied how dialogue journals allow for the proximal zone of development in writing. Each student entry that I read and wrote in response to was at a different level of language proficiency. If the student wrote only a few lines, then I only wrote a few lines. If the student wrote a few paragraphs, then I would write more. Each case study participant improved the quality and quantity of their writing. My responses targeted on their language needs and I wrote at what Krashen called i +1 (Mitchell & Myles, 2004). This allowed for an implicit language lesson that was developmentally appropriate for each entry response.

The ongoing question of correction in a language class was put to the test in the study by Pessoa, Hendry, Donato, Tucker and Lee (2007). They found that implicit correction in a Spanish content classroom brought about greater results than the direct instruction of grammar. My dual language class was supposed to include Spanish literacy as well as science content. Dialogue journals allowed for me to give targeted and specific implicit instruction for each student. For example, Beverly used gustar (to like) correctly five out of eight times in her entries. My responses included the correct usage

several times in context. Pablo and Josefina's responses from me had rich examples of accents as implicit correction and they improved their use of accents.

Implications For My Teaching

Dialogue journals can require up to ten minutes of attention for each entry. This becomes an almost impossible burden on teachers who are required to maximize their time between planning, assessing, communicating with parents, and teaching. I argue that the benefits of dialogue journals as shown in this action research outweigh the time burden imposed by them. Each participant improved their academic writing in a few weeks. I learned students' funds of knowledge and discovered their schema through their writing in a way that time would not permit otherwise. I came to value the connections forged between teacher and student in the 2-way written conversation. This vital link with students is needed in schools that are high poverty and low achieving. Each student, who as teachers we believe is capable of learning and has the potential to be successful, will thrive when she can count on complete teacher attention at least once a week on whatever she chooses to write about.

Some of the variables that alter the dialogue journal experience include the giving of prompts or free-writes, having a time limit or not, writing on paper or typing on the computer, and writing the entries in or out of class. As I reflect on the Landmark Middle School student population, I wonder which combination is the best. Easily half of the students do not have internet access at home which rules out the use of an online discussion board format. The age and academic maturity of the students leads me to believe that the absence of a prompt would leave too many of the students spending most of their time wondering what to write about. I suggest the compromise of a specific

prompt for students with the understanding that they could free-write if they so desired. Also due to the organizational deficiencies of many students, the dialogue journal should stay in the classroom so that it will not be lost. This reality rules out the possibility of doing the dialogue journal outside of class if I were to reasonably expect every student to bring it back.

I wonder how to involve peers with the dialogue journals. I believe that this would alleviate some of the burden of reading several entries in a short amount of time. This would also allow those with higher Spanish proficiency to be more capable peers to those with lower proficiency. I envision the written conversations as a place for student relationships to deepen as a sense of community is fostered.

This action research used loose-leaf pages that were later stapled together to form a science notebook. Loose pages were used for students to journal in and collected for me to respond to. Next time, I would like to have a bound notebook to write in. I like to use hard cover composition books, but I felt that the book would intimidate students and be an obstacle for the several students who lacked basic organization in their binders and backpacks. I would also like to be clear that dialogue journals should be written in paragraph form. Although Pedro was only one of a couple students to write in bullets in his first journal entry, I wonder if he would have written in paragraph form if I had made it more explicit. My next semester class will utilize a soft cover notebook of 80 pages. I felt that it was a compromise to the bigger notebooks, and will feel less intimidating. Students will leave the notebook in the classroom.

Further reflection on the use of the interactive language journal caused me to ponder if the notes were over-scaffolded. Most of the written work in the science

notebook part of the interactive language journal was shown on the projector to be copied onto the page. At least, I could be sure that correct language was modeled, yet I wondered if there was a more engaging, thought provoking way to give them the same information. I think that it would be beneficial to do expert groups to allow more oral interaction in the notetaking process. I observed that a handful of students were hesitant to speak in front of the class that could have spoken in small groups in those situations.

The most impressionable reflection of the interactive language journal was the need for students in this particular dual language program to receive Spanish literacy instruction. Partway through the research process, I learned that the district expectation of the class was that students would continue to receive literacy instruction in addition to the content. This had not been explained to me before. In fact, both dual language teachers in the school learned halfway through the semester that this was an expectation. Both of us had seen that it was a need.

Therefore, I proposed to the principal at Landmark Middle School (LMS) a plan to meet both the need for Spanish literacy and content teaching. At LMS there is built into the school day a 45-minute class that is reserved for interventions in math and reading or for enrichment. I proposed that this Monday through Thursday time slot be used for the dual language students to receive formal Spanish literacy instruction. I believe that a deliberate, targeted grouping could result in a highly beneficial class for native Spanish speakers to improve their first language and transfer to English and for native English speakers to receive another class in Spanish as they grow their vocabularies and practice their conjugations. To me, this plan gives the needed literacy work without compromising the vigor and quality of content instruction. It disturbs few

student schedules and will be an intervention that improves reading scores and by consequence math scores. Both of us dual language teachers have formal Spanish language training and experience teaching Spanish as a foreign language. This plan uses our training and expertise and fulfills a need for our bilingual students.

Implications For Future Research

There is an abundant quantity of research into interactive science notebooks. Some schools that I have worked in have even extended the interactive notebooks to their math and social studies classes. There is also a good amount of research of dialogue journals. The unique nature of the interactive language journal is that it marries the two forms into a tool that models correct language, allows for student-generated, low stakes production, and involves the teacher as a participant in the student's language journey. There are many schools with high numbers of language learners. This tool could be something that aids in a language learner progress toward English proficient. The dual interactive notebook/journal gives place for notetaking, language learning, and student ownership of work.

A need that I see for the interactive language journal is high-quality, open-ended, and student relevant prompts. A pure dialogue journal would not have any prompts, but be completely in the hands on the learner. I envision that my particular student population lacks the motivation, maturity, or skills to generate all their entries on their own. I like to see the use of academic language or vocabulary in the context of a journal entry. The prompts also encourage hesitant teachers to try a dialogue journal by giving the structure they may fear is absent in the tool. I wonder what the research informs about the benefits of prompts. According to my experience and research, some students

would need a prompt or they would spend the entire writing time thinking of what to write. I think a combination of specific and general prompts will use writing to make student's thinking visible. It would even out the effect of specific versus general prompts.

There is focused research of intercity populations of high poverty and high language learner populations. What about rural schools of high poverty, low literacy populations? I wonder how the interactive language journal would fare in another population type. How would it improve writing in richer districts? I see a need for further research in these different school populations.

There is also a need for research of dual language program models. These programs are relatively far and few between. The Inlet School District that Landmark Middle School is a part of is one of the only in the state that offers content area classes (such as science) in a bilingual format. Much of the information the district used in forming the program came from a dual language school in Texas. Further research into teaching academic writing would be useful for the implementation of the interactive language journal as well. Also at the program level is how best to motivate middle school students. This district has plans to offer dual language classes beyond the middle school. They also want to offer an exit exam after the seven years of bilingual classes that could earn the student credit for Spanish 1 and Spanish 2 at the high school level. This would be a powerful motivation for students that want to go to college because they could earn their foreign language requirement before they even got to high school. Motivation is a serious issue probably in most schools, but particularly in high poverty schools. Many students do not see the relevance of school in their lives or how they

could be successful. More students do not have basic needs met which in turn makes learning more of a challenge.

The interactive language journal could take part in further research of using low-stakes writing to develop skills and confidence for high-stakes writing assessments. Students in public schools start high-stakes testing in early grades during the most formative years of their lives. There is a need in schools to use low-stakes writing tasks to "write to learn" as well as the common "learning to write" philosophy.

Current funds of knowledge research can be advanced through use of the interactive language journal. Students have the opportunity to record a written conversation in which the teacher discovers their valuable lived experiences and can reference them in journal responses or in class discussion. The use of funds of knowledge will automatically bring relevance and meaning to curriculum because it comes from what the students value the most, their own lived experiences that those of their support systems such as family.

Final Thoughts

This interactive language journal action research project was developed from the research specific to the use of science notebooks, interactive journals, and dialogue journals. The practice of journaling was modified to specially fit the needs of Landmark Middle School's dual language population. The case study participants demonstrated growth in the quality and quantity of their writing. Even with all the extant literature available on the use of interactive notebooks/journals and dialogue journals for native English-speaking students, there is still a need to further study the effect of the interactive language journal as a language acquisition tool for ELLs in grades K-12.

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Appendix A: Letter of Consent in English

Dear Parent or Guardian:

My name is Ben Floyd. I am your student's science teacher and I am currently working towards obtaining a Masters of Education at The Evergreen State College Error! Reference source not found.. The goal of my research is to determine what effect using the science notebook with dialogue journaling has on the acquisition of Spanish science vocabulary of dual language learners. Our principal, Mr. Barkman has approved this study, knowing that participation is voluntary and requires parent/guardian permission.

The information provided by your student will be used to create my Action Research Project. All information obtained will be used solely for this purpose. The identities of the participants will be confidential, and any identity markers will be erased from the study. Pseudonyms will be used for all participants including the teacher, school, and school district. The final paper will include samples of student work, photograph(s) of interactions in the classroom that aid in vocabulary acquisition, and answers from survey or informal interview questions regarding the student's attitude about writing.

Any risks to the students will be minimal. Students might feel a small amount of embarrassment due to their actions being documented. Students will not be offered compensation for their participation in this study. The benefits of participating in the research will be to inform best practices in dual language programs. The activities named above are things that I would normally do in the course of my instruction. Permission is needed in this case because I will use this data to write my action research paper.

My classmates of the masters program as well as my professors will help me produce this final product. All confidentiality of the participants will be sustained. At written request, I will provide you with a copy of the final draft. Any participation is voluntary and can be withdrawn at any time.

Feel free to contact me if you have any questions about this project or your child's participation in it. You can call me at 360-918-1937. My e-mail address is mr.benfloyd@yahoo.com. The person to contact if you experience problems as result of your participation in this project is John McLain, Academic Dean at The Evergreen State College, Library 2002, Olympia, WA 98505: phone (360) 867-6972.

Thank you for your participation.

Sincerely,

Ben Floyd

Appendix B: Letter of Consent in Spanish

Estimados Padres o el Guardián,

Me llamo Ben Floyd y soy el maestro de ciencia de su estudiante. Estoy trabajando para completar mi educación de maestría en The Evergreen State College. La meta de mi investigación es averigüar el efecto de usar el cuaderno de ciencia con una parte de diario de diágolo en como adquieren vocabulario de ciencia los estudiantes del programa bilingüe. El director, Sr. Barkman me permite hacer este estudio en la escuela con al saber que se necesita el permiso de padres o guardián y con la certeza que partipación es voluntario.

Cualquier información colectada sólo será utilizada para escribir mi papel de investigación. Las identidades de los estudiantes serán mantenidas privadas con el uso de seudónimos por nombres de estudiantes, escuela, y maestro. El papel final incluirá muestra(s) de tarea del estudiante, foto(s) de interacción que ayuda aprender vocabulario, y respuestas de encuesta/entrevista sobre la actitud de escribir.

No hay riesgo a su estudiante para su participación menos de quizás sentir vergüenza en ser observado por la investigación. No hay compensación para participar en la investigación. El beneficio de participar en esta investigación es para informar la mejor manera de ensenar en programas bilingües. Estas son actividades que yo haría en mi clase aúnque no hiciera una investigación. Es necesario obtener permiso solo porque usaré esta información para escribir mi papel de investigación.

Mis companeros de clase del programa de maestría y mis profesores me ayudarán en completar mi papel de investigación. Toda confidencialidad será mantenido. Proveeré una copia del papel final si me da una petición escrita. La participación es voluntaria y puedes parar de participar en en cualquier momento.

Siéntase libre de contactarme si tiene cualquier pregunta acerca de este proyecto o de la participación de su niño. Me puede llamar en 360-918-1937. Me puede contactar por correo electrónico en mr.benfloyd@yahoo.com. La persona de contactar si hay problemas al participar en la investigación es John McLain, Academic Dean en The Evergreen State College, Library 2002, Olympia, WA 98505: teléfono (360) 867-6972.

Gracias por su participación.

Sinceramente,

Ben Floyd

Appendix C: Consent Form in English

I, _____, give permission for my student to participate in the research project, "The effect of the interactive language journal on dual language students vocabulary inquisition." I have been informed that the information obtained in this research will only be used by Ben Floyd to write his Action Research Paper. The identity of your student in the research will be protected and not shared with anyone. I understand that the only risk in participating may be a little embarrassment at being observed for the research paper. I will be given a final copy of the research paper upon written request. I understand that any participation is voluntary and that I can withdraw at any time.

I understand that if I have any questions about this research I can call Ben Floyd at 360-918-1937 or e-mail him at mr.benfloyd@yahoo.com.

The person to contact if there is a problem with the research is John McClain, Academic Dean at The Evergreen State College, Library 2002, Olympia, WA 98505: phone (360) 867-6972.

Name of Student_____

Student Signature_____Date_____

Name of Parent/Guardian_____

Signature of Parent/Guardian_____Date_____

Appendix D: Consent Form in Spanish

Yo _____, concuerda en participar en el proyecto de Ben Floyd quien está estudiando actividades de ayudar estudiantes bilingües aprender vocabulario. He sido dicho que la información completa por Ben Floyd sólo será utilizada por escribir su papel de investigación. Las identidades de los estudiantes serán protegidas y no serán compartidas con nadie. Comprendo que no hay riesgos a tomar parte en esta investigación menos de quizás sentir un poco de vergüenza. Seré dado una copia del papel final si hago una petición escrita. Comprendo que participar en este proyecto es voluntario; puedo parar participar en en cualquier momento.

Comprendo que si tengo cualquier pregunta acerca de este proyecto o mi participación en ello, yo puedo llamar a Ben Floyd en 360-918-1937 o por correo electrónico en mr.benfloyd@yahoo.com.

La persona para contactar si tengo problemas es John McLain, Academic Grants Manager en The Evergreen State College, Library 2002, Olympia, WA 98505: numero (360) 867-6045.

Nombre de estudiante_____

De Firma de estudiante_____Fecha_____

Nombre de Padre/Guardián_____

Firma de Padre/Guardián_____Fecha_____

Appendix E: Survey Questions

Write in the language you are most comfortable with. Escribe en el idioma en que estás lo mas cómodo/a.

1. How many years have you written in Spanish at school? ¿Hace cuántos años escribes en español en la escuela?

2. What kind of writing assignments have you done in school? ¿Qué tipos de escritura has hecho en la escuela?

3. What do you like about writing? ¿Qué te gusta de escribir?

4. What do you dislike about writing? ¿Qué no te gusta de escribir?

5. What is easy about writing for you? ¿Qué es fácil en escribir?

6. What is hard about writing for you? ¿Qué es difícil en escribir?

7. How have you used writing in everyday life? ¿Cómo usas escritura en la vida normal?

8. What would you like to accomplish with your writing? ¿Qué quieres lograr con la escritura?

9. What would you change about your writing? ¿Qué cambiarías de tu escritura?

10. What is your earliest memory about writing? ¿Cuál es tu memoria más vieja de escribir?

Appendix F: Quantitative Data Analysis

Quantitative Analysis of Journals					
Josefina					
Analysis Item	1st Journal	2nd Journal	3rd Journal	4th Journal	5th Journal
# of words	55	82	136	68	113
# of sentences	5	3	8	6	7
% words spelled right	89	94	93	90	94
% matching nouns/adjectives	100	100	100	100	100
% Verbs conjugated right	100	100	100	100	100
% complete sentences	80	100	100	100	100
% words in Spanish	100	100	94	100	98
Pedro					
# of words	23	69	74	84	49
# of sentences	0	4	4	7	5
% words spelled right	87	90	93	96	98
% matching nouns/adjectives	100	100	100	100	100
% Verbs conjugated right	100	100	100	100	100
% complete sentences	0	100	100	100	80
% words in Spanish	100	100	100	100	100
Beverly					
# of words	110	95	135	105	133
# of sentences	9	11	13	13	10
% words spelled right	90	97	97	99	95
% matching nouns/adjectives	71	88	78	70	87
% Verbs conjugated right	40	41	64	62	57
% complete sentences	100	100	100	100	100
% words in Spanish	93	89	80	88	99

Appendix G: Qualitative Analysis- ACTFL Intermediate Writing Guidelines

INTERMEDIATE

Writers at the Intermediate level are characterized by the ability to meet practical writing needs, such as simple messages and letters, requests for information, and notes. In addition, they can ask and respond to simple questions in writing. These writers can create with the language and communicate simple facts and ideas in a series of loosely connected sentences on topics of personal interest and social needs. They write primarily in present time. At this level, writers use basic vocabulary and structures to express meaning that is comprehensible to those accustomed to the writing of non-natives.

Intermediate High

Writers at the Intermediate High sublevel are able to meet all practical writing needs of the Intermediate level. Additionally, they can write compositions and simple summaries related to work and/or school experiences. They can narrate and describe in different time frames when writing about everyday events and situations. These narrations and descriptions are
often but not always of paragraph length, and they typically contain some evidence of breakdown in one or more features of the Advanced level. For example, these writers may be inconsistent in the use of appropriate major time markers, resulting in a loss of clarity. The vocabulary, grammar, and style of Intermediate High writers essentially correspond to those of the spoken language. Intermediate High writing, even with numerous and perhaps significant errors, is generally comprehensible to natives not used to the writing of non-natives, but there are likely to be gaps in comprehension.

Intermediate Mid

Writers at the Intermediate Mid sublevel are able to meet a number of practical writing needs. They can write short, simple communications, compositions, and requests for information in loosely connected texts about personal preferences, daily routines, common events, and other personal topics. Their writing is framed in present time but may contain references to other time frames. The writing style closely resembles oral discourse. Writers at the Intermediate Mid sublevel show evidence of control of basic sentence structure and verb forms. This writing is best defined as a collection of discrete sentences and/or questions loosely strung together. There is little evidence of deliberate organization. Intermediate Mid
writers can be understood readily by natives used to the writing of non-natives. When Intermediate Mid writers attempt Advanced-level writing tasks, the quality and/or quantity of their writing declines and the message may be unclear.

Intermediate Low

Writers at the Intermediate Low sublevel are able to meet some limited practical writing needs. They can create statements and formulate questions based on familiar material. Most sentences are recombinations of learned vocabulary and structures. These are short and simple conversational-style sentences with basic word order. They are written almost
exclusively in present time. Writing tends to consist of a few simple sentences, often with repetitive structure. Topics are tied to highly predictable content areas and personal information. Vocabulary is adequate to express elementary needs. There may be basic errors in grammar, word choice, punctuation, spelling, and in the formation and use of non-alphabetic symbols. Their writing is understood by natives used to the writing of non-natives, although additional effort may be required. When Intermediate Low writers attempt to perform writing tasks at the Advanced level, their writing will deteriorate significantly and their message may be left incomplete.

Appendix H: Qualitative Analysis- ACTFL Advanced Writing Guidelines

ADVANCED

Writers at the Advanced level are characterized by the ability to write routine informal and some formal correspondence, as well as narratives, descriptions, and summaries of a factual nature. They can narrate and describe in the major time frames of past, present, and future, using paraphrasing and elaboration to provide clarity. Advanced-level writers produce connected discourse of paragraph length and structure. At this level, writers show good control of the most frequently used structures and generic vocabulary, allowing them to be understood by those unaccustomed to the writing of non-natives.

Advanced High

Writers at the Advanced High sublevel are able to write about a variety of topics with significant precision and detail. They can handle informal and formal correspondence according to appropriate conventions. They can write summaries and reports of a factual
nature. They can also write extensively about topics relating to particular interests and special areas of competence, although their writing tends to emphasize the concrete aspects of such topics. Advanced High writers can narrate and describe in the major time frames, with solid control of aspect. In addition, they are able to demonstrate the ability to handle writing tasks associated with the Superior level, such as developing arguments and constructing hypotheses, but are not able to do this all of the time; they cannot produce Superior-level writing consistently across a variety of topics treated abstractly or generally. They have good control of a range of grammatical structures and a fairly wide general vocabulary. When writing at the Advanced level, they often show remarkable ease of expression, but under the demands of Superior-level writing tasks, patterns of error appear. The linguistic limitations of Advanced High writing may occasionally distract the native reader from the message.

Advanced Mid

Writers at the Advanced Mid sublevel are able to meet a range of work and/or academic writing needs. They demonstrate the ability to narrate and describe with detail in all major time frames with good control of aspect. They are able to write straightforward summaries on topics of general interest. Their writing exhibits a variety of cohesive devices in texts up to
several paragraphs in length. There is good control of the most frequently used target-language syntactic structures and a range of general vocabulary. Most often, thoughts are expressed clearly and supported by some elaboration. This writing incorporates organizational features both of the target language and the writer's first language and may at times resemble oral discourse. Writing at the Advanced Mid sublevel is understood readily by natives not used to the writing of nonnatives. When called on to perform functions or to treat issues at the Superior level, Advanced Mid writers will manifest a decline in the quality and/or quantity of their writing.

Advanced Low

Writers at the Advanced Low sublevel are able to meet basic work and/or academic writing needs. They demonstrate the ability to narrate and describe in major time frames with some control of aspect. They are able to compose simple summaries on familiar topics. Advanced Low writers are able to combine and link sentences into texts of paragraph length and structure. Their writing, while adequate to satisfy the criteria of the Advanced level, may not be substantive. Writers at the Advanced Low sublevel demonstrate the ability to incorporate a limited number of cohesive devices, and may resort to some redundancy and awkward repetition. They rely on patterns of oral discourse and the writing style of their first language. These writers demonstrate minimal control of common structures and vocabulary associated with the Advanced level. Their writing is understood by natives not accustomed to the writing of non-natives, although some additional effort may be required in the reading of the text. When attempting to perform functions at the Superior level, their writing will deteriorate significantly.