2009

Second Language Teaching Strategies for Teaching the Human Body to Fourth Graders

Maria L. Vela
Central Washington University

NOTE:

SIGNATURE PAGE OMITTED FOR SECURITY REASONS

THE REGULATIONS FOR SIGNATURE PAGES CAN BE FOUND ON CWU'S GRADUATE STUDIES WEBPAGE:

CWU.EDU/MASTERS/

SECOND LANGUAGE TEACHING STRATEGIES FOR TEACHING

THE HUMAN BODY TO FOURTH GRADERS

_____

A Project Report

Presented to

The Graduate Faculty

Central Washington University

_____

In Partial Fulfillment

of the Requirements for the Degree

Master of Education

Master Teacher

_____

by

Maria L. Vela

August 2009

ABSTRACT

SECOND LANGUAGE TEACHING STRATEGIES FOR TEACHING

THE HUMAN BODY TO FOURTH GRADERS

by

Maria L. Vela

August 2009

In a country filled with pressure for high academic achievement at the state and

federal levels, it is necessary to implement "best practice" teaching strategies for student

success. "Best practice" teaching strategies are strategies that are research based and

have proven to be essential in increasing academic achievement. Among using "best

practices," there are a variety of programs that focus on teaching second language

learners English, one of them being dual language. Dual language is an additive bilingual

program in which the second language is taught through the content areas as the native

language continues to be developed. However, the necessary materials and resources are

not always available to the minority language teacher. The focus of this project was to

develop a unit of science lessons on the human body that were aligned with national and

state standards and that encompassed second language teaching strategies to maximize

student learning and achievement. The development and research of the project are

further discussed in the report.

TABLE OF CONTENTS

CHAPTER 1

PROJECT BACKGROUND

In a country that is becoming more and more global, it is apparent that the changing

population is posing a challenge for educators to produce students who are not only

educated, but also bilingual, biliterate, and prepared to enter the ever growing global

work force. Educators and policymakers alike have begun to understand that English as a

Second Language programs (ESL), which stress a rapid transition to English with little or

no instruction provided in the student's native language, have proven to be detrimental

and ineffective in the academic and linguistic development of the learner (August &

Hakuta, 1998). On the other hand, second language courses for English dominant

students have not promoted high levels of proficiency in the second language.

Within the United States, there are additive and subtractive models on how to teach

English language learners (ELL), English. Subtractive programs include: (1)

Submersion—sink or swim; (2) ESL—pull out/self-contained; (3)Transitional—early/late

exit; and (4) Structured English Immersion. Additive programs are: (1) Immersion—

dual language; (2) Two-way immersion; (3) Developmental or enrichment; and (4)

Maintenance—heritage language, developmental, enrichment (Soltero 2004).

Dual language is a long term additive bilingual and bicultural program that

consistently uses two languages for instruction, learning, and communication, with a

balanced number of students from two language groups who are integrated for instruction

for all or at least half of the school day in pursuit of bilingual, biliterate, academic and

cross-cultural competencies (Soltero, 2004). Within dual language, there are many types

of models that can be implemented into a school. There are the 90:10, 80:20 and the

50:50 models. The school, in which this project will take place, has implemented the 50:50 model of dual language. For the purpose of this project the school in which the project will take place will be referred to as the El School.

Students in a dual language program learn a second language through content areas, such as reading, writing, social studies, math or science. The El School is a part of the public education system of Washington State; therefore all curriculum must be aligned with state standards. State standards are developed in conjunction with national standards. The goal of national and state standards is to assure that students receive a quality education regardless of where one lives. The grade level in which this project will take place is fourth grade. One of the expectations of fourth graders in Washington state in the area of science is to learn that systems are composed of smaller subsystems (OSPI, 2008). At El School the unit that will be focused on is that of the human body. The human body is one grand system composed of smaller subsystems that help it to function as a great machine.

<div align="center">Statement of the Problem</div>

Each year the United States becomes more ethnically and linguistically diverse, with more than 90 percent of recent immigrants coming from non-English speaking countries (Echevarría, Short &Vogt, 2008). Second language learners present numerous challenges for districts that lack the resources to serve them. This is problematic given the federal and state expectations that demand all students to meet high standards, in reflection of the No Child Left Behind Act of 2001 (Echevarría, Short &Vogt, 2008). In order for second language learners to succeed, they must receive better educational opportunities from U.S. schools, such as dual language.

The success of a dual language program depends greatly on the commitment and implementation of five factors. These five conditions are vital in the preservation and enhancement of existing and or implementations of dual language programs. The five conditions are: administration, staff, instructional practices, resources and parents (Soltero 2004). Dual language schools are continuously refining their program to meet the needs of the school and students. Administrators of these schools must be knowledgeable of the program, network with other dual language programs and administrators, participate in staff development, be aware of pedagogical issues, and seek or lobby for funds and support (Soltero 2004).

Developing a qualified staff that is dedicated to dual language is important in maintaining a successful dual language program. Along with having continuous professional development for dual language teachers, resource teachers should be used to support students in the program. Instructors are also highly encouraged to use student-centered activities involving active learning experiences and are discouraged from using direct instruction approaches, rote learning and the use of worksheets. Furthermore, teachers are expected to use thematic and cooperative learning instruction, while engaging students in critical thinking and problem solving (Soltero, 2004).

Teachers must also provide research based second language strategies to secure student success (Marzano 2004). The following second language acquisition strategies will be used in this project: Sheltered Instruction Observation Protocol (SIOP), Guided Language Acquisition Design (GLAD) and High Yield Strategies (HYS).

The problem in many programs is the lack of resources in the minority language that can be used in the content areas. Just as in mainstream English classrooms, academic

programs are not well established, sheltered curricula and appropriate resources are not readily available and; most importantly teachers are not trained to meet the needs of their second language learners (Echevarría, Short & Vogt, 2008). Teachers are expected to adhere to the standards of the state, yet their resources are limited. Minority language teachers many times must use materials that are badly translated or must create them on their own. Doing so can be time consuming and often difficult because of the multiple definitions words can have. Teachers must consider that the vocabulary is academically correct, and proper. Although resources are becoming easier to come by because of the new demand for dual language programs, there is still much work to be done in this area. For example in the Full Option Science System (FOSS), science kit on the human body, many of the worksheets have been translated into Spanish. However, teachers still need to review the materials prior to using to make sure the vocabulary used is student friendly and the same type of Spanish being taught. The kits also fail in providing teaching strategies that provide second language learners with not only knowledge content but also language. For this reason second language teachers must utilize adequate and quality teaching strategies to their repertoire of tricks.

Parents of a dual language program are the program's best advocates. Successful programs should provide frequent communication with parents about the program, conduct monthly parent meetings, organize successful dual language assemblies or activities, and invite or train parents to volunteer in the classroom (Soltero 2004).

A continuous problem the dual language program faces at El School is the lack of resources available to the second language Spanish teachers. At El School, science is taught in Spanish in all grades except kindergarten. In fourth grade one of the three

science kits expected to be taught by the district is the Full Option Science (FOSS) kit on

the human body. The science kit itself comes readily equipped with all the materials that

will be needed for teaching the human body unit including handouts and family letters

already translated into Spanish. The problem is the vocabulary and wording used by the

science kit are not student friendly and do not reflect the level of language competence of

the students. The kit also fails in providing second language teaching strategies for

teachers to use when teaching the human body unit. As a result, preparation is needed to

assure that proper teaching strategies are used and that student handouts have been

rewritten in a manner that is comprehensible to the students.

<div align="center">Purpose of the Project</div>

The purpose of this project is to develop a series of fourth grade science lessons on the

human body that are in line with state and national standards. These lessons are designed

to aide students in the journey to becoming linguistically and academically bilingual in

Spanish.

The national science standards state that all students should be able to understand and

have the ability to do scientific inquiry (National Research Council--1996). Students

should be able to develop the ability to not only do scientific inquiry, but also investigate,

ask questions, make observations, and communicate their findings with that of their

peers. According to the National Research Council (1996) students in kindergarten

through fourth grade, should develop a basic understanding of a life cycle. The

fundamental concepts and principles that underlie this standard are: 1) characteristics of

organisms; 2) life cycles of organisms; and 3) organisms and their environments. It is

under the first concept that the fourth grade science unit is under. One of the concepts

under characteristics of organisms is that plants and animals have different systems or structures that serve different purposes or functions. For example, the human body has distinct features that allow walking, holding, seeing, and talking. Our present science curriculum distributed by FOSS science kits, focuses on how the bones within the body act as a system. The kits go into depth teaching students the importance of having bones, joints, ligaments, muscles, etc. and why their respective functions are important.

According to the revised Washington State K-12 Science Standards, (OSPI 2008), fourth and fifth graders in Washington are expected to learn that systems are comprised of smaller subsystems. It is within this category that the human body falls under. The human body is a complex system, composed of smaller subsystems that create a great machine. As stated earlier, the FOSS science kit on the human body focuses its attention on just one of these subsystems, that of the bones.

Although the kit is in correlation with the national and state science standards, the problem with the science kit is that it lacks second language teaching strategies for teachers to use. This project will focus on providing instructional practices for second language learning to occur within the content area of science.

Significance of the Project

The classrooms of today are not the same as those of thirty years ago. The United States, land of opportunity, has become even more so, as masses of immigrants come to the United States looking for a better life. These immigrants come with high hopes of a brighter future not only for themselves but also for their children. These children by law own the right to a free education despite where they come from (Echevarria & Graves, 2007). Historically these students have been underserved, and have been taught watered

down curricula that has not stressed high academic achievement, but has stressed rapid transition of English language acquisition. Furthermore, English only students have not been offered the benefits of learning a second language through the content areas, thereby hindering their prospects of becoming a part of the global market. The goal of a dual language program is to provide second language acquisition for all students through the content areas. The significance of this project will focus on providing research based teaching strategies for second language acquisition, through the content area of science. Although the strategies were developed for students acquiring the English language, the strategies may also be easily adapted for any second language learner. These strategies are also great tools for any learner regardless of language or academic ability. Some strategies that will be used are Scaffolding, High Yield Strategies, (HYS), Sheltered Instruction Observation Protocol (SIOP), and Guided Language Acquisition Design (GLAD).

Limitations of the Project

The strategies used throughout the project can be implemented into any classroom regardless of language acquisition. However this project will be limited to fourth grade students learning Spanish in a dual language program as the students learn about the bone and muscle system of the human body, through the FOSS science kit.

Definition of Terms:

The following terms will be defined to assist the reader in understanding the terminology used throughout the project.

Additive Bilingual Programs: Bilingual education program models that aim to maintain and develop students' native language, as well as develop students' second language. The primary goal of these program models is high levels of bilingualism and biliteracy by adding another language to the students' linguistic and cognitive repertoire. Additive programs include: dual language, maintenance, developmental, and heritage language programs (Soltero, 2004).

Bilingual: the ability to use two languages along a continuum that includes variations in proficiency in expressive (speaking and writing), and receptive (listening and reading) language (Soltero, 2004).

Biliterate: The ability to read and write with high levels of proficiency in two languages through the appropriate and effective use of the grammatical syntactic, graphophonic, semantic and pragmatic systems of the two languages (Soltero, 2004).

80:20 Model: Is a total immersion program in which 80% of the day is spent in the minority language in grades preK-K and only 20% is spent on the majority language. In grades 1-2 another 10% is introduced in the majority language, and in grades 3-4 another 10% is introduced in the majority language until finally in grades 5-6 there is a 50:50 split of time spent on both languages (Soltero, 2004).

English as a Second Language: The field of study that addresses theoretical and pedagogical applications to the teaching and learning of English as a second language. ESL is an approach designed to provide specialized instruction in English to English language learners. ESL may take the form of the traditional grammar-based approach or the content-based method of instruction (Soltero, 2004).

50:50 Model: Is a partial immersion program in which 50% of the day is spent in the minority language and 50% of the remainder of the day is spent in the majority language. In a 50:50 program literacy instruction is taught in the student's native language until third grade when reading instruction in the second language is added (Soltero, 2004). *90:10 Model:* Is a total immersion program in which 90% of the day is spent in the minority language and only 10% is spent on the majority language in grades preK-1. After first grade 10% of the day is added on to the majority language (English), until 5th grade in which there is a 50:50 split of time between both languages (Soltero, 2004). *Second Language Acquisition(SLA)*: the process of acquiring a second language that occurs subconsciously as a result of meaningful and natural communication (Soltero, 2004).

Sheltered Instruction: A means for making content comprehensible for second language learners, while they are developing second language proficiency (Echevarría, Short & Vogt, 2008).

Subtractive Bilingual Programs: Bilingual education program models that aim to replace students' native language with a second language. The primary goal is monolingualism in the second language. This is accomplished by subtracting the home language from the students' linguistic and cognitive repertoire. Subtractive programs include: transitional, structured English immersion, and newcomer centers (Soltero, 2004).

Project Overview

Chapter One describes the importance of dual language programs in relation to the global work force and economy. It also explains the importance of having the adequate resources in the minority language in order to foster language development and

knowledge in the content area. The purpose of the project is to provide a unit of lessons designed to actively engage students in learning about science in the minority language. Chapter Two focuses on the review of literature about engaging students in science and how to develop lessons that all students can learn regardless of language. The procedure, development and implementation of the project are described in Chapter Three. Chapter Four contains a detailed description of the project and Chapter Five contains a summary, conclusion, implications, and recommendations of the project.

CHAPTER II

INTRODUCTION

In a time in which there is such a concentrated focus on standardized testing, it is

imperative that each state align their expectations of student knowledge with that of the

national standards and that each school district align their curriculum with that of the

state expectations. On the same note, this country is becoming more and more

linguistically and culturally diverse, making it apparent that extra measures must be

considered in assuring that students learning a second language be provided with the

tools and skills needed for academic success. Chapter Two of this project will focus on

the history of science standards along with the history of sheltered instruction. It will

also discuss opponents of dual language programs along with the multicultural issues that

dual language programs face. The chapter will then conclude with research and

suggestions of how second language learners best learn.

History of Science Standards

The purpose of having national science standards is to ascertain that all states are

teaching the same curricula in developmentally appropriate stages of student learning and

to ensure that all students receive an equal and quality education (National Research

Council, 1996).

A precursor to the first publicized standards was the publication of a report titled, A

Nation at Risk, in 1983 by the National Commission on Excellence in Education. The

report sparked controversy about education reform. *A Nation at Risk,* focused on the lack

of quality education throughout the United States during that time (National Research

Council, 1996). Amongst the report's many claims, was the rate of functioning

illiterates, the decline in science achievement and the lack of "higher order thinking

skills" by many 17 year old students (National Commission on Excellence in Education,

1983). The report claimed that the decline of production of well educated students was

due to diluted and diffused curricula (National Commission on Excellence in Education,

1983). The Commission offered many suggestions on how to alleviate the risk of student

failure, including refining graduation expectations for secondary education, providing

adequate teacher training, and to compare and contrast the education system of the United

States, with that of other developed countries (National Commission of Excellence in

Education, 1983).

As a result of the controversial report, setting goals and developing national standards

began in 1989, when the National Governors Association endorsed national education

goals (National Research Council, 1996). This was supported by President George Bush

Sr., though support continued through President Bill Clinton. The first standards

addressed were those of math. The National Science Standards later followed (National

Research Council, 1996). The development of the National Science Standards began in

1991, and was finally drafted in 1993 (National Research Council, 1996).

As a result of the publication of national math and science standards, many states soon

there after, began to align state expectations to those of the national standards. The

Washington State kindergarten through twelfth grade science standards, are a detailed

document that describe what all students in Washington should know at developmentally

appropriate stages of learning in the area of science (OSPI, 2008). The revised

Washington State kindergarten through twelfth grade Science Standards state that fourth

and fifth graders in Washington are expected to learn about systems, inquiry, application, physical, earth and space, and life science (OSPI, 2008).

It is important to note that state standards are not the curricula, nor do the standards suggest how to get students to achieve the standards (OSPI, 2008). Rather the standards should be used as a tool to drive instruction. The standards should also not be used to limit science programs. Students should be provided the opportunity to experience, and nurture interest in science and technology (OSPI, 2008).

<div align="center">History of Sheltered Instruction</div>

Given the increasing number of English language learners in U.S. school's, the best way to develop an educational plan for second language learners is to understand the diverse backgrounds of the students. Not all second language learners are alike (Echevarría, Short &Vogt, 2008). Students arrive with different levels of language proficiency of the native language. There is also diversity amongst educational backgrounds, school expectations, socioeconomic status, age of arrival, personal experiences being in the U.S., and the parents' education levels and proficiency in English (Echevarría, Short &Vogt, 2008).

One attempt in aiding the achievement gaps between native speakers and second language learners is the use of sheltered instruction. Sheltered instruction is an approach for teaching second language learners in a strategic manner that makes subject matter comprehensible while promoting second language acquisition (Echevarría, Short &Vogt, 2008). Sheltered instruction provides students with teaching/learning techniques that cover the broad and diverse abilities that second language learners bring into the classroom.

Opponents of Bilingual/Sheltered Instruction

A common argument against bilingual or sheltered instruction is that many people have been successful without it (Krashen, 1997). Although situations like these can and do occur, it is likely that the second language learner received plenty of comprehensible input in the second language to acquire the second language quickly and was in fact part of some kind of de facto bilingual program (Krashen, 1997). It is also commonly known that in second language acquisition, it takes on average 2-3 years to develop social language skills in the second language and 5-7 years to develop academic language skills. Therefore the rate at which individuals acquire a second language varies from person to person (Echevarría & Graves, 2007).

Two examples that are often cited as bilingual education opponents are cases such as Rodriguez (1982), and De La Pena (1991). Although these two individuals were cases in which English was learned quickly, without bilingual instruction, these individuals also had other factors that concluded in their success (Krashen, 1997).

In the case of Rodriguez (1982), the individual claims success in school without the use of a "special" English learning program and claims to have gained high levels of English literacy (Rodriguez, 1982). However Rodriguez had two crucial advantages that most ELL do not have. Rodriguez grew up in a predominately English-speaking neighborhood. Typically ELL students do not live in these types of areas, they live in neighborhoods in which Spanish prevails (Krashen, 1997). Secondly, Rodriguez became an excellent reader, who liked to read, which provided more academic language. Most ELL students have limited access to books outside of school (Krashen, 1997).

In the case of De la Pena (1991), the same report is made. De la Pena claims he arrived as a nine year old child with no competency in English and that he succeeded without the help of bilingual instruction (De la Pena 1991). De la Pena goes on to claim that as a newcomer, he acquired English quickly and by the end of the school year, was amongst the top of the class (De la Pena 1991). However De la Pena fails to realize that in Mexico he was a fifth grader and thus literate in Spanish and knew subject matter. In addition, as a student in the U.S., De la Pena was put back two grades. Therefore, his superior knowledge of subject matter in Spanish helped him make connections in English (Krashen, 1997).

Another myth about bilingualism is the notion that children's use of two languages results in cognitive, social, and emotional damage (Cummins, 1984). The myth describes language minority children as nonverbal, alingual, and semilingual, often with learning disabilities and speech impediments. However this myth has been debunked time and time again in recent and past studies (Cummins, 2000; Hakuta, 1986; Hornberger, 1994).

Research shows that children in supportive and nurturing bilingual environments do not develop linguistic handicaps (Garcia, 1985). In a study documenting the development of bilingualism in Mexican American children in comparison with the development of monolingual English speaking children, measures no difference in vocabulary, or phonological and syntactic development (Garcia, 1985). Hence, bilingualism in itself does not seem to interfere with the development of either language (Garcia, 1985).

Second language acquisition involves a process that builds upon a fundamental base needed for the development of both languages. There is a lack of evidence proving there

is a competition that exists between two languages over mental process. On the contrary, there is evidence that suggests there is a cognitive advantage to being bilingual (August & Hakuta, 1998).

Multicultural Issues in Dual Language

One of the goals of dual language programs is the development of positive social and cultural relationships between students, parents and teachers of the majority and minority language. This goal prepares students to be productive workers in a global society. Dual language raises awareness and appreciation for the complex, social, historical, cultural, and political dynamics involved in linguistic, ethnic, and cultural conflict and harmony becomes a major obligation of dual language education (Nieto, 2000). Nieto suggests that effective teaching in bilingual education is not simply teaching content areas in another language, rather it is using languages, cultures, and experiences of the learners in meaningful ways to accomplish linguistic, academic, and affective goals (Nieto, 2000). Programs such as dual language provide powerful ways for different language and cultural groups to acquire bilingualism and develop favorable views about diversity (Nieto, 2000). Dual language programs make it possible for students to develop pride, confidence, and a sense of self-identity of the native culture, as well as developing understanding and recognition of the cultures and beliefs of others (Soltero, 2004).

Within a dual language classroom, topics of controversy or extremely sensitive issues should be taught with responsibility and care. Controversial or culturally sensitive issues must not be ignored, especially in a dual language classroom because students come from vast backgrounds and come with past experiences and positive or negative attitudes towards issues (Soltero, 2004). An effective way to bring multicultural and diverse

perspectives into the classroom is by providing an extensive collection of children's literature, at all reading levels and in both languages (Rueda 1998). Topics on urban issues, gender, immigrant experience, historical fiction, cross-cultural relationships and ethnic folklore can heighten students' interests and provide a medium for rich and meaningful discussion and study (Rueda, 1998).

Teachers must make certain that instructional materials such as posters, videos, or software are void of racial, ethnic, gender or, disability stereotypes (Sleeter & Grant 1999). For example, children dressed in large sombreros and sarapes or Japanese children in kimonos are often portrayed like this in education posters. However, many of these children do not typically dress in this manner, except in observance of traditional celebrations or customs.

A well developed multicultural curriculum goes beyond celebrating traditional holidays and traditions. In fact, this type of multicultural education is diluted and a simplified way of teaching culture. This representation of multicultural education is what causes stereotypes (Baker, 2001). For example not all Latinos have the same traditions, values, beliefs and experiences. Even within one country there are many traditions, values, beliefs and experiences that are shaped by many factors, some may not even speak the same language (Nieto, 2000).

Multicultural education goes beyond improving attitudes about diversity. It does so by developing a knowledge base that promotes multiculturalism and pluralism (Sleeter & Grant, 1999). Sleeter and Grant also argue that teachers should engage students in learning complete perspectives of specific groups rather than isolated fragments of information or events (Sleeter & Grant, 1999). Dual language should provide a forum in

which students and teachers can explore and scrutinize long standing stereotypes,

prejudices and injustices, as well as non-mainstream curricular topics (Sleeter & Grant,

1999).

How Second Language Learners Learn

There are many factors that may effect second language acquisition. Some of the

factors are motivation, age, access to language, personality, first language development,

quality instruction, and cognitive ability (Snow, 1992).

It is imperative for a second language learner to recognize the importance of learning

a second language, and be motivated to learn it (Fillmore, 1985). According to Baker

(1992), there are two types of motivation: integrative and instrumental. When students

are motivated to join part of a language group, they have integrative motivation.

Learning a second language for the practicality of getting a better job is an example of

instrumental motivation (Baker, 1992).

Research seems to indicate that the younger a child learning a second language the

better, especially in the development of interpersonal social skills (BICS). Children are

also rid of personality issues that may make them self-conscious when learning a new

language. Older students may respond better to formal instruction because of their

advanced cognitive abilities. (Snow, 1992; Collier, 1987; Fillmore, 1985; Krashen, 1982;

Scarcella & Hilga, 1982; Cummins, 1980a; Elkind, 1970).

Students must also have access to the target language with native speakers of that

language (Baker, 1992). Learning requires successful exchanges with contextual clues to

make the message understandable (Baker, 1992).

Extroverts may enjoy immediate success in language learning because of the social aspect of building relationships with others, however there are no long term learning differences with people that are extroverts or introverts (Echevarría & Graves, 2007). Risk taking is a personality trait that does affect language acquisition. A person willing to experiment with vocabulary and basic conversation will improve proficiency in the second language (Fillmore, 1985).

Language development in the first language is a complex task that requires a minimum of twelve years (McLaughlin, 1987). Research suggests that the level of first language development significantly influences second language development. Students who have had solid schooling in the native language are more efficient at acquiring a second language. Students who achieve full cognitive development of both languages will gain cognitive benefits, whereas when the development of the native language is discontinued, there are negative consequences (Collier, 1989).

Effective language learning takes place in well-organized classrooms where there are opportunities for interaction with the teacher and peers in the target language. Interactive instruction provides ample opportunities to use the target language as the students learn about content and practice language (Echevarría & Graves, 2007).

Cognitive abilities are important for second language acquisition. These abilities affect the language learning process (Fillmore, 1985). Individuals with lower cognitive abilities are capable of learning a second language, but proficiency levels will be equal to or lower than that of the native language (Cummins, 1980b).

There are many theories in the world of second language acquisition. The work that is most often cited is that of Stephen Krashen and Jim Cummins. Krashen has five

hypotheses of what is known as the monitor model. The first hypothesis is called the acquisition-learning hypothesis. The hypothesis focuses on the distinction between second language acquired through natural communication and the second language that is learned formally. The second hypothesis is the natural order hypothesis which suggests that both adults and children learn a second language in a predictable order, although variations among individuals can be expected. The third is the monitor hypothesis which explains the relationship between second language acquisition and second language learning. For example, editing before an utterance is spoken or as a correcting device after the utterance is spoken. The fourth is the input hypothesis, in which Krashen uses the formula (i +1) or input plus the next level, which means a student's current level plus the next natural order. The last hypothesis is that of the affective filter, in which Krashen explains that a filter exists within each language learner. The filter affects how much a person will learn. If the learner is anxious, nervous or lacks self-confidence, then these factors could impede on the learning of the second language. The hypothesis suggests that a positive affective environment enhances language learning (Krashen, 1985 &1994). This hypothesis directly relates to the multicultural goal of dual language programs. Teachers must be aware of the cultural background of the student, in order to provide a nurturing and caring environment that allows students to take risks in learning a second language.

Jim Cummins' most influential contribution to second language acquisition is the concept of conversational and academic language proficiency. Basic interpersonal communication skills (BICS), is the basic social language that is needed to communicate with other people in social or daily life settings. BICS as it is commonly known, is the

language that is learned quickly (2-3 years), for survival by second language learners. The cognitive academic language proficiency (CALP) refers to the academic language second language learners must learn for academic tasks such as reading, writing, math, and other content areas. CALP is a more complex type of language proficiency that takes longer to acquire (5-7 years) (Echevarría & Graves, 2007).

Another hypothesis by Cummins is that of the interdependence hypothesis. This hypothesis holds that skills that are learned in the native language will transfer to the new language and that such skills are interdependent across languages (Cummins, 1994, 1981a, 1981b). Nevertheless, the process of transfer does not occur automatically. It is a process that requires guidance by the teacher, with explicit links to past learning and experiences (Gersten, Brengelman, Jiménez, 1994).

Teaching Strategies for Second Language Learners

Sheltered instruction does not follow one specific theory or hypothesis but does reflect several theoretical perspectives. Sheltered instruction has been identified as an effective teaching tool for students to gain access to content material as students develop a second language (Echevarría & Graves, 2007). Sheltered instruction is an approach in which teachers take into consideration the student's second language skills, and modifies the delivery of instruction through slower speech, giving information verbally and visually, and uses controlled vocabulary while upholding to academic rigor, grade level content, interactive activities and higher order thinking skills (Echevarría & Graves, 2007).

Sheltered Instruction Observation Protocol (SIOP), was initiated in the 1990's. In 1996, the National Center for Research on Education, Diversity & Excellence was funded by the Office of Educational Research and Improvement, U.S. Department of Education

to develop a study on sheltered instruction. The goals of the project were to: 1) develop an explicit model of sheltered instruction; 2) use the model to train teachers in effective sheltered strategies; and 3) conduct field experiments and collect data to evaluate teacher change and the effects of sheltered instruction on English language learners and the second language acquisition process (Echevarría, Vogt & Short, 2008). The study concluded that SIOP should be used as an observational tool as well as a lesson delivery and planning system (Echevarría, Vogt & Short, 2008). Dual language differs from sheltered instruction in that dual language is a program that fosters the development of the native language as the student learns a second language. Sheltered instruction is a method of teaching that provides learning strategies for students who are learning academic content solely in English. However sheltered instruction can be easily adapted into a dual language classroom because the strategies work for English and minority language learners.

Guided Language Acquisition Design (GLAD) is an instructional model that supports language development as it is acquired through content learning. Project GLAD was developed and field tested for nine years in the Fountain Valley School District. GLAD is a project of Academic Excellence supported by the United States Department of Education. GLAD is also a part of the California Department of Education Exemplary Program, a model of reform for the Comprehensive School Reform Design, and a training model for five Achieving Schools Award Winners. The project was also recommended by the California State Superintendent of schools for teachers of English learners. GLAD is also highlighted by the California Department of Education as a "Best Practices" program for second language learners.

The trainings prepare teachers with the tools on how to access core content while abiding to state and district expectations. GLAD provides teachers with an organizational structure for an integrated balanced literacy approach. GLAD encompasses the integration of the four modalities of language acquisition which are reading, writing, listening, and speaking, into all of the content areas. The integration of these content areas and the direct teaching of meta-cognitive strategies make learning fun, meaningful and relevant. The strategies used by GLAD foster a risk free, cross-culturally sensitive environment, in which student are able to acquire academic language and concepts. Although the GLAD model was originally intended for English language learners, the strategies are also valuable in a multilingual setting. (Project GLAD, 2009)

Scaffolding was first introduced by Wood, Bruner and Ross in 1976, in their examination of parent-child talk in the early years. Scaffolding in the usual sense is a temporary structure that is put in place during the construction of a building. The scaffold is taken down piece by piece as the new structure is built. In the classroom it is a special type of help that assists learners to move toward new skills, concepts, or levels of understanding. It is the temporary assistance given by the teacher so that the student can learn how to do something and later complete the task independently (Gibbons, 2002).

Three academic factors of academic success for second language learners are: 1) English language support in subject areas with combined support in the native language; 2) the use of current approaches to teaching the curriculum in two languages; and 3) the socio-cultural climate of the school itself: in which the curriculum was inclusive of second language students, their language and culture, in addition to, high expectations from the teacher (Thomas & Collier, 1999).

"Classroom Instruction that Works," is a book authored by Robert Marzano, Debra Pickering, and Jane Pollock, published in 2001. This book's focus is on research based strategies for increasing student achievement. The book highlights an instructional strategy in each chapter. Marzano, Pickering and Pollock not only highlight each teaching strategy but also provide the research behind each study to prove its effect on student achievement. The nine categories are: 1) identifying similarities and differences; 2) summarizing and note taking; 3) reinforcing effort and providing recognition; 4) homework and practice; 5) nonlinguistic representation; 6) cooperative learning; 7) setting objectives and providing feedback; 8) generating and testing hypotheses; and 9) questions, cues and advanced organizers.

There are many opinions on what the best practices are in teaching science in regards to second language learners. Many of which mirror the above mentioned. In a book written by Brooks and Brooks in 1993 titled, "A Case for the Constructivist Classroom," the authors highlighted five guiding principles: 1) problems of relevance to students in instruction; 2) structured learning around primary concepts; 3) the student's point of view; 4) adapted curriculum to address students' suppositions; and 5) assessments of students' learning in the context of teaching.

Another form of science instruction was brought forth by Wheatley in 1991. Wheatley proposed that the teacher's role is to provide stimulating and motivational experiences through negotiation and act as a guide in the building of personalized schema (Wheatley, 1991).

The following four step approach related to science acquisition is that of Saunders (1992): 1) organize hands-on investigation labs; 2) provide active cognitive involvement

in contrast to teacher centered teaching; 3) cooperative learning in small groups. Saunders believes that small group tends to stimulate higher level cognitive activity than whole group lectures; and lastly 4) Saunders suggests high level assessment (Saunders, 1992).

A third approach to effective teaching is that of Herrell and Jordan (2004), in which the authors suggest the following premises for effective teaching. They are: 1) provide instruction that ensures students receive comprehensible input; 2) provide opportunities for verbal interaction in classroom activities; 3) the use of teaching strategies and groupings that reduce the anxiety of students; and 4) provide activities in the classroom that offer opportunities for active involvement (Herrell & Jordan, 2004).

A fourth summarized four best practices for teachers of language learners. They are: 1) make content more understandable to students by providing non-verbal cues, such as pictures, demonstrations and hands on learning; 2) increase interaction by using cooperative learning and project based learning; 3) increase thinking skills by asking higher-order thinking questions; and 4) using a students native language to increase comprehension when possible (Jameson, 1998).

The fifth approach focuses on using the following strategies: 1) creating instruction that relates to a students prior knowledge; 2) tailoring teacher talk to the students' language proficiency levels; 3) allowing students to process information in a variety of formats; and 4) using assessment methods that allow students to display learning in a variety of ways (Becijos, 1997).

The last set of suggestions were written by the National Science Teachers Association in a book called "Science for English Language Learners," published in 2006. The

authors of this book suggest the following strategies when teaching science to second language learners: 1) research based learning models that are built on a constructivist philosophy; 2) cooperative learning, learning in pairs or small groups allows for interaction between students; 3) hands-on activities, the more senses a student uses, the more effective the learning is; 4) input from students, teachers must be able to plan and accommodate for the culture, experiences, abilities, learning styles and interests of the students; 5) student-centered classrooms, students and student learning should be the focus of the classroom, not the teacher; 6) integrating subject matter to convey connections to the experimental world. Learning content is not isolated from one subject to another; and 7) interaction, discussion, reflection and teacher flexibility, the teacher must be flexible to the curriculum, strategies and pace of learning of the students (National Science Teachers Association, 2006).

Summary

National and state science standards were born out of the need to provide a quality education to all. The standards were developed as a way to uphold high academic expectations for all students regardless of race, language or socio-economic status. Sheltered instruction was developed as an aide to teaching students academic content as the students developed a second language. Sheltered instruction focuses on upholding rigor and high expectation while implementing teaching strategies that allow students to learn in a manner that fits the needs of their language development. Sheltered instruction and dual language programs are constantly looked at critically and with opposition. Although it is true that many students may achieve academic success without receiving sheltered instruction, there are too many factors that may have contributed to that

student's success. One of the many multicultural goals of a dual language program is to develop positive social and cultural relationships between students, parents, teachers and the community. Dual language students learn sensitivity toward others. Students quickly learn what it feels like to be in another person's shoes, because all students in the program are language learners. There are many factors that effect language acquisition including, motivation, age, access to the language, native language development, quality instruction and cognitive ability. One of the most popular theories belongs to Jim Cummins. This theory derives from the belief that second language acquisition develops in stages, beginning with social language and developing into more complex language such as academics. Cummins theory states that it takes two to three years to develop basic social language and five to seven years to develop academic vocabulary skills. In other words second language acquisition is a process of at least five to seven years. In order to assure quality instruction for second language learners, research based teaching strategies for second language learners must be utilized in a sheltered or dual language classroom. Teaching strategies such as SIOP, scaffolding, HYS or GLAD are great tools for teaching second language learners and have been proven to be instrumental in attaining student achievement.

CHAPTER III

PROJECT BACKGROUND

Throughout the United States, there are a variety of different bilingual programs being

implemented into schools. Obstacles bilingual programs face are the lack of trained

bilingual personnel to deliver quality instruction in the native language, and a low level

of commitment from school districts to develop and implement quality programs (Gold,

1993). Many ESL programs teach little more than English and lack on the importance of

content learning. Many times the responsibility of teaching these students is left to

second language specialists or educational assistants (Echevarría & Graves, 2007).

Likewise, ELL students are often not included in the larger school community and are

often not integrated into mainstream classes socially or academically (Bunch, Abram,

Lotan, & Valdes, 2001).

As a fourth grade Spanish teacher of a 50:50 dual language program, it is imperative

to debunk the above mentioned research. Therefore, it is instrumental that the second

language teaching strategies mentioned in chapter Two be implemented into everyday

teaching to ensure academic success for all learners, especially second language learners.

The rural city of O-Town, the location in which this project takes place is located in

the Columbia Basin of Washington State. O-Town is a small, farming community with a

population of approximately 6,500 residents, of which 1,700 are foreign born residents

from Mexico. Hispanics account for 63% of the population while 34% are Anglo-Saxon.

African Americans, Native Americans and Asians account for the remaining three

percent (City-data.com, 2007). O-Town's main industry is agriculture, in which a

majority of Hispanic immigrants work. Although rich in crops and orchards, 34% of the

28

population is considered to be below the poverty level. Residents with income below 50% of the poverty level in 2007, was 13.1% of which 52% are Hispanic. Fifty percent are children (city-data.com). O-Town has three elementary schools, each with approximately 600 students, one middle school with about 540 students and one high school with approximately 900 students.

The El School is located in O-Town. It is host to roughly 630 students of which 65% are Hispanic, 14% are Anglo Saxon and less than 1% are Asian, African American or Native American (education.com). Roughly 75% of the student body at El School receives free/reduced lunch. El School is also a recipient of Title I funds. There are four teachers at each grade level and approximately 25 paraprofessionals that help in classrooms on a daily basis. There are certified teachers for physical education, music, computers, and library. There is also a resource teacher, speech pathologist, and a part-time counselor. El School also houses the district's self-contained, developmentally delayed classrooms.

The El School implemented dual language as a pilot district program in the fall of 2004 as a means of combating low test scores on standardized testing and as a method of getting out of school improvement. The dual language model the district chose to implement was the 50:50 model, in which fifty percent of instruction is taught in Spanish and, or English. In a typical dual language classroom at El School there are 24 students. Of the 24 students, 12 are Spanish dominant students and the other 12 are English dominant students. It is critical to maintain the balance of language learners so that maximum learning can occur in the second language. In the primary grades students are partnered with language buddies, meaning one English language student paired with a

Spanish dominant student. Buddies are changed once a trimester or on an as needed basis. The responsibility of the language buddy is not to translate directly for the student, rather it is to define, and discover the solution of the task at hand together as a partnership. Intermediate grades use language buddies in a different manner. Instead of having one partner, students are placed in groups of three to four with two dominant Spanish and two dominant English, however many students at this point are neither because they are becoming more proficient in the second language. Again translating for the group is not the purpose rather groups are given tasks and together as a group students must find solutions by using the vocabulary and strategies the teacher provides for them.

In kindergarten through second grade, reading is taught in the native language of the student. A typical dual language day at a primary grade level would be for example, a 90 minute block for reading instruction followed by another 30 minutes of writing, therefore all native Spanish speakers would go to the Spanish teacher at this time and all English dominant students would go to the English teacher. After reading and writing students would once again be combined together with their English dominant or Spanish dominant counterparts and would be taught math and science one day in Spanish and the next day math and social studies in English. In third grade reading and writing in the second language is added and the students are no longer separated by language dominance for their reading and writing instruction. Students continue reading instruction in both the native and second language through fifth grade. Meanwhile, instruction in mathematics is done in both languages kindergarten through fifth grade. For example lesson one may be taught on day one in English and the following day lesson two may be taught in Spanish. It is important to note that lessons are not repeated in English and then again in

Spanish, rather lessons are picked up where they are left off and continued, some review may be necessary for sake of the lesson but the same content is not repeated. Science and social studies are taught in just one language. Science is taught completely in Spanish at all grade levels except kindergarten and social studies is taught in English (except in kindergarten). Many versions of a 50:50 model exist, this is the one El School has chosen to implement.

Although whole school dual language programs are preferred, the School District chose to implement only one kindergarten through fifth grade strand. The program began with four teachers (two Spanish, and two English), at the kindergarten and first grade level. As the years progressed one new grade team of dual language was implemented. Dual language makes up for about 50% of the student population at El School. The dual language program at El School currently employs thirteen teachers and one coordinator.

The early stages of development were difficult as little research had been done by the district prior to implementing the program. However, the district provided a coach with a specialty in dual language that aided the dual team in developing the program to what it is today. The district also allowed the dual language team to travel to out of state conferences that focused solely on dual language as well as, providing all district trainings on how to implement second language teaching strategies in the classroom. As a result of these trainings, the program today is reflective of current research done in the area of second language acquisition in relation to dual language.

The human body science unit, in which this project will focus on, aligns with national and state standards. The science kit used comes with worksheets available in Spanish; however, the student reading material does not. The Spanish vocabulary used in the

student handouts was difficult to understand, regardless of whether the student was a native Spanish speaker or not. Much of the vocabulary used in the worksheets did not reflect the vocabulary levels of the students in a dual language Spanish classroom. The kit also failed in providing second language teaching strategies for teachers to use and lacked websites or other resources teachers could use when teaching the kit. As a natural consequence of teaching the science kit in Spanish, countless hours were spent in creating a science unit that was linguistically and academically rigorous, but that also involved second language teaching strategies. In addition, it is certain that without the proper training in second language teaching strategies and dual language, the project would have been a much more difficult process.

Project Procedure

The process taken to develop the unit was a tedious one. The first step was in assuring that the human body science kit aligned with national and state standards. Secondly each lesson was reviewed to affirm that the lesson was in agreement with state standards. Naturally there were a few lessons that did not fall under the science standard of systems therefore those lessons were omitted from the science unit. The third step in the process of the project was to develop lessons that were rigorous but also implemented second language teaching strategies for students. As a second language teacher it is important to use second language teaching strategies to ensure that second language learners are learning content as they are acquiring a second language. It is a part of daily routine and lesson planning, for without these strategies, it is certain that students would fail in learning the content and in acquiring a second language.

Project Development

The goal of the project arose from the need to provide science lessons that were both academically stimulating and linguistically appropriate for second language Spanish learners and Spanish native speaking fourth grade students. The science unit was developed to ensure that quality instruction would be provided. In the El School District 75% are Hispanic, of which, 37.3% are classified as ELL students (BERC group, 2008). For this reason extensive training has been provided by the district in Sheltered Instruction Observation Protocol (SIOP), Guided Language Acquisition Design (GLAD) and High Yield Strategies (HYS). These strategies focus on having content and or language objectives that are posted for students and the teacher to see. These objectives are to be referred to throughout the lesson and at the end. It provides students with a purpose and meaning of why the lesson is being taught. These strategies also focus on the four modalities of language development that also closely align with the modalities of learning. The strategies stress the importance of doing hands-on learning as well as interactive partner or group work to provide students the opportunity to practice the second language. The strategies are researched based and are reflective of providing students with academic success and language achievement.

In developing the science unit on the human body, careful attention was put into making sure that the lessons were aligned to national and state standards. There was an intentional purpose in making sure the science lessons incorporated teaching strategies provided by trainings in HYS, SIOP, and GLAD. The worksheets that were provided by the science kit were reviewed before use, so that vocabulary can be pre-taught or rewritten in student friendly terms. Readings from the student reference book that was

provided in English only, were also rewritten in Spanish in a manner that was highly contextualized yet easier to comprehend.

Project Implementation

The project will be implemented over the time frame of approximately five weeks. Originally there were thirteen science lessons in the unit, in which the majority were designed to last 45 minutes. However, there were two lessons that had to be divided into two individual lessons because of time constraints. In addition to dividing these lessons in half, two informal assessments were also developed.

In the fourth grade dual language program, students are placed into two homeroom classrooms. Each classroom is comprised of 24 students with 12 students who are dominant English speakers and the other 12 who are Spanish dominant speakers. One classroom called the Eagles is the designated Spanish classroom. The second classroom called the Cougars is the designated English classroom. In a 50:50 model of dual language, fifty percent of the day is taught in English and the other fifty percent is taught in Spanish. As a result of this, each science lesson will be taught twice to two different groups of students. Each lesson will be taught once with the Eagles and a second time with the Cougars or vice versa. In a dual program no lessons are repeated with any of the groups.

CHAPTER IV

A WRITTEN DESCRIPTION OF THE PROJECT

One of the first steps in the tedious process of developing the science unit on the

human body was aligning the science kit with that of the state standards. Originally the

science kit consisted of thirteen lessons. Two lessons were added as a means of

assessment and two other lessons were divided into two separate lessons, making the total

seventeen. An advantage of dividing the original lessons in half allows for deeper hands-

on learning without the pressure of rushing through the lesson. At the end of the original

science unit four of the lessons did not align with the state standard of understanding

systems, therefore those lessons were omitted.

The next step taken was to develop science lessons that utilize second language

teaching strategies provided in trainings by El School District. In order to assure that

proper measures were taken into account when developing the lessons, the SIOP lesson

plan template number three was used for each lesson in the science unit. This template

serves as a tool for teachers when lesson planning, to make sure that best practices are

being implemented throughout the lesson. Under the umbrella of SIOP and HYS, content

and language objectives were stated at the beginning of each lesson and were also

restated at the end of each lesson. Through out the course of the science unit many of the

strategies intertwine with one another. One strategy that all four models of second

language acquisition had in common and that was implemented throughout the science

unit was providing pictures, realia or other nonlinguistic representation. Another strategy

used by all four models, not present in the science kit, was providing open ended, thought

provoking, higher order thinking questions. These questions are great to use as focus

questions at the beginning of a lesson, so that students can begin to put thought into the objective of the day. They also serve as a reflection piece at the end of the lesson to review what was learned or taught that day. Scaffolding was provided by means of modeling the expectation and then allowing students to either complete or design their own version of the task at hand. Two of the High Yield Strategies that were utilized in the development of the science unit were providing feedback to students when completing a task and providing nonlinguistic representation when ever possible to provide students with clarity of the task at hand. Some of the GLAD strategies that were used in the science unit were providing; pictorial input charts, cognitive content dictionaries, and the use of chants.

Pictorial input charts are posters of pictures drawn lightly with pencil prior to the lesson. Once the lesson has begun, the teacher then uses markers to draw out the picture in color. As the picture is being drawn, it is the teacher's time to explain or discuss important information about the drawing. Pictorials may include labels for different parts of the drawing or phrases of information about the topic at hand. Pictorials are a great tool because they can be referred to time and time again. Vocabulary can also be learned by covering the labels, writing them on index cards and passing them out to students to name the parts again. Students can also incorporate the four modalities of language acquisition by listening, speaking (participating in discussion), reading the chart and also in copying the pictorial and writing the information that is provided.

Cognitive content dictionaries are a whole group approach to learning new vocabulary as a group. In a cognitive content dictionary, there are three columns drawn out on chart paper. In one column is the vocabulary word, in the second column there is a title for

predictions of the meaning of the word, and in the final column is where the definition will go. Before asking students their prediction, the teacher takes a tally count of students who are familiar or who have heard the word but may not know what it means. The teacher then writes the number beneath the vocabulary word. The next part of the process would be to allow students to predict with their group or with a neighbor, what they think the word means. After sufficient time has been given for predictions, the teacher should write a few in the middle column. In the final column, the real definition is written. Small sketches or drawings of the meaning of the word may also be put in this area. Students can also write the word and definition so as to incorporate reading and writing into science. Actions are included whenever possible to help students remember the meaning of the word.

The use of chants or songs was also utilized throughout the science unit. In one lesson students are asked to create a song or chant using information they have learned about the human body. Students are not expected to make up their own tune rather they are encouraged to use tunes of songs they already know. The process of creating a song or chant provides the opportunity to recall important information in a fun and informal manner.

Partner work or group work was also implemented through out the designing of the lessons. Small group work is an important factor is allowing student's to practice their second language. Small group work also teaches students to work with others as they solve problems or find solutions for the task at hand.

One of the most time consuming processes in the science unit was the translating or modifying of student material. The reading selections were not included in Spanish, only

in English. As a result, time was spent translating the reading selections into Spanish. In this process only the most important or pertinent readings were selected for translation. Careful attention was placed in making sure that the content was in tact, yet written in a manner that attracts student interest and that matched the language levels of all the students in the classroom.

The original handouts that were included with the kit were available in Spanish. However, the level of vocabulary and type of Spanish used in many of the handouts did not match the level of vocabulary or type of Spanish used by the students in the classroom. Therefore, modifications were made to those particular handouts. In other handouts used by the kit, only one or two words would be unfamiliar to the students. In these instances time will be taken to clarify the meaning of the word.

The posters that came with the science kit did not come with Spanish labeling and the vocabulary needed for these translations was not specifically provided anywhere in the kit. Research was needed to find the appropriate translation of the English vocabulary word into Spanish. Many times these words did not appear in typical English/Spanish dictionaries because they were scientific terms and not a part of everyday conversation. One tool that became very useful was an on-line website called wordreference.com. This website offers translations from the English language to various languages other than Spanish. The website provided the translated word, along with other synonyms for the word. Spanish cognates or words most closely resembling English were used if and when appropriate.

CHAPTER V

SUMMARY

It is apparent that as the United States becomes more linguistically and culturally diverse, other measures of instruction are needed to meet the needs of second language learners. Past experience and research state that subtractive models of second language acquisition do not work for the majority of English language learners. Additive programs such as dual language have countless benefits for English language learners and second language learners. For the English language learner, the opportunity to continue to develop the native language as they learn English through the content area is a true asset to affirming academic success. The second language learner is given the opportunity to learn a second language and form relationships with others that otherwise would cease to exist. These factors give both sets of students an advantage making them competitive forces in the global market.

In a dual language program it is equally important to adhere to the national and state learning expectations to ensure that an equal and quality education is being given to all students. In this project the national standards that were focused on were those of science. The national science standards for kindergarteners through fourth grade state that students should develop a basic understanding of a life cycle, including: 1) characteristics of an organism; 2) life cycles of an organism; and 3) organisms and their environments. One of the state science standards expects fourth and fifth graders to learn that systems are comprised of smaller subsystems. From these standards the human body science unit was developed. The human body is an organism with specific characteristics

that are comprised of smaller subsystems that allow for the body or larger system to function.

The procedures for developing the science unit involved three important steps. The first step in the process of developing the science unit on the human body was aligning the science curriculum given by the El School District to the national and state science standards. The second step was to develop lessons that implemented second language teaching strategies. These strategies incorporated hands on activities and implemented the four modalities of second language acquisition which are: listening, speaking, reading and writing. The third step in this process was translating and modifying the material that was included or expected to be taught by the science curriculum.

Many sources and research were included and considered in the development of this project. Heavy research was conducted in the area of how a second language is acquired and the best practices for teaching second language learners. The second language teaching models that were implemented in this project were: Sheltered Instruction Observation Protocol (SIOP); High Yield Strategies (HYS); Guided Language Acquisition Design (GLAD); and scaffolding. These models of second language instruction are researched based strategies that have proven to be key factors in the academic success of second language learners.

The information learned from the research provided ample support in developing the science unit on the human body that contained strategies for teaching a second language through the content area. The research on how a second language is acquired and learned provided an understanding on why so many English language learners fail in typical English only classrooms that do not provide second language teaching strategies needed

for success. Research in the area of best practices for teaching second language learners has proven to be beneficial. The strategies provided in these models are of a constructivist approach, placing the role of the teacher as the guide but not the spotlight. The strategies are engaging, fun and hands-on. These second language models of teaching have provided tools for being very intentional in the expectation of what is being learned and how it is being taught. These strategies teach metacognitive skills to the learner and the teacher. The student learns to think about their thinking and the teacher learns to think about their teaching.

The result of this project was a unit of science lessons on the human body with a focus on the bones, joints and muscles. This science unit includes research based second language teaching strategies and the necessary materials needed for investigations and deeper learning through reading in Spanish.

Conclusions

According to the National Science Teachers Association (2006), six factors must be present when developing lessons used with second language learners. The first factor is to clearly define content objectives that are in alignment with the national and state standards. The second factor is to also state language objectives that are also in alignment with national or state language standards. The third factor is to assure that the content is developmentally appropriate for the grade level of the student. The fourth factor is highly using supplementary materials such as realia, pictures, and supplementary texts. Factor number five is adapting the content to the student's level of language proficiency. The sixth factor is providing meaningful activities that allow students the opportunity to practice reading, writing, speaking, and listening.

Reviewing research related to science for second language learners; how second languages are acquired and learned; and reviewing research on second language teaching strategies provided the necessary background information to develop a unit of science lessons that were academically and linguistically rigorous. Although motivation, access to the language, personality and age may contribute to a student's acquisition of a second language, the strategies implemented in the science unit are important in achieving academic and linguistic success.

<center>Implications</center>

The work of Thomas and Collier in 1999 coined it best when they stated that there were three key factors of academic success for second language learners. The first factor was English language support through the content areas combined with native language support. The second factor was the use of current approaches to teaching curriculum through the use of two languages. The third approach was the socio-cultural environment of the school in which the school and curriculum is inclusive of all students despite language or cultural differences.

This project employs all of the factors mentioned above. As part of a dual language program there is English and Spanish language support through the content areas. Secondly, current teaching strategies are implemented throughout the unit, through the use of SIOP, HYS, GLAD and scaffolding.

With this in mind, this project implies that through the use of second language teaching strategies and alignment of state and national standards, students who are not native English speakers and students who are learning a second language such as Spanish, should be successful in learning about the human body.

Recommendations

Further work on this project is needed in providing other sources or links appropriate for fourth graders about the human body in Spanish. Another recommendation for future reference is providing a multicultural aspect of other cultures through literature. In the original science unit, no formal assessments are present in English or in Spanish. Although informal assessments were designed, developing a form of formal assessment would be beneficial in reviewing how much students learned through the context of learning another language.

References:

August, D., &Hakuta, K. (1998). *Improving schooling for language minority children.* Washington, D.C.: National Academy Press.

Baker, C. (1992). *Attitudes and language.* Clevedon, England: Multilingual Matters.

Baker, C. (2001). *Foundations of bilingual education and bilingualism.* Clevedon, England: Multilingual Matters.

Baker, D. B., Gratama, C. A., Peterson, K. M., & Bianchi, G. (2008, August). *Office of Superintendent of Public Instruction's District Improvement Assistance Plus: Othello School District.* Retrieved from http://www.bercgroup.org

Becijos, J. (1997). *SDAIE: Strategies for teachers of English Learners.* Bonita, CA: Torch, Publications.

Brooks, J. & M. (1993). *The case for a constructivist classroom.* Alexandria, VA: Association for Supervision and Curriculum Development.

Bunch, G., Abram, P., Lotan, R., & Valdes, G. (2001). Beyond sheltered instruction: Rethinking conditions for academia language development. *TESOL Quarterly, 10(2/3),* 28-33.

City Data. (n.d.). Retrieved July 17, 2009, from http://citydata.com/city/Othello-Washington.html

Collier, V. (1987). Age and rate of acquisition of second language for academic purposes. *TESOL Quarterly, 21,* 617-641.

Collier, V. (1989). How long? A synthesis of research on academic achievement in a second language. *TESOL Quarterly, 23,* 509-531.

Cummins, J. (1980a). The cross-lingual dimensions of language proficiency:

   Implications for bilingual education and the optimal age issue. *TESOL Quarterly,*

   14(2), 175-187.

Cummins, J. (1980b). Psychological assessment of immigrant children: Logic or

   intuition? *Journal of Multilingualism and Multicultural Development, 1,* 97-111.

Cummins, J. (1981a). Age on arrival and immigrant second language learning in Canada:

   A reassessment. *Applied Linguistics, 2,* 131-149.

Cummins, J. (1981b). The role of primary language development in promoting

   educational success for language minority students. In Schooling and language

   minority students: A theoretical framework. Los Angeles: California State

   University, National Evaluation, Dissemination and Assessment Center.

Cummins, J. (1994). Primary language instruction and the education of language

   minority students. In *Schooling and language minority students: A theoretical*

   framework (2nd ed.). Los Angeles: California State University, National Evaluation,

   Dissemination and Assessment Center.

Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the*

   crossfire. Clevedon, England: Multilingual Matters.

De la Pena, F. (1991). *Democracy or Babel? The case for official English in the*

   United States. Washington DC: U.S. English

Echevarría, J. & Graves, A. (2007). *Sheltered Content Instruction: Teaching English*

   language learners with diverse abilities (3rd ed.). Boston, MA: Pearson Education.

Echevarría, J., Vogt, M., & Short, D. (2008). *Making Content Comprehensible for*

   English learners: The SIOP Model (3rd ed.). Boston, MA: Pearson Education.

Elkind, D. (1970). *Children and adolescents: Interpretive essays on Jean Piaget.*

New York: Oxford University Press.

Fillmore, L.W. (1985). Second language learning in children: A proposed model.

Proceedings of a conference on Issues in English language development for minority

language education, Arlington, VA. (ERIC Document Reproduction Service No. ED

273 149).

Garcia, E.E. (1985). *Early childhood bilingualism.* Albuquerque, NM: University

of New Mexico Press.

Gibbons, P. (2002). *Scaffolding Language Scaffolding Learning: Teaching second*

language learners in the mainstream classroom. Portsmouth, NH: Heinemann Press.

Gersten, R., Brengelman, S., & Jiménez, R. (1994). Effective instruction for culturally

and linguistically diverse students: A reconceptualization. *Focus on Exceptional*

Children, 27, 1-16.

Gold, N. (1993). Solving the shortage of bilingual teachers: Policy implications of

California's staffing initiative for LEP students. *Proceedings of the third national*

Research symposium of limited English proficient student issues. Washington DC:

U.S. Department of Education, Office of Bilingual Education and Minority Language

Affairs.

Guides. (n.d.). Retrieved July 20, 2009, from http://www.k12guides.com

Hakuta, K. (1986). *Mirror of language: The debate on bilingualism.* New York:

Harper Collins.

Herrell, A. & Jordan, M. (2004). *Fifty strategies for teaching English language learners,*

(2nd ed.). Upper Saddle River, NJ: Pearson.

Hornberger N.H. (1994). Continua of biliteracy. In B.M. Ferdman, R. Weber, & A.G.

    Ramirez (Eds.), *Literacy across languages and cultures* (pp. 103-139). New York:

    State of New York Press.

Jameson, J. (1998). Three Principles for success: English language learners in

    mainstream content classes (*From Theory to Practice,* Issue No. 6). Tampa, FL:

    Center for Applied Linguistics, Region XIV Comprehensive Center. From www.

    cal.org/cc14/ttp6.htm.

Krashen, S. (1982). Accounting for child-adult differences in second language rate and

    attainment. In S. Krashen, R. Scarcella & M. Long (Eds.), *Child-adult differences in*

    second language acquisition. Rowley, MA: Newbury House.

Krashen, S. (1985). *The input hypothesis: Issues and implications.* New York:

    Longman.

Krashen, S. (1994). Bilingual education and second language acquisition theory, In

    Schooling and language minority students: A theoretical framework (2nd ed.). Los

    Angeles: California State University, National Evaluation, Dissemination and

    Assessment Center.

Krashen, S. (1997). Why Bilingual Education? *ERIC Digest.* Retrieved June 25, 2009,

    from,   .

Lawrence Hall of Science. (2005). *Human Body.* Berkeley, CA: Delta Education.

Marzano, R., Pickering, D. & Pollock, J. (2001). *Classroom Instruction that Works:*

    research based strategies for increasing student achievement. Alexandria, VA:

    Association for Supervision and Curriculum Development.

McLaughlin, B. (1987). *Theories of second language learning.* London: Arnold.

The National Commission on Excellence in Education (Ed.). (1983, April). *A Nation at*

    Risk: The Imperative for Educational Reform. The National Commission on

    Excellence in Education.

National Research Council (1996). *National Science Education Standards.*

    Washington DC: National Academy Press.

National Research Council (2000). *Inquiry and the National Science Education*

    Standards: a guide for teaching and learning. Washington DC: National

    Academy Press.

National Science Teachers Association (2006). *Science for English language learners:*

    K-12 Classroom Strategies. Arlington, VA: National Science Teachers Association

    Press.

Nieto, S. (2000). *Affirming diversity: The sociopolitical context of multicultural*

    education. New York: Longman.

Office of the Superintendent of Public Instruction (2008, December). *Revised*

Washington state K-12 science standards. Office of the Superintendent of Public

Instruction.

Project GLAD (2009, June 17). *The Guided Language Acquisition Design*. Retrieved

    July 8, 2009, from http://www.projectglad.com/glad.html.

Rodriguez, R. (1982). *Hunger of Memory: the education of Richard Rodriguez. An*

    autobiography. Boston: D.R. Godine.

Rueda, R. (1998). Addressing the needs of a diverse society. In T.E. Raphael & K.H. Au

    (Eds.), *Literature-based instruction: Reshaping the curriculum* (pp. 349-354).

    Norwood, MA: Christopher Gordon Publishers.

Saunders, W. (1992). The constructivist perspective: Implications and teaching

strategies for science. *School Science and Mathematics 92 (3): 136-141.*

Scarcella, R., & Higa, C. (1982). Input and age differences in second language

Acquisition. In S. Krashen, R. Scarcella, & M. Long (Eds.), *Child-adult differences*

in second language acquisition. Rowley, MA: Newbury House.

School Finder. (n.d.). Retrieved July 20, 2009, from http://www.education.com

Sleeter, C.E., & Grant, C.A. (1999). *Making choices for multicultural education: Five*

approaches to race, class, and gender. New York: John Wiley & Sons.

Snow, C. (1992). Perspectives on second language development: Implications for

bilingual education. *Educational Researcher, 21(2),* 16-24.

Soltero, S. (2004). *Dual Language: teaching and learning in two languages.*

Boston, MA: Pearson Education.

Thomas, W., & Collier, V. (1999). *School effectiveness for language minority students.*

George Washington University, Washington DC: National Clearing House for

Bilingual Education.

Wheatley, G. (1991). Constructivist perspectives on science and mathematics learning.

Science Education 75 (1): 9-21.

Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in Problem Solving.

Journal of Child Psychology and Psychiatry 17 (2): 89-100.

Word Reference [on-line English/Spanish dictionary]. (n.d.). Retrieved July 14, 2009,

from

Second Language Teaching Strategies

For Teaching the Human Body

To Fourth Graders

INTRODUCTION

The following pages include detailed schedules of how the dual language program works at El School. Also included are the detailed lesson plans for each science lesson on the human body. Each lesson incorporates second language teaching strategies. Following some of the lessons are readings translated from the student reader provided by the science kit. The readings have been translated from English to Spanish. Careful attention was put into making sure the content was intact yet written in a manner that meets the appropriate linguistic skills of the students in the classroom. Also included are three informal assessments that were developed to check student progress.

TABLE OF CONTENTS

4th Grade Dual Language Schedule:

Week 1: Spanish Class

	Monday	Tuesday	Wednesday	Thursday	Friday
A.M	Eagles	Cougars	Eagles	Cougars	Eagles
P.M	Cougars	Eagles	Cougars	Eagles	Cougars

Week 2: Spanish Class

	Monday	Tuesday	Wednesday	Thursday	Friday
A.M	Cougars	Eagles	Cougars	Eagles	Cougars
P.M	Eagles	Cougars	Eagles	Cougars	Eagles

Daily Schedule:

8:30-9:35	Math
9:40-10:20	Specials
10:20-10:40	Writing
10:45-11:30	Lunch/Recess
11:30-11:35	Transition to Spanish or English Classroom
11:40-12:25	Science/Social Studies
12:30-2:00	Reading
2:00-2:15	Recess
2:20-2:40	Science/Social Studies Wrap up; Read aloud; games; DEAR time

Please note:

This content has been redacted due to copyright concerns.

Appendix: All pages after page 52 have been redacted.