

Strategies to Enhance the Positive Effects of Bilingualism

by

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Dedication: To my parents who provided an amazing life for me, my fiance Kyle, the teachers that believed in me, and my students.

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CHAPTER ONE

INTRODUCTION

In this introductory chapter, I will discuss the personal background and professional connection that has led me to my capstone question. The question I am looking to answer is: *What strategies are available to educators to enhance the positive effects of bilingualism in their students?*

Personal connection

Educators should always keep in mind their own backgrounds and be open to discussing the similarities and differences between our own cultural and linguistic background versus our students' backgrounds. I come from English-speaking parents and I am both Caucasian and Hispanic. My mother's ethnicity is Caucasian, and my father's ethnicity is Hispanic I grew up in San Diego, California, where between one-third and one-fourth of people identify as Hispanic or Latino. I graduated from high school with honors and was the first person in my family to go to college. As a first-generation college student, higher education and learning were not easy for me because I had to figure things out for myself as far as academics went. But one thing that I did not have to struggle with was a language barrier. All of my classes were taught in English, had nothing but English notes and tests, and every sign was first presented in English. As a student, math did not come quickly or easily to me; I was one of the students who had to put one hundred and ten percent into my learning or my grades suffered. Teachers did not

have the time to slow down or assist students who did not readily understand the subject, as they had a curriculum to cover and a short amount of time to do so. I was envious of the students who did not have to study for a test in order to get an A. It took me two years to fully understand algebra, but since then, I have been able to solve algebra problems very quickly and easily. When I was taught math in my first language, I still struggled with it, so I can't imagine the difficulties for a student with a language barrier or a student who is unable to communicate their answers in their preferred language.

Professional Connection

My introduction to this Capstone began with the organization ACES (Athletes Committed to Educating Students). I was a part of ACES between 2013 and 2017 during my time at Hamline University, a private liberal arts institution in Saint Paul, Minnesota. ACES is an after-school organization that works with at-risk students and combines sports with math and socio-emotional learning. This organization provided a curriculum for its team leaders to teach a wide range of skills and abilities to their own groups of students. While I was a Team Leader with ACES, I remember throwing footballs with students and calculating the distance for each throw a student made. The students were able to have fun, engage in the activity, and learn how to use formulas and equations to answer a real-life question. I was connected with ACES for four years, and it is the reason I found education as a career path. Because of ACES, I was interested in learning more about teaching students and decided to take Schools and Society, which is an introductory education course at Hamline.

During my time at Hamline University, I was a part of the McVay Youth Partnership. The McVay Youth Partnership is an after-school program that primarily focuses on higher elementary through high school Karen students. I had many different roles throughout these years, starting as an intern and then working my way up to being a site leader of Wheelock and Washington Site. One of my experiences at McVay that connects to my Capstone occurred when a brand-new family from Myanmar was introduced to our site. This was a Karen family who did not speak English and my site had a hard time communicating. We had to find creative ways and strategies to inform the family of activities and events. My site staff also wanted to make sure that the family felt safe and welcomed. We were able to communicate by providing visual aids and translated documents. We also planned an event called Family Night in which parents could eat dinner and learn about what was happening at McVay. As a result, the parents learned more about McVay and became increasingly engaged in the program.

I finished my final semester at Hamline student teaching in a first grade classroom. After graduating, I was the building substitute teacher at Cedar Riverside Community School. Halfway through the school year, I became the long-term fifth through eighth grade math substitute. While in this role, I discovered a love for teaching math to fifth through eighth graders. At this school there was a high population of Somali students whose primary language was Somali. The expectation at Cedar Riverside was that students were to speak academic English, or they were reprimanded. I observed that not allowing students to speak a language they felt comfortable speaking was becoming

detrimental to the students' learning. I wondered what would happen if students were able to have the option of speaking in a language they preferred and how this would impact their way of approaching and solving higher order processing and thinking of math.

Currently, I am a sixth grade math and science teacher at Aurora Charter School. This is the first year I am responsible for my own classroom, and I am currently doing my best to be an information sponge. I am actively identifying best practices for teaching math to my student body, of whom 99 percent are Hispanic and Latino and 74 percent are English Language Learners. My school is currently moving from a predominantly English Learning (EL) approach to a bilingual approach to education due to the overwhelming majority of bilingual students enrolled in it. These students are primarily second-generation Americans whose parents immigrated from Latin America to Minnesota. In my year at Aurora, I have noticed that many of our students' parents want their children to be more Americanized. They want their children to speak more English than Spanish because they hope it will open more educational opportunities for them.

As an educator, I must find a way to respect my students' cultural identity and the languages they speak without pushing them toward one culture or another. I must also find a way to tell my students that being bilingual is a powerful tool and something to be proud of. I recognize that most of my students are Hispanic or Latino and speak Spanish, but some of them prefer to speak and practice their English. I have to incorporate both

cultural aspects of my students in my classroom. This is one of the many reasons I have decided to research how to better incorporate bilingualism in my classroom.

My school often gets a lot of newcomers from all over Latin America. I was recently assigned a newcomer who does not speak any English but is learning quickly. I am currently trying to incorporate more bilingual strategies in my classroom and help all my students become more comfortable with speaking both Spanish and English. One way that I am doing this is providing more mathematical conversations in both Spanish and English. I am also trying new strategies and attempting to identify which strategies work best for my current students. I hope this capstone project will add to the strategies I have at my disposal for the rest of my career to facilitate learning, help my students embrace their bilingual identity, and provide other educators strategies to help enhance the positive effects of bilingualism in their students.

Capstone Overview

In this chapter, I discussed the personal and professional connection to my capstone question. I also referenced my own struggle with math and how I can connect with students about the difficulty of math. In the next chapter, I will discuss the abundance of bilingual learners in America and the impact of encouraging the multiple spoken languages in the classroom on these students. This chapter will also consider the four domains of language and provide examples of bilingual strategies for each domain. Chapter three will illustrate the reasons I chose to create a website: to showcase the different bilingual strategies laid out in chapter two, provide the research supporting the

effectiveness of websites as a means of communicating learning strategies to teachers, and share the tools I will use to collect data from educators who visit the website. Chapter four will discuss the results of the data collected and what they mean for our bilingual students, as well as serve as a conclusion to this capstone project. It is imperative for educators to find new and better the next best tools for their students. This drive, coupled with my personal and professional experience with bilingual learners, leads me to my research question: *What strategies are available to educators to enhance the positive effects of bilingualism in their students?* Ultimately, the capstone process will enable me and other educators to make learning more engaging for the bilingual students in our classrooms and create a culturally responsive classroom.

CHAPTER TWO

REVIEW OF RESEARCH LITERATURE

Overview of Chapter Two

Throughout the world, children speak more than one language, and the United States of America is no exception. This chapter begins with a discussion of the languages present in the United States and included a discussion of the potential for adapting classrooms to incorporate bilingual students. The chapter also included an explanation of how incorporating home language (L1) and school language (L2) can lead to greater student engagement. Further, this chapter established and discussed the four domains of language: reading, writing, speaking, and listening, and concluded with strategies for each domain of language which support bilingual students in the classroom. This chapter establishes the opportunity for increased bilingual education, the positive effects of bilingualism in the classroom, and the ways in which teachers can engage with their bilingual students. This will support the investigation of the question: *What strategies are available to educators to enhance the positive effects of bilingualism in their students?*

Languages Present in the United States, Minnesota, and Minneapolis

The purpose of this section is to discuss the languages spoken in the United States, and more specifically, in Minnesota, to show that the bilingual student population is sizable and would benefit from specific efforts to integrate their bilingualism. There are 327.2 million people currently living in the United States as of 2018. Of 60.6 million

people who speak a language other than English at home in 2011, almost two-thirds (37.6 million) speak Spanish. In addition to English and Spanish, six languages in 2011 are spoken at home by at least 1 million people: Chinese (2.9 million), Tagalog (1.6 million), Vietnamese (1.4 million), French (1.3 million), German (1.1 million) and Korean (1.1 million) (United States Census Bureau, 2011). This source also demonstrates that the number of language speakers who spoke English “very well” outnumber those who spoke English “less than very well” for every language except Chinese, Korean, Vietnamese, Khmer, and other languages of Asia.

The data illustrate an important fact about the Spanish-speaking population: There are a significant number of Spanish speakers in the United States who speak English very well. Because Spanish is the most common first-language spoken in America aside from English, there is an opportunity to incorporate bilingual education efforts with Spanish-speakers. The data also shows that 47% of Spanish speakers (Census Bureau, 2011) did not speak English well, which indicates there is still a need for an increased English Learner (EL) focus, but this does not detract from the large number of people who would benefit from bilingual education efforts.

Languages Spoken in Minnesota

The census data discussed above is reflected in Minnesota, and more granularly, in Minneapolis. According to the American Community survey (United States Census Bureau, 2017) 11.1% of Minnesotans (age 5+) spoke a language other than English at home. After English, the most common languages spoken are Spanish (about 194,121

speakers) and Hmong (58,833 speakers). The observation from the overall census holds true in Minnesota: most people that speak another language than English also speak English very well.

Languages Spoken in Minneapolis

According to Minneapolis Public schools, as of 2018, there were nearly 90 different languages spoken by students in Minneapolis Public Schools. Spanish, Somali, Hmong, and Oromo are the four languages most spoken by English Learners. While Somali, Hmong and Oromo are not major languages spoken in the United States or in Minnesota, there are opportunities in specific cities and communities to incorporate bilingual strategies for students speaking languages other than Spanish (see Figure 1).

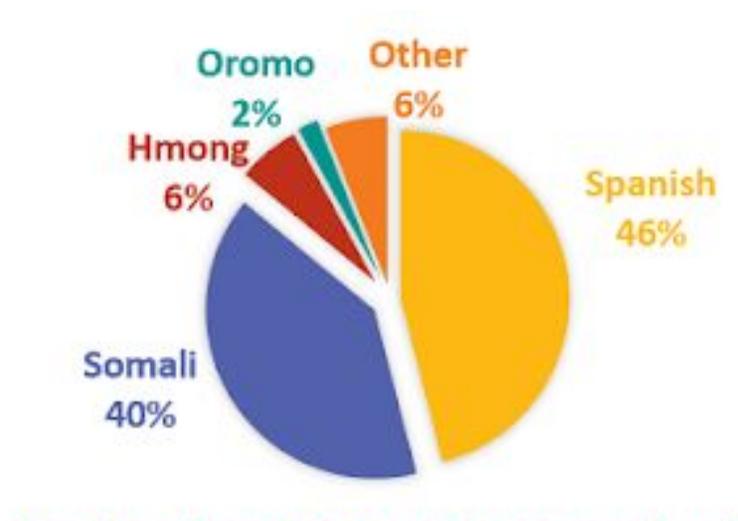


Figure 1. Languages spoken graph. This illustrates the different languages spoken by students in Minneapolis Public Schools. Adapted from "Fast Facts on English Learners:

2018-2019," by Multilingual Department, Minneapolis Public Schools, 2017, Retrieved April 1st, 2019, from <https://multilingual.mpls.k12.mn.us/demographics>.

According to the 2017 American Community Survey in Minneapolis (United States Census Bureau, 2017), 51.56% of Spanish speakers also speak English very well. Just over 73 percent of Indo-European speakers also speak English very well, and finally 58.11 percent of Asian/ Pacific Islander speakers also speak English very well. The statistics in these censuses is important for quantifying the number of people who could potentially benefit from a bilingual approach in the classroom. The 40% of Somali language spoken in Minneapolis Public Schools shown in figure one shows that there are opportunities in specific cities and communities to incorporate bilingual strategies for students speaking languages other than Spanish (opportunities exist in Minneapolis to expand bilingual strategies to both primarily Spanish and primarily Somali-speaking students).

In this section, I have discussed who the bilingual strategies would help and the prevalence of people who speak more than one language in the United States, Minnesota, and Minneapolis. I have talked about the different languages spoken in the United States, Minnesota, and Minneapolis. The following sections will define L1 & L2 and the positive effects of bilingualism.

L1 & L2

In order to understand the effects of bilingualism, a few terms need to be immediately discussed. First is the term L1; Van Gelderen et al. (2007) define "L1" as

the student's first or home language. The second term needed is L2. L2 is the second or foreign language that students learn. There have been a few studies that look at the impact of bilingualism in solving problems.

Presenting questions and problems in a student's L1 has a direct impact on the learner's ability to solve them. In a study that focused on 75 second- and third-grade Filipino-English bilingual students where the students' L1 was Filipino with English as their L2, students score higher when word problems are presented in students' first language rather than English. The researchers found that when problems were presented in Filipino some students were able to understand both the problem text and mathematical structure, allowing them to give a correct answer to the problem whereas when only English was given, the text was deemed meaningless from the students (Bautista, Mitchelmore, & Mulligan, 2009).

	Written		Written and read-aloud	
	English	Filipino	English	Filipino
High-achievers ($n = 35$)	0.705 (± 0.311)	0.752 (± 0.272)	0.667 (± 0.343)	0.733 (± 0.289)
Low-achievers ($n = 40$)	0.417 (± 0.259)	0.625 (± 0.274)	0.400 (± 0.264)	0.592 (± 0.267)

Figure 2. High achievers vs. low achievers. This illustrates how scores increased for both high-achievers and low-achievers in both the written and written/read-aloud sections when the problems were presented in Filipino. Adapted from "Factors influencing Filipino children's solutions to addition and subtraction word problems," by D. Bautista,

M. Mitchelmore, and J. Mulligan, 2009, *International Journal of Experimental Educational Psychology*, 29(6), p. 735. Copyright 2009 by Taylor & Francis.

This research builds on a study that also looked at Filipino-English bilingual students. The researchers had two classes of fifth graders answer a test booklet of 18 questions where ten questions of the eighteen were answered. One class was given a booklet presented in Filipino and the other class was given a booklet presented in English. The researchers found that Filipino-English bilingual students were more successful in understanding and solving word problems that were stated in their first language, and were more likely to experience failure in finding a solution if the problems were stated in their second language (Bernardo & Calleja, 2005); this heightened comprehension is beneficial for overall student learning.

Another Filipino-English study consisted of 283 students in grades two through four. All participants were asked to study a set of word problems about probability. Researchers discovered that, when problems were presented in their L1, students were better able to fully explore and engage in the word problems and demonstrated a deeper level of understanding of the subject matter and its application to other problems in the future (Bernardo, 1999).

The final study took place in Papua New Guinea, a country where sixteen percent of the world's languages are spoken. Researchers found that bilingual students understand word problems better in their more proficient language and are more likely to commit an encoding error when the problems were only presented in English. An

encoding error is what happens when students are unable to process verbal information at all or struggle to process such information quickly. This means that students were more likely to fail to write the desired answer correctly when the problems were presented in English (Clarkson, 1991).

These four pieces of literature illustrate that giving students the opportunity to participate and engage in more than just their secondary language can help diminish the language barrier educators sometimes have in classrooms when they focus exclusively on English. Students feel more comfortable engaging in one language over another language; the research outlined above demonstrates that bilingual students comprehend concepts and perform better if problems are presented in both their L1 and L2 rather than just their L2. By limiting instruction to only one language, educators limit the amount of learning their bilingual students can accomplish in a certain time frame and limit the positive effects of bilingualism in students.

Effects of Bilingualism

Having more than one language in our classrooms opens up many opportunities for learning and growth inside the classroom and outside the classroom. Additional studies demonstrate that students exposed to lifelong bilingualism have higher order processes (higher order thinking skills) that are needed for flexible thinking, problem solving, and planning. A study that looked at 60 preschool children, half of whom were bilingual and spoke both Chinese and English, found the bilingual children were better able to ignore distracting information in a moving word task, where the word is moved

around and then is repeated by the participant, than children who attended the same school and had similar backgrounds but only spoke English (Bialystok, 1999).

Another study that focused on the effects of bilingualism looked at monolingual English adults living in Canada and Tamil-English adults living in India. All the bilinguals in the study had used their two languages essentially every day of their lives, at least since the age of about 10 years. The researchers concluded that bilingualism reduced the age-related increase in the Simon effect. The Simon effect is an outcome of the Simon test which shows people respond faster and more accurately if there is a match between stimulus and response features. For example, in this study participants were instructed to press the left shift key (marked “X”) when they saw a blue square and the right shift key (marked “O”) when they saw a red square. The researchers measured the amount of time it took for participants to respond to the test and the number of errors participants made. This study found the age-related increase in the Simon effect was substantially less for the bilingual adults (708 milliseconds) than for the monolingual adults (1,178 milliseconds). The researchers also concluded that if the boost given by childhood bilingualism is sufficiently strong, bilingualism may continue to influence certain control processes throughout the life-span such as: fluid intelligence, cognitive flexibility, and attentional control. This study demonstrates bilingualism has direct impacts on mental acuity later in life and that these impacts can be enhanced if bilingualism is encouraged in childhood (Bialystok, Craik, Klein, and Viswanathan (2004).

Another study that shows the benefits of bilingualism conducted in 2018 focused on Catalan-Spanish bilingual speakers and Spanish monolingual speakers. Participants had to indicate the orientation of a line (horizontal or vertical), by pressing the key A or L. They also instructed participants to keep their eyes fixated at the center throughout the experiment. They concluded that bilingualism exerts an effect in the executive control network but does not exert any effect in the processes involved in the orienting network of attention (Costa, Hernandez, Fuentes, Vivas, & Sebastian-Galles, 2018). This means bilinguals were advantaged at language-free conflict resolution tasks and are able to select the target word without getting distracted by unnecessary words that do not translate easily into their other language.

These three pieces of research showed that the effects of bilingualism can indeed go further than the classroom and can set bilingual students for future success in life. The research noted above explored the effects of bilingualism in relation to processes, skills, and the positive effects of lifelong bilingualism, as well as discussed how the effects of bilingualism not only impacts students in the classroom but also in their everyday lives and brain. The next section will explain the four domains of language, prior research of language acquisition in bilinguals, and the current research of language acquisition of bilingual learners.

Four Modalities of Language

Language can be broken up into five parts (domains): pragmatics, semantics, syntax, morphology and phonology. Pragmatics is the study of signs, words, or sentences.

Semantics is the study of meaning in language. Syntax is the study of the set of rules to create sentences in a language. Morphology is the study of the form of words and phonology is the study of speech sounds. The language skills needed for the domains are called modalities of language (ASHA, 1993). The four modalities of language are speaking, reading, writing, and listening. Language can be classified as receptive (i.e., listening and reading) or expressive (i.e., speaking and writing) (ASHA, 1993). This section will first describe traditional ways of thinking about the four modalities of language and how they affect student development before introducing modern ideas regarding language domains.

Bergman (1976) describes bilingual students in America: “In the past, some teachers and service providers (including early interventionists) in the U.S. advised immigrant parents against raising their child to be bilingual, stating that it diminished the ability to learn English”. Bergman also describes an older understanding of bilingualism that infants who hear two different languages from birth create two independent systems: one for the first language and one for the second (Bergman, 1976). Mohr et al. (2018) note that “older understandings of children and language domains were that the listening domain appeared first, followed by speaking, reading, and then finally writing”. A more current view is that children can learn languages simultaneously and that the four domains can be mutually reinforced with a positive effect. In Mohr et al.’s (2018) study that looked at current research of bilingualism, researchers found that elements of one

language are used in the other and that there a more positive effect if the two languages share many common features.

Mixing one language with another, known as “code-switching,” was once seen as language confusion but is now understood as language socialization practices in the family, where students are trying to connect both their home language and their socializing language (Mohr et al., 2018). Children will use more mixed utterances the more tolerance there is for them in their environment (Lanza, 1997b). This means that students were more likely to code-switch if they were in an accepting and tolerant environment, and will therefore socialize their L2 more quickly and effectively.

Researchers found that much new research indicates a misconception that bilingualism complicates language and cognition, that children raised with input from two languages are disadvantaged (Kroll, Bobb, & Hoshino, 2014). Kroll, Bobb, and Hoshino found that bilingual learners benefit from the interplay between their L1 and L2 and are more linguistically aware than their monolingual counterparts. Current research also shows that children who are regularly exposed to two languages create two different language systems where the development of one language does not have any effect on the other language (Kroll, 2005 pg 30-43).

A study of Dutch-English bilingual children found that children who have been regularly and frequently exposed to two languages from birth and actively speak both languages are no less proficient than monolingual children. Both bilingual and monolingual children start their meaningful language production using single word

sentences (Kroll, 2005 pg 30-43). All children produce the same sorts of utterances and similar types of errors as they learn languages. Because both bilingual and monolingual students learn languages in the same way, any strategy which helps bilingual students learn a topic more effectively also helps monolingual students (De Houwer, 1990).

Educational practices that ignore or negatively regard students' native language and culture could have negative effects on their cognitive development (Garcia, 2005). If students' first language and culture was only used to learn English, the students' cognitive development could be hindered or interrupted. Children utilize native language abilities as a tool to construct higher-order thinking. Gardner and Lambert (1972) found that a more positive attitude of English speaking Canadians toward French speaking Canadians led to a higher motivation to speak French; the attitude of the learner towards members of the cultural group whose language she is learning directly influences language acquisition.

Bilingual Strategies

Educators can combine their students' L1 and L2 in their classrooms by implementing bilingual strategies. A bilingual strategy is a strategy used in classrooms that supports not only bilingual students but can also support monolingual students. A bilingual strategy is a strategy educators can implement in the classroom to enhance the positive effects of bilingualism. The strategy could be implemented in the students' L1 or be used to develop a connection between a students' L1 and L2.

A 1999 research study compared two instructional reform programs for elementary students: Exito Para Todos, and a monolingual program where students were only taught in English. Exito Para Todos is a Spanish bilingual program which is part of the original Success for All program, where students are taught to read in Spanish and then transitioned to English in the third and fourth grade. The students in the two Exito Para Todos schools in California scored higher than students who were taught exclusively in English at every grade level (Slavin & Madden, 1999).

In her review of research findings, Collier (1992b) compared the level of first- and second-language support students received to their academic achievement. She found that the more linguistic support a student receives, the more likely he or she was to have higher levels of academic achievement in a second language in each succeeding academic year. The bilingual student also showed higher levels of improvement from year to year than their monolingual peers.

Alanis (2000) found that out of all of the different programs researched that used both Spanish and English for five years, it was the bilingual program that saw a significant increase in reading scores every year since they were implemented.

The section above outlined the importance of bilingual strategies and the impact they have on students' academic achievement. The next section will describe what a bilingual strategy is, how bilingual strategies can be implemented in a different language or be used to enhance the effects of bilingualism, and one example of a bilingual strategy in each language domain of reading, writing, listening, and speaking.

Bilingual Reading Strategies

One of the first things a pre-kinder and kindergarten teacher tries to teach their students is how to read. They learn their alphabet and how certain words look and sound like. In order to increase a student's vocabulary of words educators need to build a basic reading vocabulary at an early age and continue to build their vocabulary as they get older. Studies show that bilingual students will automatically attempt to relate L2 vocabulary to the L1 vocabulary they already know. "Carlisle and his fellow researchers showed that the size of L1 vocabulary predicted L2 reading comprehension with Spanish-English children in grades one through three" (Durgunoğlu, Goldenberg 2011 pg 33). Whether vocabulary transfers from L1 to L2 depends on the existence of cognate relationships between the two languages of the bilingual student. Cognates are words that have a common source; research shows that knowledge of the cognate relationships that exist between Spanish and English directly assists in L2 English vocabulary development and L2 English reading comprehension in Spanish- English bilinguals (Ordonez et al., 2002). A study also found that when students knew the Spanish cognate word they identified 67 percent of the English words, in contrast with an identification rate of 37 percent if they did not know the Spanish cognates (Durgunoğlu, Nagy, & Hancin-Bhatt 1993).

One strategy that can help bilingual students with their vocabulary is a bilingual vocabulary word mat that can help students keep track of the words they are running into, their meaning/ definition, and the translated version of the word. In this strategy, students

have the chance to fill in the cognate definition in either English or their L1. For example the English word angle or the Spanish word el ángulo.. Students would fill in the definition, write the cognate of the word in either English or L1, and can draw a picture that goes with the word. This strategy helps expose students to potential new vocabulary words and in order to learn a new word multiple exposures are needed. A study that looked at third graders found that greater gains in semantic knowledge were made when students had a higher amount of exposure to the targeted words. (McGregor, Sheng,& Ball, 2007) .

Bilingual Writing Strategies

The next aspect of language is writing. Gort (2006) observed four English- dominant and four Spanish- dominant students as they composed stories in both their English and Spanish classes. His study revealed similarities and differences in the students' cross-linguistic skills as well as patterns of transfer. He found that the bilingual students used their L1 to monitor their writing and ask questions while writing in their L2 . In this process, the students were developing two written languages by applying what they know about writing in one language to the other language.

One study examined the activities involving the use of text, cultural values, attitude, and relationships that shape and give meaning to events. They also found differences in exposure to reading and writing that had to do with having availability to both Spanish and English texts (Reese, Thompson, & Goldenberg 2005). This means that bilingual students need texts are available in both of the languages they speak and the

texts need to include the cultural values, attitudes about the culture, and the relationships within that culture.

One example of a writing bilingual strategy is a double entry journal. A double entry journal in which two sides of a journal are being filled out. One side is the math solving calculations and the right side is the writing out how they solved the problem in their own words. Students have the option of writing in their preferred language. This also gives students the chance to write out how they are solving the problems which leads to higher order thinking. “Double entry journal (Tovani, 2000) guides students to monitor their understanding of a text or problem using a two- column format. “According to Gomez and Gomez (2007), double entry note taking has been successful in helping high school students improve their understanding of science” (Lenski, Wham, Johns, & Caskey, 2011, p. 240-243). This strategy can also be used beyond the math classroom. Students could also be able to use the double entry journal to respond to texts or events happening in their culture and be able to respond as community members.

Bilingual Speaking Strategies

Spoken language involves fast processing. A study that looked at phonological acquisition in bilingual Spanish-English speaking children found that bilingual speakers showed a slower acquisition in phonological accuracy than their monolingual peers. They studied twenty-four children aged three through four years old and also found that the phonetic properties of one language can help with the acquisition of another language (Fabiano-Smith & Goldstein, 2010).

One strategy that incorporates both languages was a strategy called RISA. RISA stands for Routine, Integrated, Structured, and Academic oral interactions. RISA is a strategy that is practiced two to three times a week that get students to start speaking academically. RISA is also an easy tool to incorporate bilingually. Students are able to talk in partners or groups and follow a given script that they will eventually remember. Every day the teachers sets aside 10 minutes to practice the RISA with the students. The students start off by practicing the RISA guided by the teacher and with enough practice are able to practice the RISA with partners and then eventually present it out in the whole class. RISA could be presented in any language and is an easy way for students to practice their speaking abilities and have an easy connection between their L1 or L2. One important tool that goes hand and hand with RISA is that the academic language that students need to learn the RISA script is included in the RISA and will also be provided on the side of RISA. What one educator had to say about RISA was this “My own field experiences and anecdotal observations of using RISA Oral Interaction groups as an instructional strategy for the past two years led me to believe that student participation greatly increased. This was confirmed by the gathered data in the observation scheme. Students were found to be using academic speech eight more instances with RISA Oral Interactions groups while the lesson time was cut in half. Finally, all teachers and students interviewed in the present study agreed that RISA Oral Interaction Groups increase student participation” (Noel, 2018).

Listening Bilingual Strategies

According to a study that looked at the perception to production of speech in children, people learn to speak by listening (Kittredge, Dell 2016). Previous research has shown that listeners have less time than readers to focus on linguistic information which makes it more difficult to notice new words in the input. A research project that looked at how much learning happens from listening in 30 postgraduate students found that 29.9 percent of post learning happened and on the delayed post-test learning 19 percent of learning was found in the cases (Van Zeeland, Schmit 2013). This studies shows that not a lot of learning happens when students are just simply listening. This indicates that far more early attention should be given to promoting speaking and listening skills to make sure that children build a good stock of words, learn to listen attentively and speak clearly and confidently. Speaking and listening, together with reading and writing, are prime communication skills that are central to students' intellectual, social and emotional development (Rose, 2006).

One bilingual strategy which emphasizes the “listening” mode of language acquisition is the TIPS Strategy. TIPS stands for Think, Ink, Pair, Share. It is a cooperative learning strategy which prompts students to think for a minute, write down their thoughts, pair up with students, and discuss what they wrote down. After this, students share their discussion with the whole class. This strategy allows students to practice active listening and listen to what their classmates are saying.

According to (The Origins Program, 2019), this strategy is an excellent way to engage learners in conversation, particularly groups of students who are unwilling or lack

the confidence to speak in larger groups. This strategy starts with the educator posing a question to the students. The students will have one to two minutes to think about their answer to this problem and then are given one minute to write down their thinking on a piece of paper or their notebooks. The next step is to have students talk with the person sitting next to them and have them share what they think about the problem and what they wrote down. Finally, the partners are able to share what they talked about to the whole classroom. This strategy is considered a bilingual listening strategy because it allows students the opportunity to share their information with their partner or whole class in their chosen language. Students have a chance to activate all aspects of language through this strategy and can choose which languages they would like to do the different parts in.

Summary

This literature review established the prevalence of bilingual learners in America by considering census data regarding people who speak more than one language in Minneapolis, Minnesota, and, more broadly, the United States. The review also demonstrates the positive effects of bilingualism and the impact it has on not only bilingual students but also on monolingual students. Next, this chapter discussed the five domains of language and how they work together with the four modalities of language. Finally, this chapter introduced four key bilingual strategies for each which can be implemented in the classroom and is included in the capstone project. The following chapter will provide information about my capstone project, best practices for website

design, my reasoning behind choosing a website platform, and the research behind website usage as a medium for information dissemination.

Chapter 3

PROJECT DESCRIPTION

Overview

The purpose of my project was to disseminate my answers to the question: *What strategies are available to educators to enhance the positive effects of bilingualism in their students?* In chapter 3, I provide a description of the project, a researched rationale for my choice of framework, describe the project audience and setting, and explain how the effectiveness of the project was measured.

Description of the Project

This project centered around the creation of a website tailored to four bilingual strategies: RISA, TIPS, double entry journal, and the word mat strategy. Educators and future educators are able to click on the website and find bilingual strategies that reflect the four modalities of language: reading, speaking, writing, and listening. Each of these strategies represent one or more of the modalities of language. I included each strategy in a menu at the top of the website and expand upon each one in dropdown menus. The website provides examples of each strategy in different content areas along with pictures and other visuals to help educators understand and utilize each strategy. I also included a multilingual function on the website where speakers of Spanish, Somali, and Lao (a close dialect of Hmong), will be able to view any page provided on the website in their native or preferred language. Included in each strategy is an English example of the strategy, as

well as additional examples in Spanish, Somali, or Hmong; this allows educators with students who speak these languages to have an example they can immediately take into their classrooms.

The website also includes current research which explains a few of the positive effects of bilingualism and also compares it to older research. The research section explains why in the research on bilingualism showing code-switching as language confusion is outdated and provides modern research which shows that code-switching happens when students are trying to connect their home language with their socializing language and has a positive effect on their language-understanding (Mohr et al., 2018).

Another section of the 'research' dropdown includes four different research studies which give a brief overview of the positive effects of bilingualism. The first study is about how providing students with questions in a student's L1 as well as English leads students to a greater understanding of the questions and is ultimately deemed more meaningful to students (Bautista, Mitchelmore, & Mulligan, 2009). Another study found that when problems were only presented in a student's L2 that students experienced more failure in finding a solution (Bernardo & Calleja, 2005). The third study included in the website found that students were better able to fully explore and engage in the word problems and demonstrated a deeper level of understanding of the subject matter and its application to other problems in the future when problems were presented in their L1 rather than their L2 (Bernardo, 1999). The last study found that if the boost given by childhood bilingualism is sufficiently strong, bilingualism may continue to influence

certain control processes throughout the life-span such as: fluid intelligence, cognitive flexibility, and attentional control. I decided to include this last study to show that encouraging bilingualism at an early age can have significant positive effects later on in life. Each of these studies were included to represent a different aspect of a student's interaction in the classroom: a student's success in the classroom, their understanding, their engagement and exploration, and finally the rest of their lives when they are no longer our students.

Research Rationale

The research that guided my website design was the guidebookz developed by United States Department of Health and Human Services (2006). Two chapters of this source were especially helpful: 'Research-Based Web Design', and 'Usability Guidelines'. These chapters explain how to have useful content in a website. Some major themes in this reading are: avoiding cluttered display, formatting information for reading and printing, providing assistance to users, using glosses to assist navigation, and the importance of having clear labels and categories. Websites should be designed to ensure that everyone, including users who have difficulty seeing, hearing, and making precise movements, can use them. One way I can try to assist these users is by following the checklist which are guided by Section 508 requirements . I also planned on having someone check the final website for for me to get rid of any bias I may have when checking my own project.

The United States Department of Health and Human Services (2006) rates each guideline it provides as highly rated or of high relative importance. The first two guidelines are to eliminate pop ups and to not require users to remember information. As a website creator I had to make sure that I prepared information with the expectation to be read or printed and did not use color alone to convey information, according to the above guidebook. Another highly related or high relative importance guideline was to make sure I provided a text equivalent for every non-text element and avoid screen flicker for users with epilepsy. I also designed, developed, and tested my website for common browsers such as Firefox, Google Chrome, Microsoft Edge, and tested it on mobile browsing to ensure it was accessible for users with limited internet access. The last guidelines I applied to my website were related to readers' immediate impression my site. The United States Department of Health and Human Services (2006) recommends that the homepage clearly communicate the site's purpose, show all the major options available on the website, and provide a positive first impression of your site in a non-cluttered manner,

One reason I decided to design a website for this project was its relatively low environmental impact. This was especially important because my school's authorizer is the conservation-minded Audubon Society. Instead of using paper and other waste materials, I created a useful and wasteless website. According to the Minnesota Pollution Control Study, recyclable paper (cardboard, white office paper, and mixed paper) accounts for 23.5% of the total waste generated by schools; Minnesota's K-12 public

schools generate an estimated 483,520 pounds of waste per day. As society's technology increases, its waste should decrease; I wanted my project to reflect this.

Project Audience

The project audience is educators who have been in a teacher licensure program or are currently enrolled in a graduate level teaching program (Master's program). This project is for educators or future educators of students who either speak more than one language or for whom English is not their first language (L1). The website is also for educators or future educators who want to learn more strategies which can help their students with the four domains of language through strategies they can implement in their classrooms.

This project is for educators who want to find strategies that can make their students' learning more engaging, applicable, and find strategies specific to their content area. This website is also for educators who are seeking to add new tools and strategies to use in their classrooms, even if their classrooms are not bilingual. Finally, this project is for educators who teach math and science of EL or bilingual students because there is a significant language component in math and science which can be addressed by using the strategies presented on this website.

Effectiveness of the project

The website's effectiveness is measured by an embedded voluntary survey. The survey included six questions which ask about different aspects of the website: its design, navigation, and completeness, and the effectiveness or relevance of its content. There is

also a question about the impact the website will have on its visitors' teaching; which strategies will they implement in their classrooms? The survey concludes with an open-ended space where users can leave freeform feedback about their complete experience on the website. The first and second questions in the survey ask the users if the website is easy and intuitive to navigate and if the background and visuals are effective and not distracting. The third and fourth questions ask users to rate the completeness of the website and how they would rate the clarity of the pages on the website on a scale of one to ten. The last two questions of the survey asked users which strategies they plan to implement in their classrooms after visiting and the final question includes an open-ended text box where users can write out anything they found in the website, any frustrations or questions they have, what strategy they would like to see added next, and lastly anything they would like to share with the website creator. Through this feedback, I will be able to tailor the website to what the users want more of, include more information and strategies, and will be able to fix any navigation problems within the website.

Timeline for Project Completion

This project began in June 2019 and was concluded and published on August 20th, 2019. In early June, I found a website platform that fit my vision for the project (Wix). By mid June, I began putting the strategies I found onto the website and included examples of the strategies and the research behind the strategies. I also found and created other visuals that can be added to each strategy.

By early July, I had incorporated the feedback surveys into the website and had a way of collecting responses. I shared my website with a teacher page of one thousand users. I made my website available to the public by the end of July and began gathering survey responses. I included a contact me button on the website so users could submit their own strategies that they use in their classrooms. By early August and the end of the capstone course, I had checked the translations on the websites, double-checked the research behind the strategies, made sure the examples of the strategies were visible and functional. After the completion of the capstone project, I will begin adding additional strategies to the website and providing other links within the website.

Summary

Chapter Three included a project description of what my website looks like, the research used to inform its creation, and what I included in the website to convey my strategies to users and collect feedback from people visiting the website. I began chapter three with a project description that described the multilingual setting on the website, and the studies from chapter two research overview that is included on my website. I then described the project audience and explained how my project audience is focused on educators of students whose first language is not English, educators who are currently teaching bilingual or EL students, educators currently in a teaching program, or future educators who are looking for engaging, applicable, and find strategies specific to their content area. Thirdly, I described the research behind developing a website and the environmental impacts of creating a website rather than creating a resource with a

physical paper copy. I concluded chapter three with describing the survey that I include in my website and the six questions users are asked in the survey. Chapter three described what my project is and the research behind it. Chapter four provides a reflection of my capstone experience, capstone project, limitations and implications, and future steps and learnings as an educator/ academic writer.

Chapter 4

REFLECTION

Overview of Chapter Four

In this chapter, I will reflect on what I learned through the research I did for this project, as well as through the process of creating my website. I will discuss my successes and struggles throughout the process and provide my learnings throughout the capstone process. I will also explore the implications and limitations of my capstone project, including my plans for disseminating it to a wider audience. Finally, I will describe any results from capstone project, how it relates to education and other educators and explore future projects for myself and others. Throughout this process I will remain focused on my capstone question: *What strategies are available to educators to enhance the positive effects of bilingualism in their students?*

Research Conveyed

Educators are always finding and creating things they can take back to implement in their classrooms or share with other educators. This is exactly why I decided to base my project on something I can implement in my own classroom and teaching and share with other educators. I started with a brief introduction of my story and where I currently am in the teaching profession, I then researched the demographics in the United States, Minnesota, and, more granularly, Minneapolis. I used this research to enhance my

capstone project; according to Minneapolis Public Schools, there is a high percentage of students whose native language is Spanish, Somali, or Hmong. My website contains a multilingual setting on my website where users can select their preferred language out of English, Spanish, Somali, or Lao. I also created strategies in English but had a translated version in English, Spanish, and Hmong so educators know what is being discussed or written about while also being able to present a strategy to the students in their L1 (native language). This way monolingual educators are able to read in English the strategy but be able to implement it in another language.

There were several studies that influenced the strategies that I decided to include in my capstone project. A study involving third graders found that students made greater gains in semantic knowledge when students were exposed more often and more directly to targeted words (McGregor, Sheng, & Ball, 2007); this study influenced me to include a word mat strategy so that students are provided that increased exposure. Gomez and Gomez (2007) demonstrated that double entry note taking has been successful in helping high school students improve their understanding of science. This study helped sway me to include a double entry journal in my website. A researcher in found in 2018 that the RISA strategy helped increase student participation which was instrumental for me because I wanted to include an engaging bilingual strategy (Noel E, 2018). Finally, The Origins Project found in 2019 that the TIPS strategy is an excellent way to engage learners in conversation, particularly groups of students who are unwilling or lack the confidence to speak in larger groups. This research inspired me to include the TIPS

strategy in my website because it is instrumental in engaging and encouraging students who may lack confidence in speaking in front of others. The following section will explain the research I decided to directly feature on my website.

I decided to include some of my research on the positive effects of bilingualism in my website after I conducted my research and discovered the prevalence of misconceptions about bilingualism. I wanted to make sure educators who visited my website would be able to understand why bilingualism is important to encourage in classrooms and better understand who benefits from the strategies on the website. One study that I decided to include on my website was the (Bautista, Mitchelmore, & Mulligan, 2009) study. This study looked at Filipino- English speaking students and found that when problems were presented in Filipino students were able to answer more questions and was deemed more worthwhile than when the problems were just presented in English. Another study I decided to share on my website was another Filipino-English speaking student study. This study found that Filipino-English bilingual students were more successful in understanding and solving word problems that were stated in their first language, and were more likely to experience failure in finding a solution if the problems were stated in their second language (Bernardo & Calleja, 2005). I decided to share this study because it shows that if a topic or strategy is shown in more than one language or their students' first language educators will have more success than when just focusing on English. I also included a study that found that students are able to fully explore and demonstrated a deeper level of learning and understanding when

problems are presented in a students' L1 and that students were able to apply what they learned in a problem to other problems in the future (Bernardo, 1999). Finally, the last study I decided to include in my website best summarized what I am trying to say in this capstone. This study concluded that the boost given by childhood bilingualism is sufficiently strong, bilingualism may continue to influence certain control processes throughout the life-span such as: fluid intelligence, cognitive flexibility, and attentional control. I included this to educators because I wanted them to see that if we encourage bilingualism not only does their classroom involvement and understanding increase in the classroom but they are likely to gain certain processes that help them their entire life span. I also included this study to give attention to the positive effects of childhood bilingualism and encouraging students with their bilingualism.

Project Limitations

Because I emphasized the importance of incorporating more than one language in classes, my website needed to reflect this. I needed to locate a website platform with a translation button I could put on the top of the website which will translate from English to many different languages. Language translation presents a few limitations. For instance, I am not fluent in any other language other than English and at most have polite (very basic) Spanish abilities. I needed assistance with the language-translation component of this project. In order to do this, I asked a few coworkers and friends to look over the translation aspect of the website and provide suggestions to make the translations better. I also had to use multiple translation websites to help me with

translating difficult words. One thing that was difficult while putting the website together was the multilingual setting. There was a multilingual setting that was provided by the website platform, but the website platform did not automatically translate it for me and I had to go into each page and translate it by hand into each language.

With language translation also comes another limitation: Phrases, idioms, or words that people use or say in English do not translate well to other languages. Visitors to the website who speak another language may use a different phrase than English speakers to describe the same thing, so I was careful to avoid these phrases. One way I addressed this was by asking the people looking over the translations for any words that might be interpreted differently in the other language.

I also needed to make sure that I give credit to the creators of any pictures or videos I used on the website. Ensuring accessibility also posed a challenge, as I had to locate and incorporate tools such as a text to speech tool for people with limited vision abilities. I made sure that any picture I provided had credit below it and that any piece of research included was included in a reference list in the bottom of the page. Most of the images that are presented in the website are self-created, though, so there were only one or two pictures I had to give credit for.

Another limitation of this project is my own bias. The examples shown on my website may demonstrate a bias toward Spanish-English bilingual learners due to my experience with these students and their relative prevalence in the United States. The examples and strategies will also likely be related to math and science topics because

these are the subjects I have experience teaching. One way I can try to overcome this limitation is to make sure that I have a two to one ratio for each bilingual strategy. For every two strategies I present that focus on Spanish/ English there will be one strategy that focuses on English and another prominent language in Minnesota or Minneapolis. I can also make sure that I am covering all of the main academic subjects in my examples.

The next limitation I encountered was making the website accessible to users of all abilities. Ensuring accessibility also posed a challenge, as I had to locate and incorporate tools such as a text to speech tool for people with limited vision abilities. I made sure to include image text so when a user with a visual disability hovers over a picture, Google reads aloud a description of what is going on in the picture. The most difficult aspect of this feature was when I had to completely type out the text in my pictures of RISA dialogues. The RISA dialogues were long to type out and I am not sure if Google will read them aloud in a different language than English.

The last limitation I have is that the majority of my project has to do with strategies to help bilingual students but I do not have a background in ESL or bilingualism. As an undergraduate, I majored in psychology and Elementary education. Although I am appreciative of the education I received, my studies did not focus on English as a second language (ESL), English Learners (EL), or bilingualism, so I had to do more research about specific strategies and lingo. One way I overcame this limitation was by making sure I was getting feedback from teachers of EL or bilingual students and

educators who majored in any of the above-listed programs. I also shared this website with the EL coordinator from my school so I could gather and incorporate her feedback.

Results

The last dropdown menu on the website contains a survey that allows users to provide feedback on the design of the website, the material provided in the website, the relatedness to the user, and if the user will be using the provided strategies in the future. It also contains a chance for visitors to write anything that could be improved upon on the site and/or what they would like to see next on the website. I will be constantly collecting results from this survey and using this information to add even more information onto my website. I will also be using this information to fix any errors on the website and update any research or information provided.

Project Implications & Professional Benefit

My capstone website creates another resource for educators to use and implement to help bilingual students. When educators search online for bilingual education resources, my website will appear and provide useful strategies to help them encourage bilingualism in their students. This project also improves the language-atmosphere in schools and society. This project provides continued added strategies provided by myself and other educators that can send in other strategies that work in their own classrooms. The professional benefit is providing the tools and resources needed for educators to support the positive effects of bilingualism and provide the research rationale to why bilingualism in the classroom works. The research provided on the website demonstrates

that English-only language schools are no longer the only way to educate America's children. Educators should instead encourage all people to speak in their chosen language and be open to learning something new in a different language. They can and should create classrooms where all languages and backgrounds are supported and encouraged; this will enhance the learning for both bilingual and monolingual students.

Learnings & Future Recommendations

When I began the capstone process, I personally thought bilingualism was a good idea to implement in the classrooms because students are able to truly be themselves and their language is represented in the classroom. What I did not know before undertaking this project was the depth of research that is in favor of bilingualism, and I did not understand just how much students can benefit from a bilingual education. I knew that my students liked being able to speak Spanish in my classroom but I did not know that there is research that shows that this helps my students be more engaged, understand more about what they are learning and apply it to their lives. I definitely did not know that lifelong bilingualism benefits fluid intelligence, cognitive flexibility, and attentional control. I learned that there is a benefit to bilingual education and that educators can set up their students for success by starting and encouraging bilingual education at an early age.

In the future, I hope to expand my website past these four strategies. I have already started looking at the Guided Language Acquisition Design (Glad) strategy, which is a book full of EL and bilingual strategies educators can use in their classrooms. I

also plan to include a strategy I used previously which requires students to write daily their learnings for the day in a journal called a learning log. I hope to continue to make the website easy for educators to read with simple bullet points and easier page navigation and will still continue sharing my website with other educators.

I recommend that educators challenge themselves by attending professional developments geared towards bilingual education or strategies that can help students whose native language is not English. I hope in the future to see more educational training focused on dealing with bilingual or EL students, as well as more bilingual training within our specialized content areas. I would be interested in attending a class or professional development about science or math-specific bilingual strategies. I believe that I can easily implement these strategies in my intervention classroom, which will enhance my ability to teach difficult mathematical topics and help my bilingual students to feel that my classroom is representative of them not only as students but as Mexican-Americans.

Summary

In chapter four I reflected on my capstone project experience. I began by overviewing and introducing chapter four. I then explained the research conveyed in my website and key studies that helped guide my capstone project. Then, I discussed the limitations to my project and obstacles that I found solutions for. Under the results section of this chapter, I explained what I will be doing with the results of the survey given to me. Finally, I described the implication my capstone paper and project has along

with learnings as an academic writer and educator. I mentioned the future recommendations for website improvement provided by educators and what will happen next with the website. I end my capstone with a brief tribute to all educators and to my students, who are each worthy of all of the time and effort I invest into them.

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