

A QUALITATIVE DESCRIPTIVE STUDY ON LEVERAGING MULTIMODAL SYSTEMS
FOR EMERGENT BILINGUALS

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BY

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DEDICATION

For my husband, Thanasi, my children, Isabella, Christoforo, Patrikio, Apostoli, Clavdio, and Phoevo, and my mother, Joan Moran. Thank you for your love, support, and patience.

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ABSTRACT

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As the United States becomes more diverse, an increase in Spanish speaking emergent bilinguals (EBs) exists in classrooms. Despite the implementation of bilingual education where EBs are educated in their heritage language, English frequently becomes the dominant language in EB's linguistic repertoires. Furthermore, the concept of literacy is changing in the 21st century, as new technologies evolve, and multiple semiotic modes are recognized as alternative affordances for communicating. Literacy is no longer relegated to oral and written forms for communicating. In this study, harnessing the power of various modes of communication offered a viable solution for EBs to develop their heritage language output (Spanish) with the goal of achieving bilingualism and biliteracy. This qualitative descriptive study chronicles how the features of multimodal instruction implemented in a two-way Spanish-English dual language bilingual classroom appeared to assist heritage Spanish speakers in developing bilingualism and biliteracy. Students engaged in multimodal activities, in a translanguaging classroom, leveraging the available modes and affordances to create meaning as the teacher/researcher documented the features of the instruction and student's responses. Six themes were identified representing features that appeared to support heritage language development. Features included instruction that was responsive to language identities, explicit teaching, ensuring students had access to comprehensible input, building conceptual knowledge, ensuring customized creative paths for students, and building metalinguistic knowledge.

Keywords: Emergent bilingual, translanguaging, multimodal systems, biliteracy, semiotic resources

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CHAPTER I

INTRODUCTION

National Public Radio (NPR) has a podcast called StoryCorps. One featured two women who identified as Latino students attending a segregated school in Marfa, Texas in the 1950s where the majority of students spoke Spanish as their first language (Warren & Glenn, 2017). They tell the story of how one day their teachers made them write on a piece of paper “I will not speak Spanish in school,” place the papers in a box and bury the box out in front of the school. They were stuck by how much the ceremony resembled a funeral. They were forbidden to use Spanish in school from that moment on. Fast forward to the year 2018, when I worked as a teacher in a third-grade bilingual class in Texas. I, the teacher, was reading a science book to the students in Spanish when my emergent bilingual (EB) students, who speak Spanish at home, interrupted me to ask me to read it in English. They tell me they cannot understand the Spanish version because they have learned the vocabulary in English and not in Spanish.

These two anecdotes, although almost 70 years apart, demonstrate a continued disparity in the use of Spanish compared with English in the classroom. English is still privileged, even though there have been many changes since the 1950s such as the implementation of bilingual education in elementary schools where children are taught in the “heritage” language while acquiring English (Arreguín-Anderson & Ruiz-Escalante, 2014; Ruiz-Escalante & Arreguín-Anderson, 2013). Although bilingual educational programs were implemented in recognition of the need for specialized programs that enable students to learn academic content in a language that is comprehensible to them (Berenyi, 2008; García & Kleifgen, 2018; García & Homonoff Woodley, 2012; Stewner-Manzanares, 1988), instead English acquisition is emphasized as the goal (Baker, 2011; Yturriago & Gil-García, 2010). With the introduction of the No Child Left

Behind Act of 2001 (NCLB), it has become a de facto restrictive language policy by tying federal funding to performance on annual high stakes standardized tests and English proficiency, which tests adequate yearly progress (AYP; Menken, 2008; Menken & Solorza, 2014). As a result, students have the opportunity to learn in Spanish at the elementary level through bilingual programs until fifth grade but progressively transition to monolingual English classrooms by sixth grade. At that point, the onus is on the student to further develop the Spanish language, either at home or through high school Spanish classes. Occasionally, high schools offer a “Spanish as a heritage language” course. Other content, beyond literacy, is not usually offered in other languages. Occasionally some junior and senior high schools do offer Spanish as a continuation of a two-way dual language program but tends to be rare.

To further set the context for this study, there has been a serious shortage of bilingual teachers (Cross, 2016; Kennedy, 2020; Richins & Hansen-Thomas, 2018). One reason for the shortage of bilingual teachers is the low quantity of candidates that possess the language and literacy skills required to pass the rigorous certification exams (Kennedy, 2020; Richins & Hansen-Thomas, 2018). Angela Valenzuela (2004) addresses this issue as “subtractive schooling,” viewing schools and state education policy causing a rift between education and the language and culture of Mexican American students (the population of students she studies).

Considering this information, using a pragmatic approach, I, as the researcher in this study, proposed to address this disparity between levels of English and Spanish output through a qualitative descriptive study (Merriam & Tisdell, 2015) based upon second language acquisition research methods (Seliger & Shohamy, 1995). Creswell (2007) frames the pragmatist as a researcher who is searching for a solution to a problem, focusing on the outcome rather than the causes. There may be many factors that contribute to this disparity, some directly out of the

control of the educator, but there are steps that can be taken within the classroom that may improve outcomes for higher levels of heritage language output (Brinton, et al., 2017; Hornberger, 2005). In this study, multimodal instruction was used flexibly in an authentic classroom context, teaching students' content while supporting their developing biliteracy.

Background

Each year classrooms in the United States are becoming more diverse with an influx of speakers of other languages entering the educational system. In fact, it is growing faster than the mainstream student population with an increase of 56 % between 1995 and 2005 (Batalova et al., 2007). Additional statistics from 2015 showed that there were nearly 5 million non-English speakers in the classroom, which equals 9.5% of public-school enrollees compared to only 8.1% in 2000 (Bialik et al., 2018). These students are EBs. I use the term EBs, as opposed to English language learners (ELLs) or Limited English Proficient (LEP), because these terms denote that students are deficient, viewing them through a monolingual lens and ignoring the fact that EBs are continuing to develop their heritage language while adding another language to their linguistic repertoire (Falchi et al., 2014; García, 2009b). EBs may be either sequential language learners, first learning a language other than English at birth and adding English later in school, or those developing both Spanish and English from birth, known as simultaneous EBs.

The Equal Educational Opportunities Act of 1974 granted that all students have a right to an equal education (Stewner-Manzanares, 1988). For EBs, this means that they have a right to a comprehensible education that meets their unique linguistic needs (Berenyi, 2008). That being said, the idea of a comprehensible equal education is being challenged by strict mandates on testing and accountability measures, which are tied to federal funding. These measures are implemented through high-stakes testing, a by-product of the NCLB of 2001, that focuses on

students' academic growth. Because most of these tests are administered in English, with few exceptions, even though the focus of testing is on content, they become de facto tests of English acquisition. The students may know the content, but if they cannot understand the questions, they are not able to demonstrate their knowledge. Thus, schools must ensure that EBs learn the same academic knowledge as their native English-speaking peers and that they acquire English language proficiency (Batalova et al., 2007; Flores et al., 2012). As a result, EBs not only have to navigate learning the same content as native English language speakers but that they have the additional challenge of learning it in a second language and becoming proficient in it (Menken, 2008; Menken & Solorza, 2014). In other words, an emphasis seems to be placed on English language acquisition which is too often at the expense of students' heritage language development.

Heritage Language

Throughout this study, the term “heritage language” is used to denote the language, other than English, that students speak in the home and in parts of their communities (in this context—Spanish). Ofelia García (2005) clarifies that the use of this term should not be understood as looking at the language through a review lens, as if it was something left behind and not used in the present or future, and as having been replaced with English. She asserts that, although the term as used today, signals a loss of ground gained during the civil rights era for language minorities, it could, in actuality, be a very important term in education, opening an important space for languages other than English in face of a homogenous monolingual school setting.

Historically, according to García (2005), the bilingual educational model aimed to benefit ethnolinguistic groups that spoke languages other than English and who were not

necessarily immigrants. However, when immigration began to increase, and with the reauthorization of the Bilingual Education Act, it unfortunately became synonymous with the transitional educational model, where children use their “other” language mainly for the purpose of eventually acquiring English. This meant that the word “bilingual” was being replaced by “heritage language” in the sense that it was a language being left behind. Yet, as a result of increasing immigration since the 1980s and the prevalence of other languages, especially Spanish, being spoken in the home and the community, García (2005) suggests that the term “heritage language” does not indicate a language that has been left behind but is part of many people’s bilingual and transcultural identities that is being denied to many U.S. citizens.

In utilizing the term “heritage language,” the focus is on how it can be used in education for its valuable cross-linguistic potential while meeting the demands of today’s globalized world where plurilingualism is a reality and much needed (García, 2005). Brecht and Ingold (2002) discuss how bilingual speakers are an untapped resource, in comparison to speakers of English acquiring a second language, who require many more years to become proficient enough to use the second language efficiently. They emphasize the urgency of a need for “highly developed language competencies...for use in social, economic, diplomatic, and geopolitical arenas” (p. 2). In response to this need, the focus of this study is on how to empower EBs, that are heritage Spanish speakers, by providing them with the tools and knowledge to wield them for increasing their heritage language.

Heritage Language Loss

As English slowly comes to dominate EBs’ linguistic repertoire and the educational system in the United States continues to push for English language development, many heritage language learners do not have the opportunity to develop proficiency in their native language to

the same degree. There are many negative outcomes due to language loss or lack of proficiency in the heritage language (Guardado, 2010; Moore, 2019; Nuñez, 2022; Portes & Rumbaut, 2006; Sánchez-Muñoz, 2016; Tseng, 2021) Some such negative outcomes of language loss can be a barrier to communication within extended family members which results in the loss of sharing of traditions, cultural practices, and family memoirs that usually bind families together, or a feeling of linguistic insecurity or isolation where speakers avoid using the heritage language. Language loss could also limit future job opportunities (Agirdag, 2014; Brecht & Rivers, 2002; Shin & Alba, 2009). Multimodal instruction in the classroom can be a potentially powerful tool for EBs to help develop literacy in both languages. becoming bilingual and biliterate.

Goal of Bilingualism and Biliteracy

EBs come to school already speaking at least one language other than English, to some degree. Throughout their education in the United States, they add English to their repertoire. Researchers in the field of bilingualism advocate for a dynamic approach that strives for additive language outcomes in contrast to monolingual ideologies where EBs are seen as two monolinguals in one (Collier & Thomas, 2009; Flores & Schissel, 2014; García & Wei, 2014). In a heteroglossic approach, educators value EBs' linguistic repertoire and open a space where they can develop all languages (Blackledge & Creese, 2014; García, 2009b; García & Wei, 2014; Hornberger, 2012). This approach contrasts with the prevailing approaches of language maintenance where EBs only maintain their heritage language, or even worse, learn English at the expense of their heritage language which is a subtractive language practice (Menken, 2008; Menken & Solorza, 2014).

When one looks up the words ``bilingual'' and ``biliterate'' in a dictionary, while definitions may vary, the most common definition is someone who has the ability to speak,

read, and write in two languages at a proficient enough level to navigate in a world where it is used. EBs' level of bilingualism and biliteracy is mostly correlated to the level at which they were able to learn to speak, read, and write in two languages. However, if instruction in the heritage language is non-existent or slowly decreases at the elementary level to make room for more focused instruction in English, EBs lack educational opportunities within the classroom to develop proficiency in their heritage language. EBs continue to receive instruction in English throughout their academic career but their heritage language skills may remain at the level where learning new content solely in English begins. Besides speaking it at home with family, the exceptions would be students who purposefully continue to try to develop it either on their own time or through extracurricular activities that provide opportunities or Spanish classes for heritage language speakers. None of these are content specific where they would learn content vocabulary in both English and Spanish.

Barriers to Biliteracy

While there are many, in this section I focus on three barriers that EBs face in achieving a more developed bilingualism and biliteracy. One barrier, mentioned previously, results from strict federal and state mandates that students are making adequate progress in English, which can put pressure on teachers and cause them to focus more on students' English language development to the detriment of developing their heritage language (Menken, 2008). A second barrier is due to the decreased "exposure to formal or academic" forms of students' heritage language while living in the United States (Carreira & Kagan, 2011, p. 12). Students may speak the heritage language at home with their families and receive instruction in some of their classes, but are increasingly exposed to English in their communities, on television, and in school (Carreira & Kagan, 2011; Polinsky, 2015). The more exposure to English could result in less

exposure than EBs would have had if raised in their (or their parents') native country. And finally, a last barrier is an implicit one, where students may feel pressured to acquire English either by society at large (perhaps due to being viewed negatively as an "immigrant" or even just a desire to fit in), or from their families. Or they may become more comfortable in English and find it easier to utilize. As a result, EBs' may begin to develop English at the detriment of their native language.

The first barrier that EBs face to achieving full bilingualism and biliteracy is a result of strict federal or state mandates, beyond those discussed earlier. The federal government has placed demands upon states to ensure that speakers of other languages acquire proficiency in English. While EBs should and need to acquire English, it should not be at the expense of the other languages in their repertoire. However, many teachers feel pressure from their districts to ensure that their students are making adequate progress in acquiring English due to the punitive measures if they do not (Menken, 2008). In Texas, English language proficiency is tested annually through a state mandated test, the Texas English Language Proficiency Assessment System (TELPAS), and the state expects to see progress towards proficiency, or a school or district may be put on an improvement plan. Additionally, state mandated tests that measure knowledge acquisition in certain subjects like reading and math must be taken in English once EBs are exited from either a bilingual program in elementary, or 3 years after being classified as a student who is LEP.

Due to the pressure on schools to meet these expectations, teachers often feel pressured to transition their students to English quickly, resulting in subtractive rather than additive language practices (Menken, 2008; Menken & Solorza, 2014). In other words, students are being exposed to more English input and expected to produce more output in English at the expense of their

heritage language (a subtractive language process) as opposed to being encouraged to develop their heritage language while also acquiring English (an additive language process; García, 2009a; García & Wei, 2014; Menken, 2008; Menken & Solorza, 2014; Sánchez-Muñoz, 2016).

A second barrier that EBs face that may impede language proficiency, and ultimately literacy development in the heritage language, is lack of exposure to the heritage language while living in the United States. Increased interactions in English with people in the neighborhood, in school, and on television means less exposure to the heritage language. Ultimately less exposure to vocabulary and language input means that language development could also be affected (Brinton et al., 2017; Haynes, 2010; Montrul, 2018; Quiroz et al., 2010; Richins & Hansen-Thomas, 2018), which in turn could affect students' comprehension in reading (August et al., 2005). Without an active and explicit approach to developing the heritage language lexicon, EBs may not be aware of the discrepancy until they are adults.

The third barrier is a more implicit one which is when EBs themselves avoid speaking in their heritage language. This can stem from multiple reasons. Sometimes teachers view other languages and cultures through a deficit lens which could impact EBs by influencing them to have a negative language identity (Arreguín-Anderson & Ruiz-Escalante, 2014; Ruiz-Escalante & Arreguín-Anderson, 2013). Another underlying reason could be attributed to the fact that immigrants and children of immigrants of certain nationalities are subjected to more discrimination than others. This may result in a desire for EBs to hide any sign of their heritage that might identify them as they try to assimilate more quickly into the mainstream culture. Or, as it sometimes happens, parents and family may pressure their children to acquire English, believing the false notions that are often "sold" to them that they need to learn English as fast as possible, or that they will be confused by learning in two languages (Babino & Stewart, 2019;

Beeman & Urow, 2013). Another reason may stem from the fact that subsequent generations of immigrants may suffer from a sort of language insecurity “derived from ideologies of language purity, proficiency, and individual agency” (Tseng, 2021, p. 113). And finally, the students themselves may just desire to “fit in,” or feel more “comfortable” in English. Speaking the heritage language may require more effort due to a lack of proficiency or of a sufficient lexicon to communicate effectively.

While these barriers may not be easily mitigated or changed, educators take action by providing instruction and the tools that will help EBs develop both their heritage language and English contributing to increased bilingualism and biliteracy (Brinton et al., 2017; García et al., 2017; García & Kleifgen, 2018; García & Wei, 2014; Hornberger, 2005). Creating a space where students are freely able to use their entire linguistic repertoire and any other available tools may encourage a more dynamic bilingualism or heteroglossic language practices (Flores & Schissel, 2014; García, 2009a; García & Homonoff Woodley, 2012; Hornberger, 2005).

The Traditional Model of Bilingual Education

The traditional bilingual model of education tended to focus on using a student’s “first language” to develop their “second” using the premise that students receive instruction on content in a language they can comprehend while acquiring the English language (García & Homonoff Woodley, 2012). Historically, there has been a tendency to have a strict mandate to not mix languages. Spanish was supposed to be used during Spanish instruction and English only during English instruction (García et al., 2017; García & Homonoff Woodley, 2012; Gomez et al., 2005). In recent years, there has been a slight relaxation in the model with the recognition of the benefits of translanguaging, students using their entire linguistic repertoire. However, this is

still a relatively new, and frequently unknown, concept for many educators who tend to continue to adhere to the strict separation model (García et al., 2017).

In the same vein, the traditional view of literacy that does not stretch much beyond the oral and written word on paper seems to still dominate in the 21st century classroom as opposed to being open to incorporating multiple modes, i.e., linguistic, aural, visual, gestural/tactile, and spatial, especially in the form of digital technology. This is no different in many bilingual classrooms, despite the evidence that multiple modes and access to digital technology can prove to be beneficial and be considered to provide a more equitable education for EBs (Daniels et al., 2020; García & Kleifgen, 2018; International Literacy Association, 2019).

Teachers can be powerful agents of change in the classroom when they enter it informed and equipped with knowledge and tools that can transform their teaching practices (Babino & Stewart, 2018; Daniels et al., 2020). Multimodal systems, including translanguaging, employed through a multilingual turn lens, are tools that can mitigate what can be termed as linguistic oppression that has resulted in an imbalance in Spanish speakers' levels of bilingualism and biliteracy (Arreguín-Anderson & Ruiz-Escalante, 2014; Ruiz-Escalante & Arreguín-Anderson, 2013).

Multimodality and Translanguaging: Powerful Tools for Biliteracy

The face of literacy and language has changed since the end of the 20th century. The written word is no longer the dominant medium that it once was in this new media age full of technological advancements (Kress, 2000, 2003). Representation and communication can be made across a plethora of modes that all contribute to communicating meaning, i.e., linguistic, aural, visual, gestural/tactile, and, spatial. Each mode has its own affordances and carries a different part of the load. For example, a picture accompanying a text with access to a recording

explaining the context will communicate a message more powerfully and completely than any one of the modes on its own. When modes are used together, each affordance communicates meaning and enables the creator as well as the consumer of the message to create meaning. Language and literacy go beyond just the spoken word and written text to incorporate all the different modes that are recognized historically by a community (Kress, 2003).

Multimodality is especially salient for EBs that are in the process of acquiring and adding a second language to their repertoire (García & Kleifgen, 2018; Smith et al., 2021). Multimodal systems could greatly benefit EBs by incorporating multiple modes of learning, enabling students to capitalize on the increased variation of affordances they offer (Daniels et al., 2020; International Literacy Association, 2019). Also, where EBs may be restricted by language, these modes and their affordances may compensate by offering more alternatives for receiving input, choosing the most comprehensible to them, as well expressing their learning by creating output.

Translanguaging, also considered a multimodal tool (García & Wei, 2014), is another potentially powerful one that can be wielded by EBs. Because their linguistic repertoire is constantly developing, as Spanish and English are integrated, EBs are not only able to actively learn using their entire linguistic repertoire but are also able to utilize it to create products that represent their learning. One concept exists in the mind with multiple linguistic and semiotic resources to represent it. However, as communication is a social practice, in a society where an interlocutor may not possess the same linguistic repertoire, there may be a need to be able to produce a comprehensible message to an intended audience. Translanguaging may be used to formulate the thoughts or message, without constraining the sign maker to one language or the other, constricting them to one half of their linguistics repertoire, and consequently formulate it to fit the intended audience (Jonsson & Blåsjö, 2020).

Multimodal Instruction

In this study I incorporated multimodal instruction in a two-way dual language bilingual classroom. A second language acquisition (SLA) pedagogy was the theoretical lens undergirding the instructional goal of increasing heritage language proficiency while still developing English. Using a qualitative descriptive design (Merriam & Tisdell, 2015; Seliger & Shohamy, 1995), I describe how multimodal systems may support biliteracy development. The ultimate objective of the study was to develop a pedagogy that equips EBs with the knowledge to utilize multiple semiotic resources in a way that extends student learning beyond the written and spoken words.

A qualitative research design (Merriam & Tisdell, 2015; Seliger & Shohamy, 1995) enabled me, as the researcher and the educator of record, to intentionally document and describe how students responded to instruction by utilizing multimodal systems for input and output in an authentic classroom setting. At the same time, it also enabled me to qualitatively study the classroom environment and see how factors may enhance or inhibit the effective implementation of multimodality in the classroom, while trying to improve instruction. While there are other classrooms that implement multimodality in their instruction, research is sparse on how it is implemented and how to capitalize upon its possibilities in increased “heritage” language output.

The objective of multimodal instruction, in this study, was to empower EBs by developing their understanding of how multimodal systems work, tailor the systems to their individual needs and affinities, and capitalize on the benefits. Students need to understand how multiple modes and their various affordances, when combined, may increase learning and offer alternatives to the design process used to represent learning. For example, technology may offer the visualization of content while hearing it explained. Students may then demonstrate their

learning through alternate means such as creating a model or working with a partner using tactile and visual modes while discussing the content orally. Throughout the course of learning, EBs were able to access their entire linguistic and semiotic repertoires as well as utilize the multiple affordances within modes to develop their heritage language while still acquiring English.

However, students need explicit instruction on the purpose and benefit of multimodal systems, and how, when modes are combined, learning and communication are enhanced. Observing student choices as well as having them reflect on their learning, fosters student metacognition surrounding multimodal systems. Understanding how students utilize the available systems guides further instruction that may extend their access and knowledge of how to leverage them to develop proficiency in Spanish. Gathering evidence of how students use the various tools may assist educators to understand how they may better shape instruction so that EBs can more fully access the power of these tools.

Multimodality can come in many forms that incorporate the linguistic, visual, aural, spatial, and gestural/tactile modes whether individually or in conjunction with others. In the classroom, this may be done through digital and non-digital means. Students may engage with spatial, tactile, visual, aural and linguistic modes when they physically engage in manipulating materials while discussing their learning with their peers, including translanguaging. Technology may incorporate modes within various digital resources for visual, aural, linguistic, and spatial modes for learning in a variety of ways.

Translanguaging is one of the most promising multimodal systems and SLA theories that challenges a monoglossic approach (García & Wei, 2014). Furthermore, multiple scholars have contributed to the research supporting, not only the effectiveness of it, but also the necessity of doing so (García et al., 2017; García & Kleifgen, 2018; Hornberger & Link, 2012).

Translanguaging eliminates an emphasis of input and output in only one language. Thus, by leveraging translanguaging, EBs access comprehensible aural and linguistic input. Additionally, EBs may wield their full linguistic repertoire in order to produce output in the target language.

As the researcher and teacher of record, this study transpired in my second grade, two-way Spanish-English dual language bilingual classroom where heritage Spanish speakers and heritage English speakers learn together. My focus was encouraging Spanish language output to support biliteracy. Pushed output in Spanish is important because, heritage Spanish speakers tend to create less output in Spanish as they develop English (Babino & Stewart, 2015). The goal of this study was to support students in developing bilingualism and biliteracy. When educators focus on content and not form within a structured pedagogical framework, enabling EBs to access their full linguistic repertoire, they facilitate increased opportunities for students to develop their bilingualism and biliteracy.

Theoretical Perspectives

Three theoretical perspectives frame the study, multimodality including translanguaging, second language acquisition theories, and a multilingual turn lens. Combining these theoretical perspectives with a qualitative descriptive design methodology enabled me, as the researcher and a teacher, to explore a pedagogy that leverages multimodal systems to alleviate the disparity of language use in the classroom.

A multimodal theoretical perspective focused on the use of multiple semiotic systems as a resource for learning and communicating meaning beyond the traditional oral and written linguistic forms, by also incorporating aural, visual, gestural/tactile, and spatial modes, (Bezemer, 2012; Kress, 2003; Sanders & Albers, 2010). Translanguaging, also considered a

multimodal tool, (García & Wei, 2014) creates a space for EBs to wield their entire linguistic repertoire for learning and representing that learning.

I applied SLA theories to guide instruction to challenge a monoglossic approach that seems to dominate in education (May, 2014). But rather than focus on the “second language,” the focus was on the “first” or heritage language that tends to get less exposure and less formal education as students advance in their education.

SLA theories are traditionally applied to classroom instruction in order to support the acquisition of a second language. Cummins’s (2016) prominent theory of common underlying proficiency formed a basis to my instructional design. The theory of common underlying proficiency posits that knowledge and skills learned in the heritage language can be easily transferred to the second language. Thus, when students learn a concept in one language, they do not need to relearn it in the second language. However, the vocabulary in the target language does need to be learned. In the case of this study, I applied SLA theories to focus on developing the heritage language, Spanish, to ensure that EBs are intentionally acquiring content vocabulary in both the heritage language and English with a certain degree of proficiency. The rationale is that EBs are still in the process of developing their heritage language while acquiring English and if care is not taken, the heritage language may not ever be fully developed as the dominant language of English overshadows it.

Additionally, students need access to comprehensible input (Krashen, 1982) but with an understanding that for EBs, some content may be comprehensible in one language and other content comprehensible in the other. And finally, if students are going to develop proficiency in any language, forced output (Swain, 1985) supports active usage.

And the third theoretical perspective was to view the students through a “multilingual turn” lens (May, 2014) that recognizes students' linguistic identities and that these identities change across time and space (Norton, 2014). Rather than compare language learners to a monolingual norm, they are seen holistically as competent bi/multilingual speakers who use their languages in response to their communicative needs. Language learning is more successful when students have more focused input through authentic learning experiences (Ortega, 2014).

Students, especially in elementary school, do not always have access to multimodal systems nor the freedom to create multimodal representations of their learning. The printed and spoken word continue to be the privileged mode and dominate most classrooms, ignoring the advancements of technology as well as our understanding of multimodal tools and semiotic resources. These tools could enhance language learning, not solely as applied to second language acquisition but to a continued development of the heritage language.

Multimodal systems can be a powerful resource for developing bilingualism and biliteracy. Explicit instruction, continued guidance, and the freedom to access and utilize multimodal systems may provide a valuable resource to add to EBs linguistic “toolkit” (Sanders & Albers, 2010).

Problem Statement

EB students have fewer opportunities to develop proficiency in their heritage language beyond the elementary level, and thus become biliterate. Furthermore, there is a failure within the educational system to explicitly teach for biliteracy (Babino & Stewart, 2017, 2018; Brinton et al., 2017; Montrul, 2018; Sánchez-Muñoz, 2016) while there is a clear need for fluent bi/multilingual speakers in professional capacities (Brecht & Ingold, 2002). Research on instruction using digital tools and multiple modalities appears to support EBs’ linguistic

development (Si et al., 2022; Smith et al., 2021; Yi & Choi, 2015). However, these investigations focus on English language development, rather than heritage language development. If biliteracy instruction, maintaining heritage languages is sparse, and multimodal instruction appears to support linguistic development, then more must be known about how multimodal instruction promotes bilingualism and biliteracy.

Purpose of the Study and Research Question

In this study I incorporated multimodal instruction on the use of multimodal systems in a two-way Spanish-English bilingual classroom to support bilingualism and biliteracy development. Instruction, guided by SLA theories and a multilingual turn lens, was targeted towards supporting heritage language development. The purpose of the study was to design a pedagogy that provides EBs access to multimodal systems and semiotic resources for learning that extend beyond the written and spoken words, and encourage more target language output, Spanish. As a result, EBs were able to access their full linguistic and semiotic repertoires to support the development of bilingualism and biliteracy.

By instructing EBs on the use of multimodal systems, observing student choices, and having students reflect on their thought processes, I examined how students are currently using the multiple modes available to them. Using this knowledge to extend EBs access to multimodal systems, instruction focused on how to leverage modes to develop biliteracy through increasing proficiency in the heritage language. The outcomes of the study will help educators incorporate multimodal tools into instruction to empower EBs to access the affordances of multimodal systems in customized ways.

The research question guiding the descriptive research follows:

What are the features of multimodal instruction and multimodal systems that appear to support EBs' biliteracy development in a second-grade two-way dual language bilingual classroom?

Key Terms and Concepts

Emergent Bilinguals: People in the process of acquiring a second language while still developing their heritage language skills (Falchi et al., 2014; García, 2009b).

Heritage Language Speaker: A person who has been raised in a home environment where a language other than English is spoken which they can understand and speak to a certain degree, and who is also acquiring another language and becoming bilingual or is bilingual (García, 2005; Wiley, 2001).

Biliteracy: The ability to read and write in more than one language (Escamilla et al., 2014).

Translanguaging: This term refers to a theory that supports the language practice of EBs that challenges the notion that there are separate linguistic systems. Rather there is one linguistic repertoire that EBs may access to learn and communicate effectively (García, 2009a; García et al., 2017).

Semiotic Resources: Material, social, or cultural resources that have the potential to make meaning and to communicate within a community based on past uses within that community and the possible uses, based on its modal affordances (MODE, 2012).

Mode: A set of semiotic resources, or materials, recognized within a culture, to have the potential for creating meaning or communicating such as textual, oral, linguistic, visual, spatial, etc. (MODE, 2012).

Modal affordances: The potential uses of a mode according to its properties for making meaning (MODE, 2012). Some examples of affordances are speech, writing, gesture, and image. Each of

them might be used to project information about the same subject but, due to their properties, carry a different part of the load of meaning, according to the interests and desire of the creator and as interpreted by the recipient.

Multimodality: The use of multiple modes together to make meaning in a single artifact (Bezemer, 2012; Kress, 2003). An example is a video that can use image, speech, movement, and music. At first glance, one may think of technology as the main source of multimodality considering how much it has developed in the past 50 years, how prevalent it is in many classrooms, and all the many possible ways it can transform learning. However, the research on the use of multimodality with EBs revealed that it comes in many different forms, digital and non-digital such as speech, dramatic play, and drawings.

Transduction: The conversion and transformation from one mode to another such as speech into writing (Kress, 2003).

Social Semiotics: The study of how individuals access the semiotic resources that are available to them and use their potential for making meaning by combining them, modifying them creatively and/or redesigning them according to the specific purpose at hand (Ranker, 2009).

Dual Language Bilingual Education (Two Way and One Way): Bilingual program model where heritage speakers of a language other than English receive initial instruction in their native language while gradually acquiring English. A one-way model consists only of speakers of the heritage language, and a two-way model consists of heritage speakers of English and heritage speakers of a language other than English in a single classroom receiving content and literacy instruction in the heritage language and English (Gándara & Escamilla, 2017).

Significance of the Study

This study is significant to the educational field involving speakers of languages other than English and the noted disparity in the level of their heritage language use and English. Multimodal systems offer powerful resources that students can leverage in their learning beginning in the primary academic years. When students learn how to wield the tools at their disposal, they become active decision makers in their educational outcomes that can extend beyond the elementary level. The implications of this study may benefit EBs and educators at all levels, including high school and beyond.

While there is literature and studies that illustrate how multimodal tools can be used in the second language classroom (Smith et al., 2021), there are few studies that address how they can be used in a bilingual classroom context focusing on the “first” or heritage language. The difference between the second language classroom and the bilingual classroom is that the second language classroom focuses solely on language acquisition while the bilingual classroom focuses on learning content while developing a second language, English (Gándara & Escamilla, 2017). This research was unique because it focused on the instruction involving the use of multimodal systems for developing both the heritage language of Spanish as well as English. As a result, I sought to push “at traditional curriculum boundaries [and] begin to shape a curriculum which will be relevant for a highly technologised 21st century” (Marsh, 2006, p. 503-504). Empowering EBs to become more agentic in language learning, understanding their linguistic identities while creating their futures in bilingual classrooms through multimodal instruction was a unique aspect of this study.

CHAPTER II

LITERATURE REVIEW

The purpose of this literature review is to understand what language oppression is, and how a multimodal pedagogy, undergirded by SLA theoretical stance, introduced at an elementary level can be a powerful force for increasing Spanish language proficiency. First, I discuss language oppression and how it affects the identity, culture and language of heritage language speakers. Secondly, I define multimodal systems and explain how incorporating them into the pedagogy for teaching for biliteracy may minimize language oppression. Finally, I delve into translanguaging as a potentially transformative tool in the multimodal system and the importance of viewing EBs through a multilingual turn lens.

Conceptual Framework

Teachers can be powerful agents of change in the classroom when they are informed and equipped with knowledge and tools that can transform their teaching practices (Babino & Stewart, 2018; Daniels et al., 2020). Multimodal systems used in conjunction with translanguaging, and the multilingual turn lens are tools that can mitigate what can be termed as linguistic oppression that has resulted in a disparity in Spanish speakers' levels of biliteracy (Arreguín-Anderson & Ruiz-Escalante, 2014; Babino & Stewart, 2018; Brinton et al., 2017; Ruiz-Escalante & Arreguín-Anderson, 2013; Sánchez-Muñoz, 2016). Biliteracy is defined in many dictionaries as the ability to read and write in two or more languages. More specifically, Escamilla et al. (2014) define it as being a “skilled” reader and writer in two languages, but often EBs are able to read and write better in English than Spanish, especially when there is a lack of opportunity to develop biliteracy after elementary.

While the founding fathers of the United States recognized linguistic diversity, by the early 20th century, attitudes began to change to intolerance (Macedo et al., 2003; Menken, 2008). Anti-immigrant sentiment began to grow with an influx of immigrants, and later in response to the two World Wars and language restrictions began to be implemented. From 1918-1968, the use of a language other than English in Texas was expressly prohibited and used as an excuse for the segregation and maltreatment of any students who chose to use their maternal language, Spanish, in school (Arreguín-Anderson & Ruiz-Escalante, 2014; Ruiz-Escalante & Arreguín-Anderson, 2013).

It was not until the passage of the Bilingual Education Act in 1968 (Arreguín-Anderson & Ruiz-Escalante, 2014; Menken, 2008; Ruiz-Escalante & Arreguín-Anderson, 2013; Stewner-Manzanares, 1988) that was the impetus for the implementation of bilingual education did things begin to change. However, unfortunately, linguistic oppression does still exist, and it is manifested in a myriad of covert and overt ways, e.g., laws, policy, curriculum, and even the outlawing bilingual education (Arreguín-Anderson & Ruiz-Escalante, 2014; Babino & Stewart, 2018; Macedo et al., 2003; Menken, 2008; Ruiz-Escalante & Arreguín-Anderson, 2013).

Menken (2008) has heavily documented how state-mandated testing with the enactment of the NCLB in 2001 has been used as a de facto language policy. Due to AYP requirements, teachers feel pressured to teach in English so that students and schools meet the state requirements of students acquiring English language proficiency. Additionally, the high-stakes testing works as a language policy because, while the aim is to test content acquisition, when offered only in English, is implicitly testing a student's ability to understand the question in English (Menken, 2008; Menken & Solorza, 2014).

Ruiz-Escalante and Arreguín-Anderson (2013) document linguistic oppression through the voices of Chicanos. In a similar article, Arreguín-Anderson and Ruiz-Escalante (2014) document the experiences of Mexican Americans, even suggesting that linguistic oppression has negatively affected their intellectual potential. While this study focuses on Spanish as the heritage language, it applies to other languages and cultures, where some heritage languages have become almost extinct.

Linguistic Oppression: Loss of Heritage Language, Identity, and Culture

Linguistic oppression is not just the explicit oppression of a language but also an implicit oppression of the whole person, their heritage, identity, and culture (Arreguín-Anderson & Ruiz-Escalante, 2014; Moore, 2019; Ruiz-Escalante & Arreguín-Anderson, 2013). Linguistic oppression is not always an overt action, but when heritage language speakers are denied sufficient opportunity to develop the heritage language due to English hegemony (Babino & Stewart, 2015, 2017; Potowski, 2004), it is still a form of linguistic oppression. Nevertheless, an overt action or not, linguistic oppression still impacts peoples' lives.

Linguistic oppression and heritage language loss can negatively impact people, especially in the long term. Beyond just oppressing identity (Arreguín-Anderson & Ruiz-Escalante, 2014; Moore, 2019; Ruiz-Escalante & Arreguín-Anderson, 2013), it may impact the level of heritage language use (Babino & Stewart, 2015, 2017; Potowski, 2004), fluency (Moore, 2019) reading comprehension (Proctor et al., 2010), and even result in possible total language loss eventually (Moore, 2019). Furthermore, a perceived lack of proficiency can impact identity and cause breaks in the connection between family and culture and cause linguistic alienation or insecurity (Moore, 2019; Richins & Hansen-Thomas, 2018).

While not a study of the Spanish language, Moore (2019) used a narrative methodology that used the interviews of five Inuit women ranging in age from 28 to 55, who were learning their heritage language to understand the relationship between identity and language. Having been denied the opportunity to learn their heritage language, these women were participants in a project to learn it. The researcher documented through a narrative methodology how regaining their heritage language affected the participants' sense of self and their identity and how it changed over time. In the initial analysis, three themes surfaced in relation to language and identity: that language is deeply related to self-identity as a member of a culture, that language connects the speaker to others and the culture, and that a lack of language proficiency leads to a sense of alienation.

In contrast, Arreguín-Anderson and Ruiz-Escalante (2014) documented how experiences of being forbidden to speak Spanish in Texas schools caused people to perceive themselves and their culture disparagingly. At the same time, it caused a rupture in the transference of culture by rupturing the intergenerational communication, the vehicle of that transference. Children no longer could speak Spanish and could not communicate with and learn from their elders.

Babino and Stewart (2015) conducted a mixed method study of dual language students and found that students' educational outcomes of being bilingual, biliterate, bicultural were closely tied to their investment in their identities. By studying the link between language and other factors linked to their identity, such as gender, place of birth, birth order, among others, the researchers found that there was a strong correlation between language use and identity. Babino and Stewart's (2015) findings underlie the importance of how important it is to develop students' Spanish language proficiency for biliteracy and value the heritage language. Using the same study, Babino and Stewart (2017) focused on interviews of the students to gain more insight into

the language ideologies of the students and how language use, especially by those perceived as more powerful, influence attitudes towards language.

Richins and Hansen-Thomas (2018), in response to a growing population of bilingual students and a documented need for bilingual teachers that understand the cultural and linguistic needs of the students, conducted a case study of 11 female heritage language speaking pre-service teachers, either first generation immigrants or children of immigrants, all of whom had limited or no academic skills in Spanish. The researchers, through the study, focused on how to approach the challenges of developing fluency in the target language. Their study revealed helpful insight to some of the root causes of the obstacles that comprise this challenge. One root cause was a lack of opportunity to fully develop a strong linguistic knowledge of Spanish. While the preservice teachers identified Spanish as their heritage language, their receptive language was stronger than their productive language, which negatively influenced results on the Bilingual Target Language Proficiency Test (BTLPT) administered to measure language proficiency for bilingual teacher certification in Texas. Richins and Hansen-Thomas (2018) hypothesized that this lack of proficiency was due to lack of frequency of the input and not much use beyond limited social contexts. Thus, frequency and context of usage could possibly influence fluency. Through the approaches of the instructional program, they used the classes as an opportunity to increase that usage and push it more to its potential. Drawing upon students' entire linguistic repertoire, and explicitly teaching vocabulary increased students' proficiency and as a result, it also increased their confidence in their language skills.

In another study, Proctor et al. (2010) conducted a quantitative study measuring the Spanish language reading comprehension of students in three programs across grade levels from second grade to fifth grade. The three programs were English only, Spanish-English bilingual,

and Spanish only. While students in the Spanish only program outperformed the other groups, and both groups with Spanish language instruction outperformed English only, there was still a significant language loss from second grade to fifth. Two reasons proposed for this was the language complexity and cognitive demand of texts as students progressed in grade level and that Spanish instruction stopped after second grade, signifying that more instruction is needed if we want to prevent language loss and promote true biliteracy.

Other scholars echo the finding that a lack of proficiency may cause linguistic insecurity or alienation (Haynes, 2010; Montrul, 2010; Moore, 2019; Sánchez-Muñoz, 2016). When there is a lack of heritage language input, there is a lack of language development in terms of vocabulary, and morphosyntactic structure. These elements that form the basis of communicative messages, when not fully developed, may interfere with attempts to communicate.

These findings underscore the importance of explicitly targeting heritage language development for biliteracy. Language is more than just a means of communication. It is deeply rooted in identity and culture. When dual language pedagogies do not attend to heritage language development, EBs are being deprived of a valuable resource.

Multimodality

Literacy in the 21st century is no longer defined as reading and writing through “traditional text,” the written word on paper, as it has dominated throughout the ages but rather, in the age of advance technology, has been transformed to include many alternative means of production and transmission (Sanders & Albers, 2010). Online websites, social media, instant messaging are only a few of many alternatives. Unfortunately, educators continue to struggle with tensions in the classroom as they are faced with restrictive political mandates that still value traditional literacy such as through written standardized testing given annually. Educators also

struggle with needing to find the time to teach students the requisite skills for navigating these new literacies (Sanders & Albers, 2010).

A multimodal theoretical perspective of literacy is an understanding that there is more to representation and communication than just oral and written language and that through employing it as a tool, people have a multiplicity of modes at their disposal (Bezemer, 2012; Kress, 2003). Students come to school with different literacies that should be recognized, built upon and valued (Sanders & Albers, 2010).

Through an understanding of multimodality and a comparison with the traditional model of education, students benefit when given agency to choose semiotic resources and to learn and represent that learning creatively in alternative forms. Multimodality has the potential to transform the pedagogical model (Si et al., 2022). It creates a partnership between the educator and the student in a bidirectional relationship, rather than the traditional unidirectional model where knowledge is transferred from teacher to student and reproduced according to a set of standards dictated by the school or teacher (Kress & Selander, 2012).

In order to understand multimodality, it must be broken up into its individual units. Using the definitions of these units (Jewitt et al., 2016), semiotic resources, modes, and affordances. The best place to begin is with semiotic resources. Semiotic resources are the materials or actions that can be used to communicate meaning within a community and are shaped by that community, based on how they have been used or could be used by its members. Some examples would be a pen and ink in a society that values writing or hands for the hearing impaired.

Modes are then sets of semiotic resources, or materials, also recognized within a culture to have the potential for creating meaning or communication such as textual, oral, linguistic, visual, spatial, etc. Examples of modes are such things as speech, video, or written text.

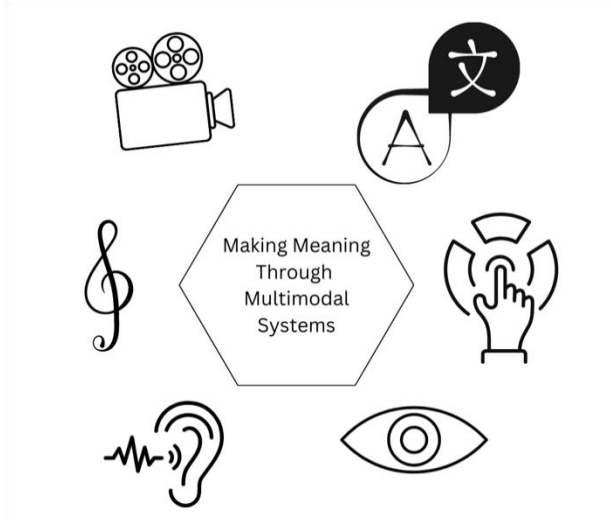
What differentiates the modes and influences how they are used are their distinct modal affordances; the potential uses of a mode according to its properties for making meaning and how the user wishes to convey that meaning. Speech, writing, gesture, and image are modes; each of them might be used to project information about the same subject but, due to their properties, carry a different part of the load of meaning, according to the interests and desire of the creator and as interpreted by the recipient. Furthermore, these modes allow for transduction, the conversion from one mode to another such as the conversion from speech into writing (Kress, 2003).

Finally, it is the sum of these parts in which the term multimodality is encountered. The use of multiple modes together to make meaning in a single artifact (Bezemer, 2012; Jewitt et al., 2016; Kress, 2003). An example is a video that can use image, speech, movement, and music.

Through the study of social semiotics, researchers strive to understand how individuals access the semiotic resources that are available to them and use their potential for making meaning by combining them, modifying them creatively and/or redesigning them according to the specific purpose at hand (Ranker, 2009). At first glance, one may only equate technology with multimodality. While technology has developed vastly in the past 50 years, is very prevalent in many classrooms and may transform learning, multimodality may be digital and non-digital. Research conducted on the use of multimodality with EBs revealed that they engage with multimodal systems in various forms such as speech, dramatic play, and even translanguaging. See Figure 2.1 for the various multimodal systems.

Figure 2.1

Multimodal Systems



Multimodal Systems Can Transform the Traditional Educational Model

Semiotic resources may be used as a form of discourse in different contexts (MODE, 2012). Educators and researchers should be knowledgeable about how they can be used and be prepared to work with them, recognizing their value as tools in the classroom (Sanders & Albers, 2010). Multimodality offers a nonlinguistic or extralinguistic form of representation across alternative modes. EBs, when faced with a lack of vocabulary to express their thoughts or knowledge in the second language, may benefit from utilizing the alternative non-linguistic modes (Ranker, 2009).

In school, students learn and are expected to represent what they have learned using the culturally accepted signs of the school environment, known as the “sets of standards” (Albright & Luke, 2010; Kress & Selander, 2012). In other words, traditional theories of teaching and learning possess a specified hierarchy where the teacher is the authority who possesses the

knowledge and transfers it to the learner who must acquire that knowledge (Freire, 2018). The student's success is measured by the degree to which the knowledge has been acquired as determined by meeting a standard set by either the teacher or the school. Multimodality challenges the traditional learning environment because it proposes a change in the relationship between the teacher and the learner. Rather than knowledge being transferred from teacher to student, the two are now being seen as co-constructors of knowledge as communication flows between the two; both are agents interacting in the design process (Kress & Selander, 2012).

Where once "texts" were considered the written word on paper, now, especially with the advent of technologies, text is considered any socially complete communication using semiotic resources (Kress & Selander, 2012). It can be anything from as simple as a picture to as complicated as a video with the creator choosing which modes and how many to include to convey their intended meaning and the receiver choosing how to interpret it, focusing on the mode or modes that most interest them. When participation in learning is restricted by only certain socially acceptable forms such as text and speech, both the creator and receiver of the signs may be limited. This is especially true for EBs who, at times, may be restricted by their proficiency in the English language and not able to clearly communicate their ideas. Thus, not only are the EBs restricted in being able to convey meaning but also the recipient is restricted in being able to interpret the intended meaning. On the other hand, when EBs are able to employ alternative modes besides just linguistic ones, they are given more agency to express meaning (Kress & Selander, 2012; Smith et al., 2021).

Multimodality as a Partnership: Agency, Alternatives, and Learner Identity

Kress and Selander (2012) explain the benefits of this utilization of multimodality. When there is an agency in the design, freedom to employ alternative modes, and a recognition that

learning is an interaction between the sign maker and the interpreter of that sign, can a learner project their identity. Moreover, because of employing multimodality, the teacher's role changes. The teacher must now analyze the learner's response which requires several complex steps. The educator must understand how the learner interpreted the prompt; why the learner chose the resource they did from all of the available resources; and how the learner employed transformation and transduction into a representation of their interpretation and knowledge. Thus, the teacher is not simply an assessor anymore, evaluating a response but rather is interpreting a response and providing feedback to continue guiding the learner and facilitating the learning experience. No longer is the dominant mode of writing and speech but meaning is recognized as existing in multiple modes. This creates the need for recognition of these different modes which the learner and the interpreter use to express these meanings.

Furthermore, multimodal composing practices, especially for EBs, can be utilized as a resource for further compositions as they use it as a base for redesigning in other contexts as seen in a study conducted by Ranker (2009). The researcher was interested to see how three focal students used resources in their current social context, a book and a movie about the *Titanic*, to aid in their composition of a text. However, these students then used other resources that went beyond that current social context, which were based on their previous writing experiences. The boys transformed their previous work and redesigned it to fit the new context, which was a book written about cars, to fit the current book on the *Titanic*.

Teachers' Recognition of Multimodality as a Tool

When teachers recognize the benefits of multimodality and incorporate it into their classroom practices and allow space for it, they are setting students up for success. A study conducted by Martínez-Álvarez et al. (2018) recognized the benefits of employing

multimodalities as a support for developing language abilities while encouraging the transfer of knowledge for EBs. The teachers in the case study conducted by Ranker (2009) also recognized the benefits of multimodality as a resource, and, even though it went against school policy, the teacher enabled the students to use their native language and multimodality to transform their writing. When the teacher recognized the importance of multimodality and structured the environment in such a way where students could import resources from other works, results were reflected in the students' composing process, whereas the restriction of them would have made their writing task more difficult.

Multimodality and Language

Communication can be transmitted through multiple modes and is not relegated solely to the linguistic mode. Multimodal systems can be a powerful tool for enhancing language (Godhe & Magnusson, 2017; Kress, 2000; Si et al., 2022; Smith et al., 2021; Yi & Choi, 2015). Kress (2000) challenges professionals in the field of linguistics to look beyond oral and written language as the only means of communication. Other modes such as visual and spatial are, at times, capable of communicating a message more accurately than words, whether spoken or written. Utilizing other modes empowers a person to transform the knowledge they have learned into other forms.

Godhe and Magnusson (2017) acknowledge that the traditional text has evolved to become more multimodal and the challenge that this presents in the contemporary language education classroom. They adopt the term “design” to signify the shift in power from teachers as designers of the learning process to students who are designers of their learning and opening up the landscape to incorporate all modes for communicative purposes. Thus, there is a need to transform how technology and multimodality is utilized in the language classroom.

Communication needs to be viewed as including non-linguistic or extralinguistic modes which challenge the traditional model and also affect traditional pedagogical formation. In a subsequent study, Magnusson and Godhe (2019) further the conversation by delving into the possibilities and challenges associated with incorporating multimodality into meaning-making especially as it is related to production. The call for a reconceptualization of the hierarchy of modes to represent meaning to a non-hierarchical view, recognizing the power of each mode to convey meaning. Although these scholars are located in Sweden, this issue is a global one as technology has been integrated in almost all corners.

Multimodality is by no means solely relegated to the technological realm. It incorporates all mediums. Adoniou (2013) conducted a study in year 3/4 class in a primary school in Australia of newly arrived immigrants where drawing was encouraged before students had to write. Drawing appeared to be an effective bridge between the literacies students brought from home and those in their new academic setting to convey meaning where traditional linguistic means were not available.

Smith et al. (2021) conducted a systematic review of the literature involving 70 studies where EBs in the secondary classroom had access to digital tools and multiple modalities. Their findings underscored how they support identity expression, challenge the language ideologies in education, empower EBs as designers of their own learning, and assist them in expanding their linguistic repertoire.

Research supports the conclusion that the infusion of multimodal systems into a pedagogy benefits EBs. However less research has been conducted on its use in the elementary classroom and focusing on the development of the heritage language. Considering the curriculum

demands and the time constraints, educators do not feel sufficiently equipped and able to incorporate multimodal systems into their pedagogy (Yi & Choi, 2015)

Translanguaging and the Multilingual Turn

As stated previously, multimodality offers multiple modes for making meaning.

Translanguaging is a very important mode within the multimodal systems that should be part of the EB's toolkit. Over 70% of the world's population is bilingual or multilingual and should not be viewed through a monolingual lens (May, 2014). Rather a person's repertoire of languages can be useful in differing contexts and recognized for the power in itself.

The Power of Translanguaging

Language is more than the structure that forms it. It is the meaning that people give to it. It is "becoming of ourselves and of our language practices, as we interact and make meaning in the world" (García & Wei, 2014, p. 8). In other words, language does not have meaning if it is only used with oneself. It is in communicating that it has meaning, and it needs to be comprehensible in order to have meaning. García (2009a) defines translanguaging as the way in which EBs strategically select features from their linguistic repertoire that enables them to communicate effectively. She emphatically states that it is not a monolingual times two. Students can use all the semiotic resources available to them to both produce and acquire meaning. Hornberger and Link (2012) posit that EBs' language skills in both languages, input and output, are located at different points on a biliteracy continua. When educators allow EBs access to all of their linguistic repertoire at the various points through the pedagogical approach of translanguaging, they foster both literacy and language development (Hornberger & Link, 2012).

Translanguaging, when recognized as a powerful component of a dynamic multimodal system, can enhance a students' learning and be a means of increasing their biliteracy (García & Wei, 2014; Hornberger & Link, 2012). Technology has developed so much in the last 50 years that has changed the way we view literacy (Kress, 2003). Students have the ability to access content in any language they want and often even have multiple choices of similar content.

Through flexible use of language, students can use their full repertoire to learn concepts, avoiding a monoglossic pedagogy. When educators give students space to explore multilingual resources, even if the teacher does not know the student's language, they empower that student to use all of their linguistic repertoire for learning (Hornberger & Link, 2012).

Using multimodal systems in the classroom creates equitable learning spaces for students and a translanguaging pedagogy helps EBs to feel that their language and culture are valued. Using a translanguaging pedagogy in the classroom takes a holistic view of language and literacy. EBs are able to use all of their languages which helps them to develop a comprehensive linguistic and cognitive system (Escamilla et al., 2021). Because the pathway to biliteracy is unique to everyone, it cannot be measured by monolingual standards. Rather students should be allowed the freedom to use their entire "linguistic, cultural, and experiential assets as the foundation for lesson development" (p. 364) and not be dictated by the language of instruction.

The Multilingual Turn Lens

May (2014) holds a similar stance refuting the tendency to see bilingualism as two monolinguals in one person. Moreover, in his approach of the multilingual turn, he argues against the tendency of SLA theories to use the native speaker as the model to which we should compare a person learning a second language, who will always come up deficient if they do not acquire native-like proficiency, By challenging monolingualism and acknowledging

multilingualism as cultural capital, researchers can hope to transform language practices at the classroom level.

The multilingual turn lens critically challenges the monolingual norm in SLA by positioning the bi/multilingual as multicompetent (May, 2014). Native speaker competence is used to measure the linguistic competence of a second language learner which views the bi/multilingual speaker through a deficit lens, ignoring their “fluid and overlapping language uses, and related linguistic and sociocultural competencies, of multilingual communities” (May, 2014, p.7). Bi/multilinguals use both their first language (L1) alongside their second language (L2) and not just in place of it, making it an additive language model and not a replacement one. Thus, the use of interlanguage, as it may be called, is not a failure but rather competent speakers who use both languages to suit their communicative needs in different contexts.

Another view embodied by the multilingual turn lens is that language is shaped by a speaker's experiences over the course of their lifetime and language input is a vital component that shapes it (Ortega, 2014). The frequency and quality of the input plays an important role in the development of language, whether in the so-called “first” or “second” languages. Thus, learning opportunities that provide meaningful interactions with language must be readily available.

The multilingual lens also recognizes that language is a social practice, and the identity of the bi/multilingual speaker is not static but rather negotiated through experiences within the larger social world (Norton, 2014). Language learners do not just internalize rules of grammar but actively interact with it and position themselves within it. Their level of investment determines the level of their linguistic identity, signifying that the linguistic identity can change over time and space and is determined by social interactions. Thus, students must feel

empowered over the literacy events they are invited to interact in and their identities validated.

The classroom must be transformed into a semiotic space where students have agency and choice over meaning making.

Discussion and Implications

This literature review attempts to address the question of how multimodal systems can support EB students and their Spanish language proficiency. It discusses the negative impact of linguistic oppression that EBs often encounter, the benefits of a multimodal perspective and how it can transform their language learning. By incorporating instruction on multimodal systems, especially one that includes a translanguaging and multilingual stance, into the pedagogy, educators can help to create a unique learning space for EBs that is more equitable and culturally relevant where students can use their entire linguistic repertoire for learning and develop biliteracy.

CHAPTER III

METHODOLOGY

The previous chapter provided a review of the literature detailing the problem of linguistic oppression and how it may impede the development of Spanish language proficiency for many heritage speakers. The purpose of this qualitative descriptive study was to challenge this disparity by combining a multimodal theoretical perspective (Bezemer, 2012; Kress, 2003; Sanders & Albers, 2010), a multilingual turn lens (May, 2014), and SLA theories to challenge the monoglossic approach that seems to dominate in education (García & Wei, 2014; Hornberger & Link, 2012). The research question was: What are the features of multimodal instruction and multimodal systems that appear to support EBs' literacy development in a second-grade two-way dual language bilingual classroom?

The powerful tools of multimodal systems applied through the framework of the multilingual turn and SLA theories provided students with alternative modes for communicating and learning. These differ from the modes that dominate in schools, the oral and printed word. Considering the linguistic differences and challenges that EBs face in a country that seems to value the English language more than students' heritage language, these alternative modes could be advantageous to students by enabling them to choose modes or a mixture of modes that enhance their educational experience. Moreover, through this study I gained insight into how educators can more effectively incorporate multiple semiotic resources into their pedagogy, so students increase their levels of bilingualism and biliteracy.

I begin this chapter with a discussion of the study's research methodology and rationale for a qualitative descriptive design to explain how it was best suited for a study that revolves around language acquisition. Secondly, I introduce myself and explain my positionality and

interest in the study to clearly state where my interest in this subject originated and how my personal experiences enhanced my insight into it. Then, I proceed to explain the context to the study and introduce the participants so that other researchers may see how this could be generalizable or transferable to their context. Afterwards, I focus on the research design including the data sources, collection, and analysis. I conclude with sections on the trustworthiness and limitations of this study.

Rationale for a Qualitative Research Design

Creswell (2007) frames the pragmatist as a researcher who is searching for a solution to a problem, focusing on the outcome rather than the causes. In choosing a pragmatic paradigm, I explored how, when provided the opportunity to employ multimodal systems, EB students could use the available semiotic tools to develop their biliteracy, chiefly focusing on increased heritage language proficiency. There may be many factors that contribute to the disparity of language proficiency among students, many directly out of the control of the educator, but there are actions that can be taken within the classroom that may improve outcomes for higher levels of Spanish language output. In this case, I incorporated multimodal instruction in a two-way Spanish-English dual language classroom.

One of the features of qualitative research is that it focuses on a phenomenon as it happens in a naturally occurring setting (Merriam, 1998; Merriam & Tisdell, 2015; Miles et al., 2020; Seliger & Shohamy, 1995). It is more concerned with looking at a phenomenon through a holistic lens and the meaning behind it and less so with how frequently it occurs (Merriam & Tisdell, 2015). For this reason, a qualitative research design was the most appropriate choice for this study, which explored how students interacted with multimodal systems in response to instruction in an authentic classroom setting as a normal part of the curriculum. Furthermore, it

conformed to four defining characteristics as defined by Merriam and Tisdell (2015). First, it focused on meaning and understanding, adopting an emic perspective by observing how the students interacted with these systems and understanding why they made the choices they made. I, as the researcher and teacher of record, was a primary instrument for data collection and was able to be responsive and adaptive according to the students' needs. It was an inductive process, where the findings helped to explain the phenomenon and connected to the theoretical framework from which I was operating. And lastly, the participants' words and artifacts served as rich, descriptive evidence for how the students chose to use the systems to develop their biliteracy, which numbers and frequencies from a quantitative study would fail to do.

Rationale for Descriptive Design

A descriptive research design is recommended for studies that focus on language acquisition due to the complexity of teaching and learning in the classroom where language acquisition is taking place. Descriptive research provides a lens to focus on describing observable behaviors of individual learners and their experiences in language acquisition settings (Nassaji, 2015; Seliger & Shohamy, 1995). This contrasts with quantitative research, which consists of tightly controlled experimental methods, which is more difficult to carry out in the classroom where language acquisition is taking place and the findings may not be applicable to other classroom contexts (Nassaji, 2015; Seliger & Shohamy, 1995). In this study, the focus was on how multimodal instruction appears to contribute to the development of students' biliteracy.

Utilizing research methods designed for second language acquisition, particularly the descriptive design, enabled me, as the researcher, to focus on and describe *what* is occurring naturally, rather than *how* or *why* (Nassaji, 2015; Seliger & Shohamy, 1995). Moreover, the study was guided by a research question undergirded by SLA theories, that focused on

understanding students' experiences, and then used data collected in a non-intrusive manner, to look for recurring themes or patterns and in order to describe them (Nassaji, 2015; Seliger & Shohamy, 1995).

I chose to use the four-parameter framework as proposed by Seliger and Shohamy (1995) seen in Figure 3.1 that is used in second language research. They propose that the researcher find their place upon a continua of factors based upon the focus of the research. These four parameters, upon which the research design is based, should guide the research methods, from the approach and objectives of the research to decisions on data collection. The first parameter considers whether the approach is synthetic/holistic or analytic. The second parameter relates to the objective of the research, whether it is heuristic or deductive research. The third parameter focuses on the degree of control or manipulation within the research which is based upon the first two paradigms. And finally, the fourth parameter is concerned with the data collection and the degree of explicitness. The four parameters all run on a continua and are interdependent.

Figure 3.1

Implicational Relationship Between the Different Parameters

Parameter 1	Synthetic paradigm	or	Analytical paradigm
Parameter 2	Heuristic	or	Deductive
Parameter 3	Degree of control/manipulation		
Parameter 4	Data collection/analysis		

Note. Adapted from Second Language Research Methods by H. W. Seliger and Elana Shohamy, 1995, Oxford University Press, p. 32. Copyright 1989 by H W Seliger and E Shohamy.

For this study, I pursued a synthetic approach because there are many factors that contribute to EBs' language acquisition, many of those factors outside of the classroom. I wanted to conduct research with a holistic focus on biliteracy development and not individual components of language.

Seliger and Shohamy (1995) state that the second parameter is concerned with the objective of the research, whether it is heuristic or deductive. A more synthetic approach would entail a heuristic objective which is "characterized by its inductive and descriptive nature" (Seliger & Shohamy, 1995, p. 57). The heuristic goal of this study was to describe what happens when students receive multimodal instruction to investigate if multimodal systems could contribute to EBs' biliteracy development.

The third parameter of the model focuses on the degree of control or manipulation within the research study (Seliger & Shohamy, 1995). The synthetic and heuristic ends of the continua attempt to understand and describe a phenomenon that requires less manipulation to be able to observe it in a natural setting. The other end of the continua calls for isolating factors to manipulate and control them to analyze each variable distinctly from the others. In this study, there was no manipulation of the environment. Instruction on multimodal systems was introduced as a normal part of the curriculum and the data collected was analyzed holistically.

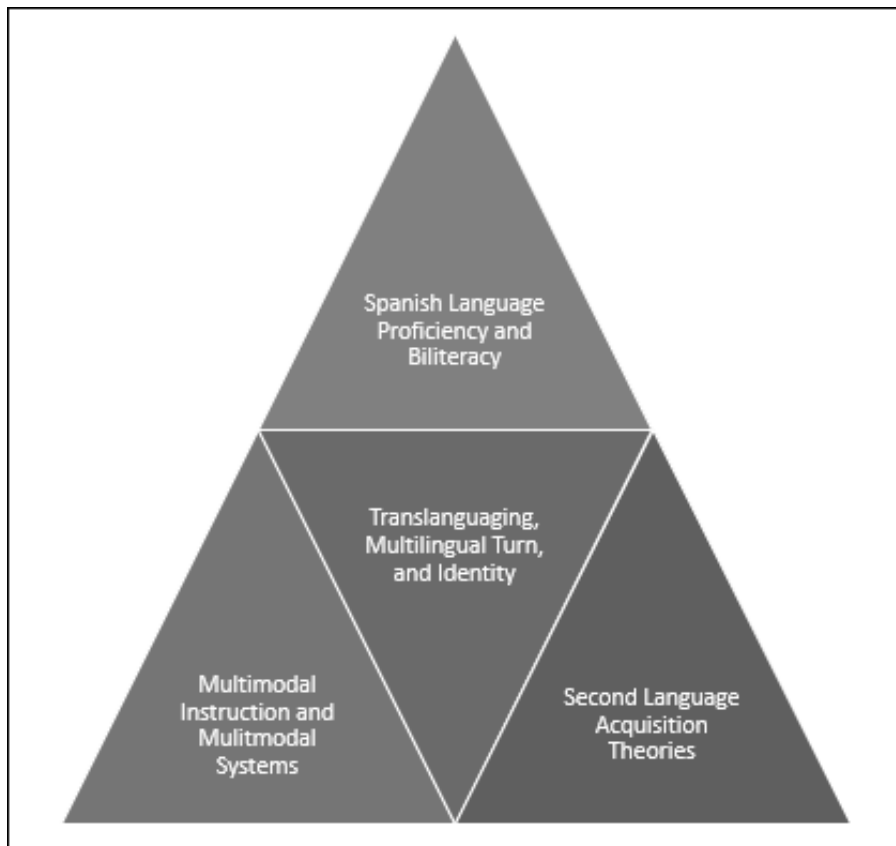
Lastly, the fourth parameter focuses on data collection and analysis methods which determine what data is collected and the manner in which it is collected (Seliger & Shohamy, 1995). There is an interdependency between each parameter that heavily influences what data should be collected and how, which is the concrete manifestation of the decisions made in the first three parameters. Careful consideration was given to what data would be least intrusive in order to maintain the most authentic and natural occurring setting and yet, also answer the

research question. The forms of data I decided to utilize in the study were observations and reflective field notes, student conferences, and artifacts, which consisted of snapshots of students interacting with multimodal systems, and their written compositions.

In summary, the research study investigated how multimodal instruction, guided by second language acquisition theories, appears to affect EBs biliteracy, focusing on Spanish proficiency. Instruction was examined through a multilingual turn lens, which recognized student identity, and incorporated multimodal systems. In Figure 3.2 is a model representation of these factors contained in conceptual framework.

Figure 3.2

A Conceptual Framework



Positionality

It is important to state upfront what my positionality is within the context of the study and the setting of this research so that my relationship with the participants and the research is clear to the reader (Creswell & Poth, 2016; Merriam & Tisdell, 2015). In this section I will describe how my role as a language learner, teacher, and researcher influenced the decision to conduct this research study.

My personal language experiences inspired my interest in finding ways to increase students' heritage language proficiency. To maintain fluency in any language, one must use the language frequently. I am a native English speaker, who grew up speaking only English for the first 16 years of my life. I have since acquired Spanish as an exchange student in Chile, French in college and living abroad in France, and Greek because of marrying and living in Greece. As a language learner, I have understood, firsthand, the difficulties and frustrations of communicating in a second language and the ability to speak on a multitude of topics coherently in a second language. While living in Chile as an exchange student as a teen, I quickly acquired Spanish and, while I easily understood spoken and written English, I struggled with oral output. There were few contexts in which I had to produce output in English, so when an occasion did arise, it was very difficult. It is a complex concept to explain to others how a person is not able to produce their native language. I learned that lack of use affects fluency, but not that the language is lost. Now, over 30 years later, I have regained fluency in English, as well as have maintained it in Greek and Spanish because I use them daily. Unfortunately, while once fluent in French, I again struggle with oral retrieval because I do not have the opportunity to use it. Additionally, I expanded my lexicon in all those languages by using them, but that expansion halts when I stop using them. This is what I see is happening within bilingual education. If children do not

continue to learn and use a language, they remain stagnant. I wanted to find ways to increase proficiency in the heritage language among bilingual students learning English in bilingual educational programs.

As for my teaching experiences, I have been teaching in the United States for almost 11 years, Spanish as a second language in elementary and high school, and bilingual education. I am currently teaching in a second grade two-way Spanish/English dual language program, where this research is conducted. Before teaching in the United States, I taught Greek and French as foreign languages in Greece for 2 years. Thus, I have personal experiences and insight as both a language learner and a language teacher. As an educator, I can relate to the struggles that students face, and I understand the intricacies of teaching in both a second language classroom and a bilingual one. The former focuses only on language acquisition and the latter on learning content while acquiring language, which is more complex.

As a scholar and researcher, a few experiences in the last few years have solidified my interest in the subject of increasing heritage language proficiency. Upon returning to the United States from Greece to commence my career in teaching, I was surprised by the urgent need for bilingual educators. I sought to understand why there was such a discrepancy between the size of the bilingual population and the percentage of this population that pursues a degree in bilingual education. I first decided to obtain a Master of Arts in Bilingual Education from the University of Texas of the Permian Basin in the hopes to understand this discrepancy, but ultimately did not find an answer. A few years later I was accepted into a special grant program through Texas Woman's University that provided educational opportunities for bilingual educators to improve fluency in Spanish in an educational context. The original goal of this program was to increase the level of biliteracy, by increasing Spanish input and output. However, it differed from an SLA

classroom as it was taught through content and did not focus solely on language acquisition. This opportunity extended to a scholarship to obtain a doctorate in literacy and learning and as a dissertation topic, heritage language proficiency has become the focus of my research. Other experiences that influenced this focus include encountering educators and students that were raised in bilingual homes who struggle with their Spanish proficiency. Some even refuse to speak in Spanish or declare that they find it difficult to speak and write in Spanish even though they were/are enrolled in a bilingual program. These experiences revealed a need for action.

A final influencing factor that contributed to my focus of research is that many classrooms still seem to reflect the traditional forms of literacy that revolve around oral language and paper via written compositions or books. While some technology has crept into the classroom setting, children are still not often allowed to use it for producing work, only consuming. Thus, final work products are mostly unimodal with only writing or bimodal with writing and visuals. And yet, there are multiple ways that students could use design and create multimodal products in new ways to represent their learning, especially when they might lack the linguistic means. This could be in the form of digital products like digital books or videos or even theatrical performances.

These combined experiences and circumstances prompted me to look at how I, as a bilingual teacher, can assist students' development of their heritage language proficiency and equip them with the knowledge, the tools, and, hopefully, desire to continue their own. Upon learning about the concept of multimodality, I was inspired to investigate what research has been done on incorporating multimodality into the pedagogy used with the EB population to learn more about the benefits a multimodal perspective might have on improving heritage language proficiency.

Research Context

The context for this project was in a second grade two-way Spanish-English dual language bilingual classroom with heritage Spanish speaking students in a large school district within a small urban town in Northern Texas. Henderson Elementary (a pseudonym), is a Title 1 school that offers bilingual education. In the year 2021-2022, when the study was conducted, it had 651 students registered, 116 in second grade, with a 70.5% Hispanic population.

Henderson elementary offers three choices of educational programs. There are two monolingual English classes per grade level where instruction is in English only. There are two one-way Spanish-English dual language bilingual classes in which only students whose primary language (L1) is Spanish are enrolled, with the majority of instruction in Spanish and gradually decreasing yearly as children acquire English. Lastly, there are two two-way Spanish-English dual language classes, where heritage English speakers and heritage Spanish speakers are placed in classes together and instruction provided in both languages (see Figure 3.3 for the district's language allocation plan).

Figure 3.3

District Language Allocation Plan for One-Way and Two-Way Dual Language

One-Way/Two-Way Dual Language Language Allocation Plan									
		Math	Literacy		Science	Social Studies	HB 4545 Requirement	Total Minutes	% Language of Instruction
Students whose L1 is Spanish (One-way & Two-way)	PK, K, and 1st	90 minutes	160 minutes	ELD Time: 15-20 minutes during the day	30 minutes	30 minutes		330 instructional minutes	67% Spanish 33% English
Students whose L1 is English (Two-way)	K & 1st	90 minutes	160 minutes	*SLD ~2022-2023 Pilot Time: 15-20 minutes during the day	30 minutes	30 minutes		330 instructional minutes	24% Spanish 76% English
		Math	Spanish Literacy	English Literacy	Science	Social Studies	HB 4545 Requirement	Total Minutes	% Language of Instruction
All students in One-way and Two-way DLE	2	90 minutes	80 minutes	80 minutes	40 minutes	40 minutes		330 instructional minutes	48% Spanish 52% English
	3	90 minutes	80 minutes	80 minutes	10 minutes Science ELD 30 minutes	40 minutes		330 instructional minutes	45% Spanish 55% English
	4	85 minutes	75 minutes	75 minutes	Science and SS to alternate every other day when HB 4545 intervention is implemented for grade level in 4th Grade 40 minutes total *10 minutes of Science ELD during Science block		*50 Intervention provided in LOI	330 instructional minutes	32% Spanish 52% English Science Days 15% Intervention based on LOI
	5	85 minutes	50 minutes	50 minutes	55 minutes	30 minutes	**60 Intervention provided in LOI	330 instructional minutes	24% Spanish 58% English 18% Intervention based on LOI

In Henderson Elementary, the two-way dual language program was adopted in 2017-2018 and began in kindergarten. Each subsequent year, as the children advanced a grade level, it was incorporated into the next grade level with them. The heritage Spanish speakers are either immigrants or children of at least one immigrant parent. Children's language proficiency in English and Spanish is tested before entry into kindergarten and it is determined if they would benefit from a bilingual educational model.

While in kindergarten and first grade, the students were placed in each homeroom according to their officially registered language, Spanish or English. The morning was spent instructing the children in either English or Spanish language arts, focusing on readings and

writing, according to their officially registered heritage language. The afternoon was spent as mixed classes, splitting the afternoon into two sessions, one where the students learned math in English for an hour, and then science or social studies in Spanish, also for an hour. This meant that formal instruction in reading and writing in the second language (L2), would not be offered, officially, until students entered second grade.

Once students enter second grade, they receive instruction for one half of the day in English and the other half of the day in Spanish: English language arts and math in English and Spanish language arts and science and social studies in Spanish. However, the language arts block in each language is for a reduced amount of time to equal the time they formally had for instruction in their primary language in the previous grades. Also, in second grade, the students are placed in classes of mixed heritage languages all day as opposed to the model in the previous years. Table 3.1 displays a visual of the instructional model of the two-way dual language program from kindergarten to second grade.

Table 3.1*Instructional Model of Two-Way Spanish-English Dual Language Program in Henderson**Elementary From Kindergarten to Grade 2*

Grade level	Morning Instruction		Afternoon Instruction	
Kindergarten	Language arts (reading and writing) in home language (as per home language survey upon enrollment)		Students from both classes mixed and they alternated between the two classes as listed below.	
			Math in English	Science/ social studies in Spanish
First grade	Language arts (reading and writing) in home language (as per home language survey upon enrollment)		Students from both classes mixed and they alternated between the two classes as listed below.	
			Math in English	Science/ social studies in Spanish
Second grade	Group 1	Group 2	Group 2	Group 1
	Math	Science/ social studies	Math	Science/ social studies
	Language arts in English	Language arts in Spanish	Language arts in English	Language arts in Spanish

Another important point to note is that second grade is a pivotal time for students as they transition to deepening their comprehension and more cognitive demand on acquiring knowledge through reading and less on the fundamentals of reading. The second-grade curriculum requires that students research topics and write about them. Students also read across all genres of literature and encounter new vocabulary.

Access to Research Site

As the second-grade two-way dual language bilingual teacher of record in the school, I had access to the students and obtained approval from the school district and the school administrators to conduct the study. In order for a qualitative descriptive research design to be considered effective and rigorous, groups must be formed naturally and should have existed before research begins (Seliger & Shohamy, 1995). Being the teacher of record enabled me to investigate this topic in such an environment and afforded me the opportunity to obtain an in-depth understanding of the ecology of the classroom with the students, for whom the instruction intended to benefit. Moreover, the instruction had educational value that not only enhanced the pedagogical objectives but did not interfere or distract from them (Reinking & Bradley, 2008). The research activities were integrated into regular classroom activities and involved the entire class.

Research Sample

A typical purposeful sampling procedure was chosen for this study as the most appropriate, because the participants were representative of the average person that multimodal instruction would benefit (Creswell & Poth, 2016; Merriam, 1998; Merriam & Tisdell 2015). The focal students in the study were EBs who were classified as heritage Spanish speakers. Rather than use the term EB, because all students in a two-way dual language program are EBs to different degrees, the term “heritage Spanish speakers” clarifies their linguistic background (see Chapter 1 for more information on the use of the term heritage Spanish speaker). Because this study focused on the heritage language development, Spanish, as a means to developing biliteracy, participants needed to be EBs enrolled in a Spanish bilingual program as heritage Spanish speakers.

Three factors contributed to the decision on the exact sample. First, the participants in a second-grade dual language program were chosen because they were representative of other heritage Spanish speakers in two-way dual language programs where students receive partial instruction in English and Spanish. Secondly, if students in a second-grade two-way dual Spanish language program were able to benefit from multimodal instruction, then it could be applicable to other language programs and grade levels. Lastly, I am a qualified teacher for this population. As the researcher this offered the least intrusive method to observe a phenomenon in a naturally occurring setting, as is typical of qualitative research (Merriam, 1998; Merriam & Tisdell, 2015; Miles et al., 2020; Seliger & Shohamy, 1995).

Participant Selection

As explained, the participants identified as Spanish heritage speakers that have been placed in the second-grade two-way dual language program, indicating that they are considered fluent enough in Spanish to be able to understand it and be able to speak, read and write in it to a certain degree but having differing levels of English/Spanish on a continua (Hornberger, 2004). While all of the students in the class were participating in the instruction as part of the normal curriculum, data was collected only on the students that volunteered to participate in the research study, had parental consent and that had themselves assented to participate in the study.

Participation was open and optional for all the students whose heritage language was Spanish.

While the relationship between researcher and participant was not neutral because I was also the teacher of record, I still sought objectivity. One of the characteristics of qualitative research is that it seeks to understand how “knowledge is constructed by people in an ongoing fashion as they engage in and make meaning of an activity, experience, or phenomenon” (Merriam & Tisdell, 2015, p. 23). Thus, while the nature of the relationship was asymmetrical,

(Roth & von Unger, 2018) the nature of a qualitative descriptive design warrants an imbalanced relationship. As the teacher of record, I was able to observe them in an authentic environment in the normal course of instruction. Additionally, I had formed deep relationships with the students and was very aware of the individuality of each student. This afforded me a better understanding of why something may or may not have worked and I would make the necessary adjustments.

Another issue I considered, as the teacher of record, is that the students may have felt forced to participate in the research study. Their rights were protected because they understood that regardless of participating in the research project or not, the whole class would still participate in the instruction as part of the normal course of the curriculum. I explained the entire nature of the study and the proposed goals. A letter of consent was provided to the parents as well as a letter of assent for the students outlining the study, how their rights would be protected, the potential harm and benefits, about the data that would be collected, and how it would be handled. They also understood that it would be a cooperative relationship with their feedback actively guiding the course of the research. Parents and students were also informed that the students did not have to participate in the research, and it would not affect their relationship with me or affect their grade. If they choose to not participate, no data would be collected from them for the research project. On the other hand, if they did decide to participate, they understood their full rights and that they had the right to stop participating at any time. I also explained that the data collected from them would be anonymous and that it would not be identifiable in any way.

Participant Profiles

There were eight participants in total in the study. There were six girls and two boys. Three girls and one boy were from the morning section and three girls and one boy from the afternoon section. They were two simultaneous bilinguals who have been learning and speaking

Spanish and English since birth, and six sequential bilinguals who only spoke Spanish at home and began acquiring English in school.

The language trajectory of each of these heritage Spanish speakers varies greatly from child to child. It is also much different than those of the students that are “heritage English speakers,” those who have been raised surrounded by the English language and who have only been exposed to Spanish through this program. In contrast, most of those students that were included in this study have been exposed to both languages in multiple locations in their lives, whether it be at home, in their communities, and/or at school. Of course, the amount of language exposure differs greatly but, just by living in the United States, and living in a home where Spanish is spoken, ensures that there is likely more exposure to both languages. Table 3.2 displays a summary of students’ language practices that I compiled based upon discussions with students and my observations

Table 3.2*The Participants and a Summary of Their Language Practices*

Student	Language spoken most often in the classroom	Language likes to write in	Language spoken at home the majority of the time	Simultaneous or sequential bilingual	Target language of student (student-focus)	In Henderson Elementary since Kindergarten
Lara	English	English	Mostly English with family and only Spanish with grandparents	Simultaneous	Spanish	Yes
Elena	English and Spanish	English	Spanish with father and both with mother. Mixed with different relatives	Simultaneous	Both but expressed desire to develop more English	Yes
Zelda	Spanish with frequent translanguaging	English	Spanish with parents, English with sibling	Sequential but at an early age began to include English	English	Yes

Student	Language spoken most often in the classroom	Language likes to write in	Language spoken at home the majority of the time	Simultaneous or sequential bilingual	Target language of student (student-focus)	In Henderson Elementary since Kindergarten
Liliana	Spanish	Spanish	Spanish	Sequential	Both	No
Alan	Spanish	Spanish	Spanish	Sequential	Both	Yes
Cecelia	Spanish	Spanish	Spanish	Sequential	Both	Yes
Jisel	Spanish	Spanish	Spanish	Sequential	Both	Yes
Gael	Spanish	Spanish	Spanish	Sequential	Both	Yes

Lara

Lara is a simultaneous bilingual born in Texas meaning that she has been speaking and learning both English and Spanish in the home since birth. Lara's mother mentioned in a conversation that they, the parents, try to encourage their children to speak Spanish as much as possible, which demonstrates that they value Spanish and want their children to be able to speak Spanish. Lara has been in a bilingual program since pre-kindergarten.

Lara self-identified as an English speaker. She reported that she speaks English mostly at home with her immediate family but only Spanish with her grandparents. More specifically, she explained that while most of her extended family speaks in Spanish, some speak more in English. She explained why she wanted to learn Spanish:

I want to learn more in Spanish because my grandmother does not speak in English ever.

She only knows how to speak in Spanish, and I have to speak to her in Spanish and sometimes when I do not know a word I have to ask 'Alexa' how to say it in Spanish.

(Unrecorded conference with Lara)

However, while Lara may identify as being an "English" speaker, when asked why she wanted to be bilingual, she said it is because some of her friends do not know Spanish and her grandparents do not know English. She expressed her desire to learn Spanish throughout the year and worked hard at producing written Spanish, even though she often chose to speak mostly English in class.

Elena

Elena is also a simultaneous bilingual born in Texas who speaks both English and Spanish at home. She speaks Spanish with her father, an immigrant from Mexico, and a mix of

Spanish and English with her mother, a child of immigrants born in the United States. Elena's mother expressed that they also value Spanish and want their children to be able to speak it.

Elena has been in a bilingual program since pre-kindergarten.

Like Lara, Elena said that she feels more comfortable with English. Elena, and I had several conversations at the beginning of the year about why she would write in English so often. She said that it was because she "knew Spanish well enough." I asked her why she wanted to learn English, she responded,

Because I want to be bilingual. Because I have only learned Spanish, only in bilingual classes. In preschool it was only in Spanish but when I came here, I did not understand what they were saying in English.

We then discussed the importance of continually developing her Spanish and not stopping at a second-grade level. After that conversation, she became quite vocal about learning Spanish, explaining that she wanted to continue getting better at Spanish, even though she continued to speak in a mix of English and Spanish.

Zelda

Zelda is a sequential bilingual learner born in the United States to immigrant parents from Mexico. At home, she speaks Spanish with her parents but with her sister she speaks some English. She said the majority of her family only speaks in Spanish except her sister and her uncle. She has been in a bilingual program since pre-kindergarten.

Zelda explained that she wanted to be bilingual because ever since she was little, she only knew Spanish, and she wanted to learn English, so her sister helped her. She continued to explain that, like Elena, she already speaks Spanish and that her English was not very good like her

sister's. She said, "Ella casi no hace 'mistakes.' No me gusta hacer 'mistakes' porque mi hermana me hace 'bullying.'" [She (her sister) hardly makes "mistakes," (saying the word "mistakes" in English). I don't like to make mistakes because my sister bullies me.] Zelda spoke mostly Spanish in class with some English mixed within the sentences, translanguaging.

Liliana

Liliana is a sequential bilingual learner, and, with her parents, immigrated from Mexico when she was 4. She only speaks Spanish in the home, but, remarkably, her writing in both languages was very good, in orthography and syntax. Liliana has been in a bilingual program since pre-kindergarten. She only spoke Spanish in class but spoke in English with her best friend who is just learning Spanish.

Liliana's mother said that she had no idea how her daughter had learned English so well. Liliana, herself, said that she felt she needed to learn English so that she could serve as a bridge between her parents and the world since they do not speak English. She took on the responsibility of being the language broker and teaching her parents.

My parents don't speak hardly any English and my mom wants me to learn English so I can teach everyone English. There are different days where I teach my parents, siblings, uncle, etc. My mom wants me to translate for her at stores. Or if someone comes to the house that speaks English, she needs me to speak with them. My dad does know a little English. (My translation of our conversation per notes.)

She told me that when she was in first grade in a different school, they had given her some cards in English, and she uses them with her family to teach them.

Alan

Alan is a sequential bilingual, the child of immigrant parents from Mexico. He and his family (parents and siblings) speak mostly Spanish at home. He would also speak mostly Spanish in class. He did use some English when he did not know how to say them in Spanish. He is in the gifted and talented program and missed class at least once a week when he attended the program. He has been in a two-way dual language bilingual program since kindergarten and, like the other students, had only been receiving Spanish language arts until second grade.

Alan stated that he would like to learn more English. He feels like he could serve as a language broker, a translator for people of either language that would need help. “Si alguien no sabe cómo decir algo en inglés o en español puedo ayudar.” (If someone doesn't know how to say something in either English or Spanish I can help.)

Jisel

Jisel is a sequential EB, born in the United States to Honduran immigrants. Her family only speaks Spanish at home. She has older siblings who just recently immigrated from Honduras to join them, and they do not speak English, according to Jisel, and she wanted to help them to learn.

Jisel strongly identified as a Spanish speaker although she could understand and speak English. She often reminded me that I needed to speak in Spanish because I would sometimes speak in English to the heritage English speakers who were learning Spanish to clarify content, instructions, or important information. She told me:

Entiendo y hablo en inglés. Hablo con mis hermanos, hablo un poco en inglés con mis papás porque son hondureños y no saben y apenas están aprendiendo. Estoy aprendiendo

escribir en inglés, pero no se tanto. [I understand and speak in English. I talk with my siblings; I speak a little in English with my parents because they are Honduran and they don't know (English) and are barely just learning. I am learning to write in English, but I don't know very much.]

She told me that she wants to be bilingual because it will help her in the working world.

Cuando estoy trabajando como en la Pizza y alguien viene y habla en inglés, quiero poder traducir. Pero si no sé cómo hablar en inglés no voy a poder trabajar ahí. (When I am working like in the Pizza (a pizza place) and someone comes in and speaks in English, I want to be able to translate. But if I don't know English, I won't be able to work there.)

Gael

Gael is also a sequential bilingual learner born to immigrants. His mom is from Guatemala and his dad is from Mexico. He speaks Spanish at home with his family. He also had been in a bilingual program since pre-kindergarten. He spoke mostly in Spanish during class but would often speak in English to his friends who were also heritage Spanish speakers but who preferred to speak in English.

He expressed a desire to learn English so that he could make more English-speaking friends (this is the first year that they are mixed with the “monolingual” class) and he is excited that he is able to speak more English. He said that he felt that he did not know English very well. While Gael says that he speaks mostly Spanish at home, he said that it used to be easy but as time goes on and he interacts more in English at school and at home with his friends that he feels like he does not know as much Spanish.

Casi no tengo amigos que hablen inglés. A veces me hablan en inglés y no entiendo que me están diciendo. (I hardly have any friends that speak in English. Sometimes people speak to me in English and I don't understand what they are saying to me.)

When we discussed his reasons for wanting to be bilingual, he said that he wants to learn both English and Spanish well because:

Quiero ayudar a mi familia. Mi papá habla un poco en inglés, pero casi no sabe nada y mi mamá no habla nada de inglés. Mis hermanos hablan. Quiero ayudar a mi tío que apenas vino de Guatemala. (I want to help my family. My dad speaks a little English, but he hardly knows any, and my mother doesn't speak any English. My brothers do. I want to help my uncle who just came from Guatemala.)

Cecilia

Cecilia is a sequential bilingual learner born in the United States to Mexican immigrants. She says they mostly speak Spanish at home, although she sometimes speaks English with her two sisters. Cecilia reported that her mom does not speak very much English, although she does know that her dad speaks in English because, as she said, she hears people call her dad that are American, and he speaks English. She also mentioned that her mother values that the family speaks Spanish well. They only have Spanish books at home. Like Alan, she is in the gifted and talented program and missed my class at least once a week when she attended the program. She has been in a bilingual program since pre-kindergarten. She always spoke mostly in Spanish in class.

Cecilia explained, during one conference, that she wanted to learn English. She identified herself as “part Mexican and part American” and while she knows some English, she wants to

learn more. In response to my question about why she wants to be bilingual, she said that she wants to be bilingual, because while Spanish is easy, English is not.

Research Design

The following section describes the research design including the rationale for the data sources, a timeline of the study, the basis of the instruction, data collection and storage. It continues with describing the first and second cycle of data analysis. And finally, it concludes with the issues of trustworthiness and the limitations of this study.

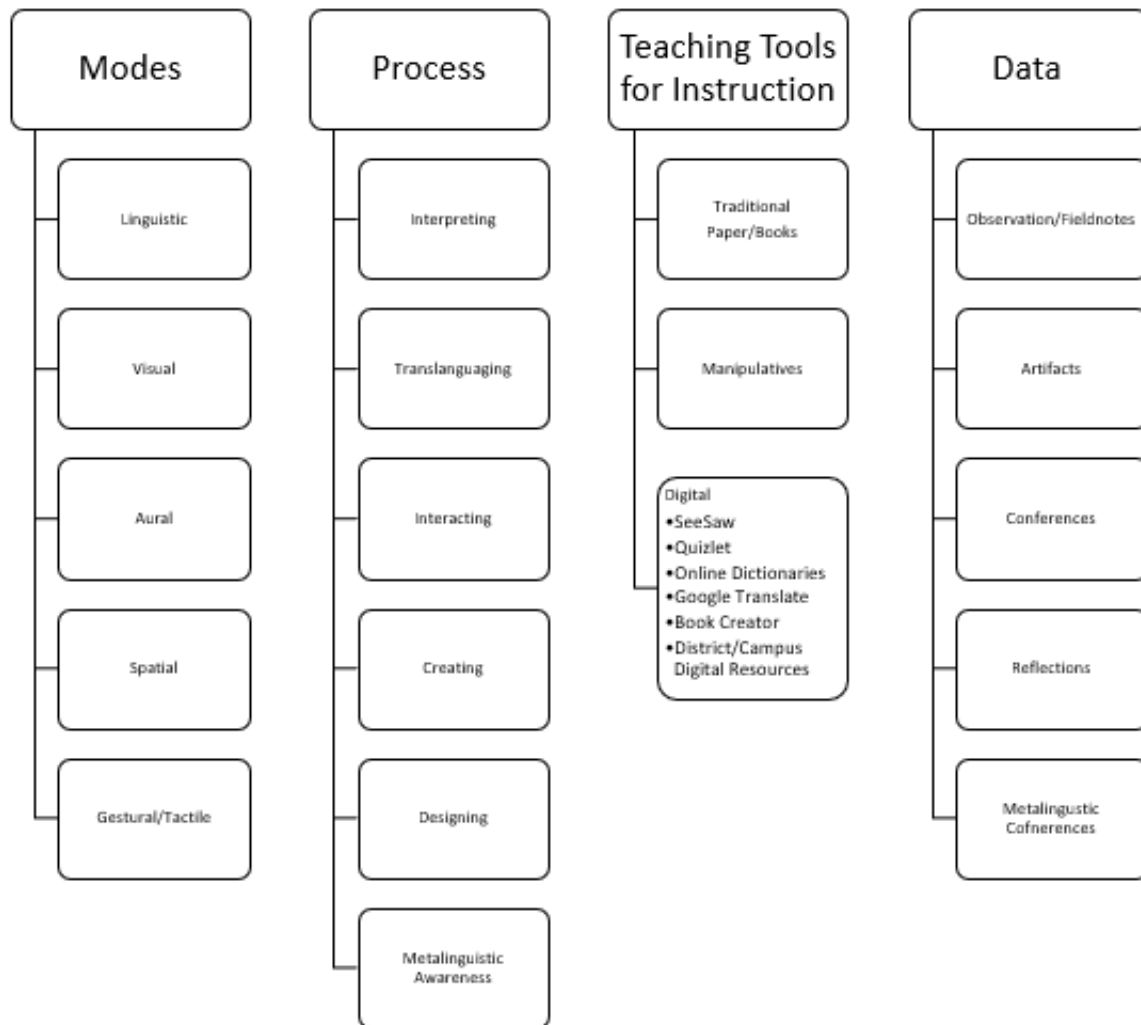
Data Sources and Collection Procedures

Rationale for Data Collection Sources

The data collected in this research was approached systematically because of the nature of qualitative descriptive designs that involve language acquisition. Seliger and Shohamy (1995) emphasize the need to identify the variables and ensure that the data collected answers the research question. As a result, the researcher is able to focus on the specific behaviors that could provide acceptable evidence. Figure 3.4 displays an instructional chart that identifies the available modes, the processes involved in interacting with them, the teaching tools utilized, and the data collected.

Figure 3.4

Instructional Chart With a Menu of the Modes, Processes, Teaching Tools, and Data Collection



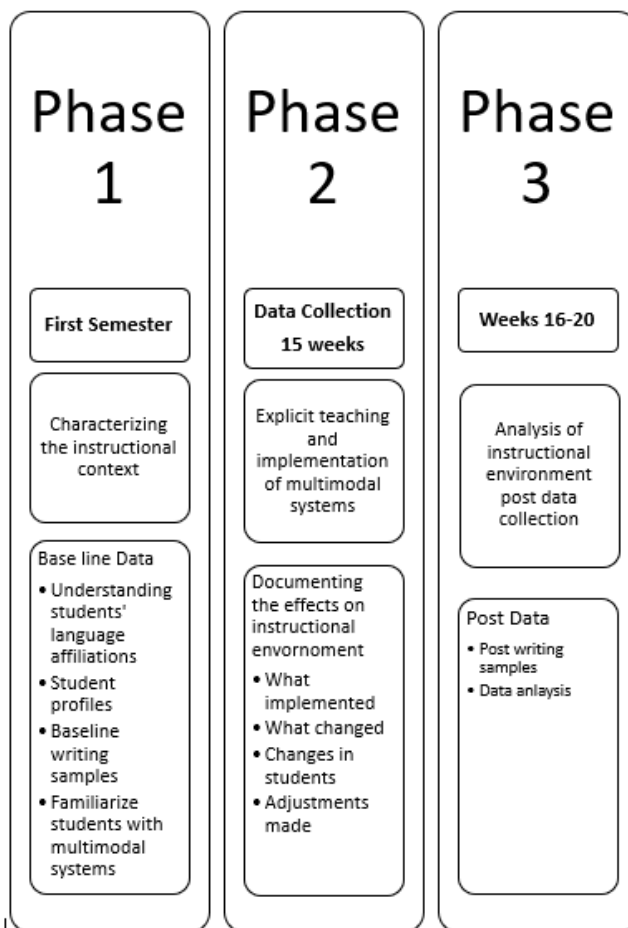
Research Timeline

This section discusses the timeline for the study (see Figure 3.5). The first semester, phase one, was spent building a relationship of trust with the students and understanding the ecology of the classroom. I gathered information on the language practices and ideologies

through informal conversations with the students and, and observations of their interactions with their peers and with me, the language practices in the classroom and home. as well as their baseline writing samples. I familiarized students with the multimodal systems that we would be utilizing at the commencement of the second semester.

Figure 3.5

Timeline of Phases of Instructional Intervention Implementation



Active data collection was phase two and occurred over the course of 15 weeks in the area of research and writing across content areas: language arts, science, and social studies. The focus was on how multimodal instruction could contribute to EBs' development of their biliteracy. Instruction was incorporated during the course of the normal curriculum while students were learning content.

The remaining final 5 weeks, phase three, were spent analyzing data, wrapping up the project with the students and gathering any remaining data such as post work samples. While I was actively analyzing the data while collecting it, it was not until I had all the data, including the post writing samples, that I began to analyze the data in its entirety.

Instruction

Instruction revolved around research and writing compositions in the content areas of language arts, science and social studies. The Texas Essential Knowledge and Skills (TEKS), taken from the Texas Education Association (TEA) website, lists the expected skills for second graders. The most notable requirements are (11) the student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions and (13) the student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. Section (13) (B) develop and follow a research plan with adult assistance; (13) (C) identify and gather relevant sources and information to answer the questions; (13) (E) demonstrate understanding of information gathered; and (13) (G) use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

These TEKS indicate that it is important that students write, revise and edit their compositions using the standard writing conventions, but even more importantly that they

engage actively in research and that the presentation of their research can be multimodal and does not necessarily have to be handwritten on paper. Multimodal systems became the focal point of instruction as students learned to conduct research and represent their findings multimodally. The only constraint was that my partner teacher interpreted the TEKS differently than I and felt that it was important that students use the traditional form of literacy by writing their language arts compositions on paper. I complied for the final assessment for shared subjects but allowed student access for working drafts.

A typical instructional lesson lasted for approximately 60 minutes and was divided into three instructional units. The first 20 minutes consisted of a mini lesson on content. The next 30 minutes was the workshop where students worked independently. The last 10 minutes was a whole group circle time for wrapping up and sharing.

Overview of a daily 60-minute class time

A. Mini Lesson - Content (20 Minutes)

- Writing in Language Arts/Science/Social Studies
- Narrative/Information Texts
- Metalinguistic
- Multimodal Resources

B. Workshop/Small Group Time (30 minutes)

- Conference with individual students based on observations
- Small groups formed based on observations
- Student translanguaging, engaged in writing, talking, and reading from multimodal sources

C. Whole Group – Sharing and Reporting outcomes (10 minutes)

Data Sources

The types of data collected were observational field notes, student conferences, researcher/teacher reflections, and artifacts. The artifacts consisted of student writing samples and pictures of students interacting with the multimodal systems.

Observational Field Notes. Field notes were recorded almost daily and consisted of the date, participant, the context of the observation, and any researcher/teacher reflections, as relevant, according to the suggested guidance for qualitative research involving field notes (Merriam & Tisdell, 2015). Almost daily, I recorded my instructional moves as a teacher and reflections on what worked or not, and what needed to be changed. They also usually included observations of one or two individual participants as they interacted with the multimodal systems for periods varying between 5-10 minutes and, if possible, a conference with them. These field notes were handwritten in a journal as they took place, recording student comments if applicable (see conferences below). I hand wrote, or recorded in a voice memo, more specific contextual information and teacher/researcher reflections as soon as possible, after they occurred, if time allowed. Avoiding any delay between observations/reflections and recording them is suggested in order to provide as highly descriptive information as possible and to avoid the possibility of poor recall (Merriam & Tisdell, 2015). All notes were typed directly into NVivo, a qualitative data analysis software program (QDAS), where the data was stored and coded preliminarily, at the end of the day. The field notes provided depth to the data collected and their analysis

revealed factors that influenced the successful implementation of multimodal instruction and guided future courses of action.

Conferences-Metalinguistic and Multimodal Reflections. Student reflections are windows into the consciousness of students that enable the researcher to better understand the complicated social and educational issues that students face (Seidman, 2013). I conferenced with students while they interacted with multimodal systems, which offered insight into the students' decision-making processes. During these conferences, I provided more individualized instruction according to student requests or instructional needs. In qualitative research, interviews tend to be "open, informal, and unstructured" (Seliger & Shohamy, 1995, p.160). I asked open-ended questions to understand why the participants made the decisions they did, how they felt about a system and how it helped them learn. I recorded these interactions in the observational field-notes and journal to document the instruction and resultant actions. I checked for accuracy by repeating and clarifying what the students said before writing their words in my journal and then, at the end of the day, I typed the notes directly into NVivo.

Artifacts. Artifacts are valuable pieces of data in the qualitative research setting that address the research question and are non-intrusive (Merriam & Tisdell, 2015). Artifacts consisted of students' handwritten or digital compositions and taking pictures of students' work while they interacted with the multimodal systems.

Data Storage

All the data generated was either handwritten or collected electronically. The handwritten notes were stored in a locked filing cabinet in my classroom during the day and taken home at night to be recorded directly into NVivo on my personal computer that is password protected.

Photographs of student work and students' handwritten compositions that were scanned on my iPhone were password protected. If any compositions contained personal information such as names, I uploaded it into a digital application, called PDFescape, that enabled me to erase any identifiable information. I then downloaded onto my personal computer, uploaded it directly into NVivo, and deleted it from my computer. Any digital applications used were connected to my teacher account and password protected. I downloaded copies to my personal computer and, after removing any identifiable information with PDFescape, I uploaded them into NVivo and then deleted them from my computer. The artifacts collected were analyzed within a day or two of being created so that I could review them and search for useful information to guide the research and instructional process, documenting the findings and reasoning for the follow-up actions in my field notes as noted above.

Data Analysis

After data collecting commenced, I created a case file for each participant. As data accumulated, I coded it to the relevant participants' case as appropriate. The data fell into one of three categories: a research journal, which included fieldnotes, researcher observations and reflections and student conferences; photographs of students interacting with multimodal systems; and student compositions, both digital and paper.

First Cycle Coding-Descriptive Coding

While actively collecting data, I immersed myself in the data, searching for what might be immediately apparent, to reflect on what was happening throughout the study, and guide any instructional decision making. Miles et al. (2020) suggest that the researcher not wait to start

coding their data but rather begin as the data is collected. Doing so helps condense the amount of information into more manageable and meaningful units to facilitate analyzing.

For the first cycle coding, I used descriptive coding. Miles et al. (2020) frame descriptive coding as the act of assigning labels in words, or short phrases that summarize the data. The reason is to “provide an inventory of topics for indexing and categorizing” (p. 45). Utilizing descriptive coding added clarity by deconstructing and condensing the data so I could see any existing patterns more easily. Because I did not conduct in-depth recorded interviews outside of the normal curriculum and therefore have transcripts to draw upon for In Vivo coding, descriptive coding proved to be the best method for inventorying data in order to construct an accompanying narrative more easily.

To differentiate between similar codes, I created a table to clarify the definitions of the codes so that I used them consistently as suggested by Miles et al. (2020) and further break them down into more meaningful units. Keeping a journal while coding was helpful as a means to “verbalize” my thoughts through the written word as though I was discussing and explaining them to a colleague to better understand my thinking and guide my future actions. Table 3.3 is a list of some of the initial descriptive codes, created solely from the journal entries soon after actively collecting data and having a sufficient quantity to analyze. Listed in the second column were subcategories, which I quickly realized were needed to provide more meaning and a richer description of the data as the first was too general. And finally, in the third column, I wrote researcher reflections to describe my thought processes and ideas for further actions and coding (See Appendix B for original charts with reflections).

Table 3.3*Research Journal of Initial Descriptive Codes*

Code	Subcodes	Reflections and definitions
Description of atmosphere	Difficulties Worked well Context	External factors affecting the implementation of the study i.e., TELPAS testing, weather cancelations
Tasks and Medium	Seesaw Quizlet Magnetic tiles Flashcards Digital Book Creator	Instructional tasks and mediums: digital and non-digital
Language	Language practices Language identity	Any content related to language: <ul style="list-style-type: none"> • audio recording • bilingual • English
Student experience	Actions Feelings	Students' voices from conferences and student interactions with multimodal systems
Instructional move	Moves Reflections	Researcher/teacher instructional moves and reflections

Because there were external factors that were affecting instruction, I recorded them in my journal. Such external factors included testing for the TELPAS. For almost 2 weeks, students had to write in English on paper, in response to a prompt. Other factors included zone testing for the district, report card assessments, weather, extracurricular activities such as the gifted and talented program, etc. Documentation enabled me to understand what external factors may interfere with instruction and constrain implementation of multimodal systems. I also documented the different tasks that the students engaged in and the medium, digital and non-digital. I noticed that conferences and reflections frequently revolved around language, so I created another category

with subcategories to differentiate the context. Understanding how students experienced multimodal systems was central to my study so I created a category to reflect data from conferences that provided insight into how students interacted with the multimodal systems and how they felt about using them. And lastly, I created a code that documented my instructional moves as the researcher and the teacher and my reflections and insights on their effectiveness.

The next step was to then consider the rest of the data, in conjunction with the journal, which included snapshots of students at work, interacting with the multimodal systems, and their output in the form of compositions, both on paper and digitally. The artifacts contained more information on the language use and development but also incorporated modes and thus I needed to create another set of codes that could describe what I was noticing. Table 3.4 is a list of the additional codes and their definitions. I was specifically searching for information in the artifacts that provided insight on language use, whether used separately, bilingual compositions, and translanguaging. I also created codes to reflect which modes students chose and the apparent connection of the mediums on students' work.

Table 3.4*Additional Descriptive Codes to Describe Artifacts and Journal Entries*

Initial descriptive codes	Definitions
Bilingual	Used both Spanish and English in composition
English	Used only English or mostly English
Spanish	Used only Spanish or mostly Spanish
Audio recording	Used audio recording as a mode
Language	Student mentioned language use in conference
Translanguaging	Student used translanguaging in their work for input or output
Language identity	Student revealed how they felt about their language identity in conference
Google Translate	Any student use of Google Translate
Task	The medium through which the students did their work, i.e., paper, Book Creator, Digital resource, etc.
Metalinguistic awareness	Work or discussion was around features of the language

Second Cycle Coding-Pattern Coding

After coding all of the data, I moved into second cycle coding. Here I used pattern coding to look for themes and patterns while reducing the multitude of descriptive data codes (Miles et al., 2020). The first step was to discover a way to better organize the codes to answer my research question: what are the features of multimodal instruction and multimodal systems that appear to help students develop biliteracy. Dissecting the question into the information that I would need to answer it, I organized the data into three main categories: what my instructional moves were, how the students responded, and how it appeared to connect to their biliteracy.

Because NVivo was not as user friendly as purported, using the search features did not always provide me with useful information or it was incomplete. Thus, I had to find alternative ways to sort and find patterns. One way was to retrieve data under one code, such as instructional moves, and then, within that data, highlight either all related codes or search for certain specific codes to see if or how they were related (see Figure 3.6). To continue with the example of instructional moves, I cross-checked it with the magnetic tile activity and then created a table (see Table 3.5). The table facilitated organizing the data for me to clearly see the exact instructional moves I utilized with the magnetic tile activity, how the students responded, and then my post reflections on the lesson, for changes to be made in future activities. Furthermore, because of the way that NVivo can group the data, I was able to quickly retrieve all the other related data like the photographs taken of students while interacting with this activity, which were also coded (see Figure 3.7).

Figure 3.6

Data Coded as Instructional Move With Relevant Coding Stripes

Reference 1 - 4.58% Coverage

Today I had the students use a visual and gestural tool. It consisted of small magnetic tiles of words with Spanish on one side and English on the other. They were divided up into categories of nouns, verbs, adjectives, and connectors. At first, I gave the students all of the tiles to let them try to work in bilingual pairs to build sentences. I wanted to see where discovery would lead them. I soon realized that some students were able to figure it out, others struggled with the English part because it required more grammatical knowledge. For example, the verb "tiene" would say "he/she/it likes" and that confused the students. Also, when they tried to create phrases using adjectives and then flipped them over, they did not make sense. For example, the words "la casa" and "roja" could be put together but when it was flipped it would say "the house" "red" and they could not separate "the house" in order to insert "the red house" so they would try to make it say the house is red. They then would redesign the sentence to say "la casa es roja." Sometimes they would find a tile with an adjective in the wrong gender and put it anyway. When asked if it made sense, they would say no but have to think to answer why it didn't make sense. After some time, Elena, who had "el pastel rojo" then told me that since it said "el" the word should be "rojo" with an "o." Elena, Gael, Lara, and Zelda all said it didn't sound right, (in their own sentences) but they all figured out that it was the last letter that made it not right. It seemed that they knew instinctively and by having the visuals there and manipulating them helped them to become aware of it and be able to verbalize the rule. It was then that I explained the placement of the adjective is different in Spanish and English. I will follow up with other activities to give the students an opportunity to practice and build on their knowledge.

As I mentioned, some students were able to construct sentences with the verbs immediately. I was able to observe Cecilia when I had originally given all the grammatical parts and she immediately constructed a sentence: "el mono monto el arbol." (using the word "monto" in the past tense). When I told her to flip the word "monto" around to English she saw that it was I ride and not the past tense "rode" like she was using it. I showed her that if she added the tilde on the white board over the letters, it would be in past tense. So after this, when she used a word that was in present tense and didn't fit the context, she would add a tilde on the whiteboard to make it past tense: "el pez bebo."

Jise described the experience as "divertido" and that she learned to write more words in English. She said that it helps her to remember more in her mind how to write in English. I saw her forming sentences in English first and when I asked her why, she said it was because she knows Spanish and that she wanted to do it first in English.



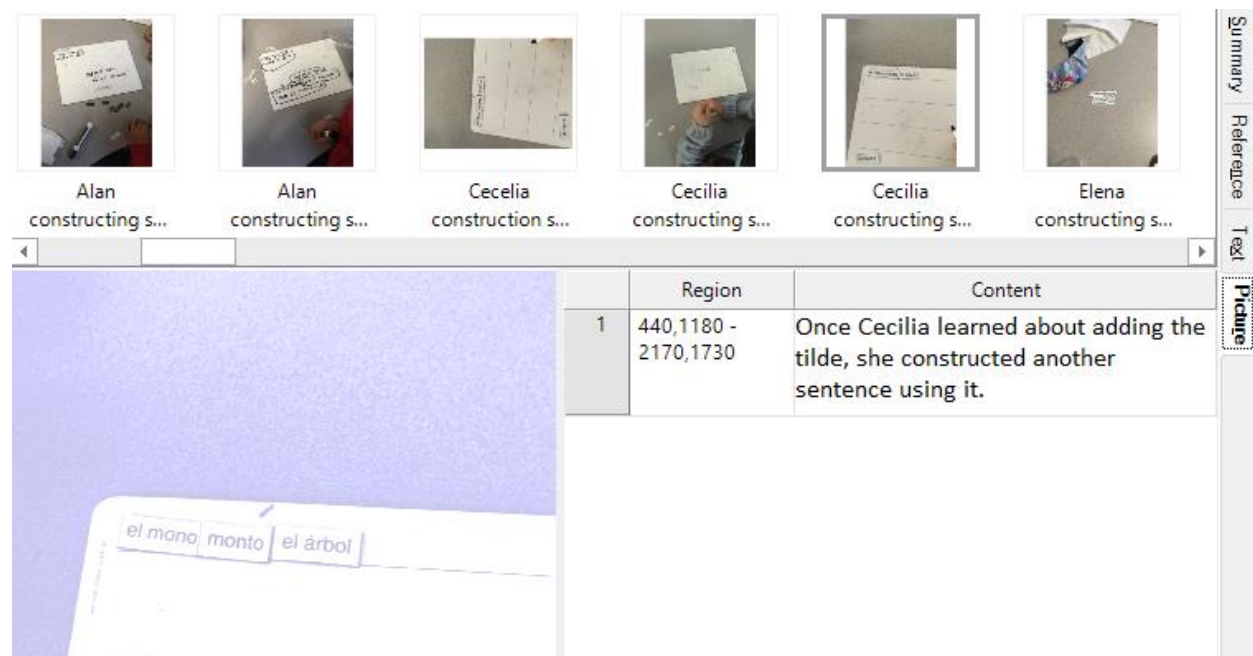
Table 3.5*Sample of Some Related Notes and Photos to Instructional Move With Magnetic Tile Task*

File or Case	Observation	Description
Instructional move and reflections	<p>“Today I had the students use a visual and gestural tool. It consisted of small magnetic tiles of words with Spanish on one side and English on the other. They were divided up into categories of nouns, verbs, adjectives, and connectors. At first, I gave the students all of the tiles to let them try to work in bilingual pairs to build sentences. I wanted to see where discovery would lead them. I soon realized that some students were able to figure it out, others struggled with the English part because it required more grammatical knowledge. For example, the verb "tiene" would say "he/she/it likes" and that confused the students. Also, when they tried to create phrases using adjectives and then flipped them over, they did not make sense. For example, the words "la casa" and "roja" could be put together but when it was flipped it would say "the house" "red" and they could not separate "the house" in order to insert "the red house" so they would try to make it say the house is red. They then would redesign the sentence to say "la casa es roja." Sometimes they would find a tile with an adjective in the wrong gender and put it anyway. When asked if it made sense, they would say no but have to think to answer why it didn't make sense.”</p>	Instructional move and student responses
Elena	<p>“Elena, who had "el pastel roja" then told me that since it said "el" the word should be "rojo" with an "o.””</p>	Student response
Photo 1	<p>“Here Elena is using the tiles and then creating sentencings in her journal. This time she decided to use the tiles and create more syntactically correct sentences by adding the word "es" (is). Again the students were limited in the words that they had and they were trying to make sense with them. The last sentence "El pastel es roja" does not agree in gender. I notice that all of these sentences and phrases begin with a capital letter.”</p>	Artifact and student response
Photo 2	<p>“Now Elena is showing a metalinguistic awareness by changing what she had previously "El pastel es roja" to "El pastel rojo" which agrees in gender and is in the correct syntactical order. She did not translate this phrase though. In the next phrase she does translate "El árbol grande" but she kept the Spanish syntax "The tree large" but has drawn an</p>	Artifact and student response

File or Case	Observation	Description
	arrow above the word “tree,” pointing to the word large.”	
Elena, Gael, Lara and Zelda	“Elena, Gael, Lara, and Zelda all said it didn't sound right, (in their own sentences) but they all figured out that it was the last letter that made it not right.”	Student responses
Teacher reflection	“It seemed that they knew instinctively and by having the visuals there and manipulating them helped them to become aware of it and be able to verbalize the rule. It was then that I explained the placement of the adjective is different in Spanish and English. I will follow up with other activities to give the students an opportunity to practice and build on their knowledge.”	Instructional move
Cecilia	“As I mentioned, some students were able to construct sentences with the verbs immediately. I was able to observe Cecilia when I had originally given all the grammatical parts and she immediately constructed a sentence: "el mono monto el arbol."(using the word "monto" in the past tense). When I told her to flip the word "monto" around to English she saw that it was I ride and not the past tense "rode" like she was using it. I showed her that if she added the tilde on the white board over the letters, it would be in past tense. So after this, when she used a word that was in present tense and didn't fit the context, she would add a tilde on the whiteboard to make it past tense: "el pez bebo."”	Student response
Photo	“Cecilia constructed a sentence that without the tilde, was ungrammatically correct but she knew what she wanted to say so I showed her how to write a tilde over the letter "o" to make it grammatically correct”	Artifact and student response
Jisel	“Jisel described the experience as "divertido" and that she learned to write more words in English. She said that it helps her to remember more in her mind how to write in English. I saw her forming sentences in English first and when I asked her why, she said it was because she knows Spanish and that she wanted to do it first in English.”	Student response

Figure 3.7

Photographs and Related Data to Magnetic Tile Activity



	Region	Content
1	440,1180 - 2170,1730	Once Cecilia learned about adding the tilde, she constructed another sentence using it.

Once I was able to review the data according to these three categories and interpret them through the theoretical framework of multimodality, SLA theories, and the multilingual turn lens, I began to detect developing themes. I analyzed the artifacts again more closely, whether it was a snapshot of the students interacting with the multimodal systems, their words from student conferences, or their final product, to triangulate what I was hypothesizing. Six themes connected to the theoretical lens began to materialize:

1. Language identity influenced how the students responded to the multimodal instruction and systems (multilingual turn and translanguaging)
2. Students needed explicit instruction on how to use the multimodal systems (multimodality)

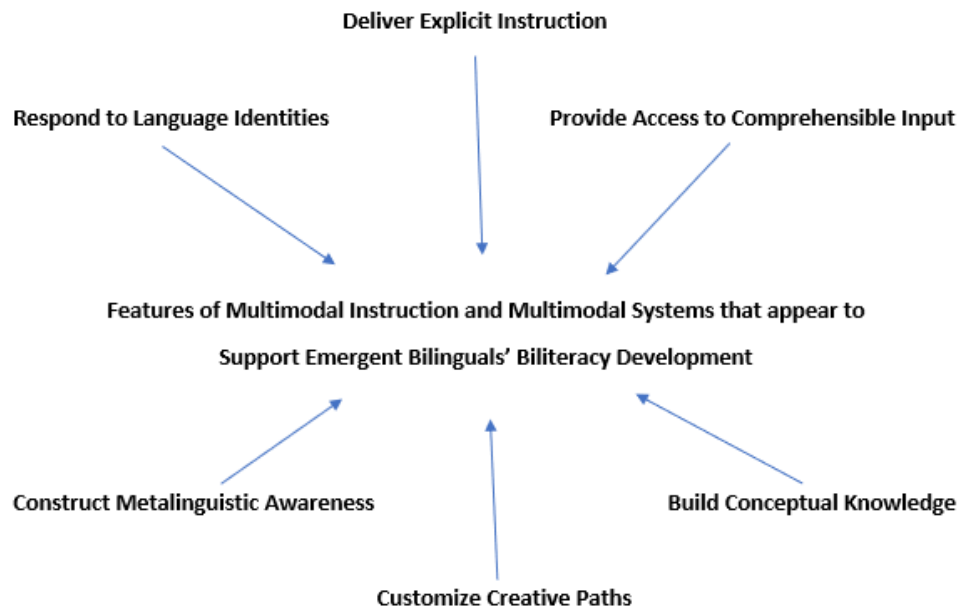
3. Students needed and used comprehensible input for learning and developing their biliteracy (SLA theories)
4. Multimodal systems help students to build their conceptual knowledge and then develop the related content vocabulary in both languages (multimodality, translanguaging, and SLA theories)
5. Students were able to use the multimodal systems to create alternative representations of their learning (multimodality and multilingual turn)
6. Multimodal systems help students to develop their metalinguistic knowledge (multimodality and SLA theories)

Once I identified these themes, I stopped to reflect on my findings and began writing to describe what I was seeing and exactly how they connected to the theoretical framework. This enabled me to verbalize my thought fragments into more complete ideas. From this point, I needed to return to the data, analyze it more carefully, and see if the evidence supported these themes. As stated earlier, the process was slightly easier when searching by the codes that would retrieve the material that had been cross coded.

Once I located the evidence that supported my claims and wrote up a narrative that connected it to the theoretical framework, I had my academic advisor read through the findings and examine the evidence that supported them. She agreed with my findings but based upon the feedback, I realized I needed to compress and refine the themes for clarity. In response, I compressed the six themes that describe multimodal instruction as follows (see Figure 3.8): respond to language identities, deliver explicit instruction, provide access to comprehensible input, build conceptual knowledge, customize creative paths, and construct metalinguistic knowledge.

Figure 3.8

Visual Representation of the Six Themes Derived From the Study



In summary, by keeping a journal of my data analysis and the procedures I followed, I was able to clearly show a methodological path to my conclusions. The next step would be to create a pedagogical approach that could be used by others in similar contexts across grade levels to replicate these findings.

Trustworthiness

In this section, I review the trustworthiness of this study. One of the main factors I employed for trustworthiness was triangulation: triangulation of data sources and theory triangulation (Patton, 2014). First, I collected multiple sources of qualitative data: fieldnotes that consisted of teacher/researcher instructional moves and reflections, student conferences, and various artifacts i.e., photos of students interacting with multimodal systems and student-produced compositions. The data collected represented second language behavior from eight

participants that are retrievable for review of confirmability (Patton, 2014; Seliger & Shohamy, 1995). I triangulated the different data sources as explained in the methodology section. For example, I used data that explained my instructional decision and resulting teacher moves, participant quotes from conferences in response to the instruction, photographs of students interacting with the multimodal systems within the context of the conference, and student-created artifacts, which represented their response to instruction.

Then, I applied theoretical triangulation, which looks for the best fit when the data is viewed through multiple theoretical lenses (Patton, 2014). The various sources of qualitative data were analyzed through a multifaceted theoretical framework, patterns detected, and the findings linked to the multiple theories to support the conclusion. The connection between the data and theoretical framework was noted within the report of the findings. The three theories that comprise the framework were: multimodality (including translanguaging), second language acquisition theories, and a multilingual turn lens. When multiple sources of data were examined through the lens of these multiple theories there was alignment to support the findings.

After arriving at the findings, I conducted audit trails of the data to provide verifiable evidence confirming the observable patterns were present in the different sources of data. I was not able to apply interrater reliability because the interviews or conferences with students were unstructured and it is only when participants are asked the same questions in a structured interview can multiple persons compare interpretations to justify interrater reliability (Patton, 2014). Instead, I used a modified version of member checking with the participants that contributed to the credibility of the recorded conferences in my field notes. To ensure that I understood and represented students' comments correctly, while conferencing, I repeated to the

student what I understood them to have said and waited until they confirmed its accuracy before entering the notes in my journal.

Due to the complexity of this unique study, finding a knowledgeable other who possessed the required knowledge of multimodality, second language acquisition theories and the multilingual turn was difficult. Thus, my academic advisor, who is not bilingual, but was familiar with the theories and data collection processes, reviewed my themes and evidence (translated to English) to verify the credibility of my findings.

Finally, the data in NVivo supports the documentation of coding processes and data retrieval. First and second cycle coding in this study were documented, as described in this chapter, via a clear pathway, essentially creating replicable audit trails. Those trails of analysis led to the warranted findings related to the research question, thus establishing the trustworthiness of the findings.

Limitations

It is important to state forthright the limitations of any study (Bloomberg & Volpe, 2019). The limitations that I faced were due to my dual role as teacher and researcher. My role of teacher took precedence over that of researcher, so I was not able to devote as much time to observations as was originally scheduled. Moreover, instructional time was interrupted considerably by the state's mandatory assessments on students' acquisition of English, TELPAS. And finally, as a multilingual researcher, I frequently transcribed student conferences in English even though they may have taken place in English. While I repeated what I heard the students saying, I had already translated it into English in my head, unconsciously, most likely to facilitate writing it in the journal more quickly. It was not until afterwards that I realized that I

had transposed my interpretation of what they were saying, interfering with the multilingual reader to create their own interpretation.

Conclusion

In conclusion, in this chapter, I reported and justified the research approach I chose to use for this study, my positionality, the data sources and collection, and my analysis. I included information on the trustworthiness and limitations of the study.

This qualitative descriptive design study approach helps meet the goal of reliability and validity by adhering to the criteria set forth by Seliger and Shohamy (1995). The instruction was centered in an authentic instructional context guided by a multimodal theoretical and a second language acquisition theoretical framework. It was goal oriented in that it sought to understand how multimodal instruction could be implemented in a realistic context. There was space to see what was working and what was not in order to reach the pedagogical goal. Throughout the study I made constant reiterative adjustments according to observed results in order to achieve transformative pedagogical instruction.

CHAPTER IV

RESULTS

The purpose of this qualitative descriptive research study was to analyze how the incorporation of multimodal systems in a second-grade two-way dual language program appears to support the development of biliteracy of EBs, with a focus on the heritage language development. The term heritage language is used throughout this study to signify the language “other than English” that has been spoken in the students’ homes since birth and through which they communicate at times. Spanish was the heritage language of this classroom and considered the “target language,” for output. Multimodal systems incorporate linguistic, visual, aural, spatial and gestural/tactile modes in order to communicate and consume messages. The instruction was grounded in a multilingual turn theoretical perspective that challenges the deficit view of the language practices of bi/multilinguals. Underlying all pedagogical instruction were SLA theories.

This chapter addresses the findings to the research question: What are the features of multimodal instruction and multimodal systems that appear to support EBs’ biliteracy development in a second-grade two-way dual language bilingual classroom? To answer this question, I analyzed multimodal instruction and how students responded as they employed multimodal systems. This was achieved through conducting student conferences, capturing snapshots of their work while employing them, and analyzing their final products to see how they developed their biliteracy over time. Through this process, a clearer picture emerged of the features of multimodal instruction and multimodal systems that may create a space for EB heritage language development, thus contributing to student’s biliteracy development.

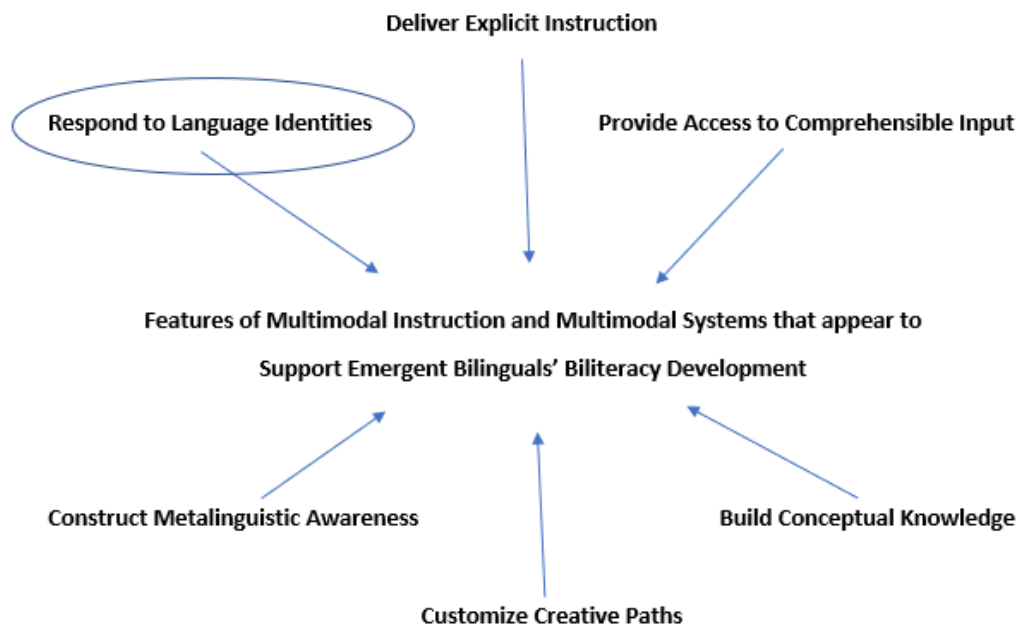
This chapter describes the six themes that address the research question and provide supporting evidence. These findings demonstrate the features of multimodal instruction for EBs that appear to assist in building biliteracy. Those features are: respond to language identities, deliver explicit instruction, provide access to comprehensible input, build conceptual knowledge, customize creative paths, and construct metalinguistic knowledge.

The Findings

Throughout the chapter, a graphic organizer is used to highlight the features of multimodal instruction for EBs that appear to assist in building biliteracy. As each feature is discussed, the corresponding feature is circled in the figure, providing an overview and a guide as one interprets the findings (see Figure 4.1).

Figure 4.1

Overview of the Findings: Respond to Language Identities



Respond to Language Identities

One of the first and most important themes that I identified early in the study is students' language identity appears to be one of the driving forces behind which multimodal systems they choose and how they wield them (See Figure 4.1). By viewing students holistically through a multilingual turn lens, each student was recognized as being bi/multilingual wholes, each coming to the classroom with a different identity and experiences. Additionally, applying SLA theories meant providing access to a translanguaging space, where students could use their entire linguistic repertoire and not be limited to one language or another; providing them with comprehensible input and encouraging pushed output. This, generally, is not the traditional stance in bilingual education, where there tends to be a strict separation of languages. After considering the individual student's linguistic identities, customized explicit instruction supported their utilization of multimodal systems, supporting their biliteracy.

Because data collection began in a unit where the students wrote personal narratives, the initial focus was on student output before starting the research units in writing, science, and social studies, where some of the focus shifted to input. This furnished the opportunity to build upon the information gleaned on each student in the beginning of the year. During that period, through informal conferences, interactions with the students, and the work they produced, their language identities began to be revealed.

Although all students' language identities were woven into their employment of multimodal systems, three students were selected because of available data and variation in the students. The focus of the study was related to the instruction; thus, three students provide the warranting for the theme related to language identity and how students employed multimodal systems. What follows are the trajectories of three students who exemplify different points of the

biliteracy continua and illustrate differing language identities. Each students' products (output) from across the school year exemplified how identity and learning how to employ the affordances of multimodal systems carved individual paths to biliteracy development.

Lara, who self-identified as an English speaker that knew some Spanish, focused on increasing Spanish communicative skills. Zelda, who self-identified as a Spanish speaker, focused on communicating better in English. Liliana, who self-identified as a Spanish speaker but appeared to be more centrally positioned on the continua of biliteracy, concentrated on expanding her biliteracy skills. Upon initiating a translanguaging space, multimodal instruction was individualized upon student needs and desires. Students commenced translanguaging through the medium of bilingual books while incorporating other multimodal affordances.

Lara

Lara's trajectory most exemplified how multimodal systems may support biliteracy and increasing heritage language proficiency. A simultaneous bilingual, speaking both Spanish and English since birth, Lara self-identified as an English speaker and focused on increasing her Spanish communicative skills. Her parents had enrolled her as a Spanish bilingual student and thus had only received instruction in Spanish language arts until second grade.



Lara expressed her language identity through her writing which alerted me to the importance of recognizing students' language practices and affiliations in any classroom. She chose to write the first assignment, a personal narrative used as baseline data, in English (see Figure 4.2) even though the expectation was that it be in Spanish for heritage Spanish speakers. In this sample, Lara exhibits an advanced knowledge of English syntax. Although the Spanish phonological and phonetic system influenced the orthography, her past verb tense was used correctly. For example, Lara used the letter D for the /th/ sound because that is the way it is

pronounced in Spanish. Also, the long /i/ does not exist as the letter I but can be written with either “ai” or “ay” thus, she chose to write “my” as “may.” Utilizing the Spanish phonological and phonetic system, her intended meaning can be transliterated into the standard English orthographic system. Lara explained, when asked why she wrote in English, that it was because she began the narrative in the English language arts block and the teacher’s instructions were for English speakers to write in English and Spanish speakers to write in Spanish. She declared that she considered herself an English speaker. This interaction revealed that language identity is not a straightforward issue and that educators may need to stop assuming that people have a clearly defined first language (L1) and a second language (L2).

Figure 4.2

The First Page From Lara's Beginning of the Year Personal Narrative Benchmark Writing

Sample


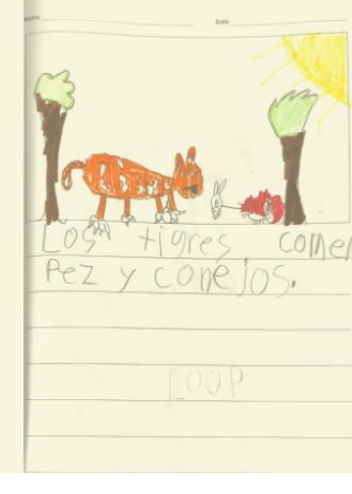
First page of Lara's book	Text
 <p>When i wocke up. I Went to de cechen. I sal pink bolumos and may frave cake.</p>	 <p>Frst I opend de bax dat may grama gav me. Den i opend may moms precent. De last wan from may cosen.</p>
<p>When i wocke up I went to de cechen. I sal pink bolumos and may fravet cake. [When I woke up, I went to the kitchen. I saw pink balloons and my favorite cake.]</p>	<p>Frst I opend de bax dat may grama gav me. Den i opend may moms precent. De last wan from may cosen. [First, I opened the box that my grandma gave me. Then I opened my mom's present. The last one from my cousin.]</p>

For comparison, Figure 4.3 is a sample of Lara's writing in Spanish that she wrote as a baseline sample for the informative writing unit in the second 9 weeks of the academic year. Lara frequently explained that it was hard for her to read and write in Spanish, so when she did write in Spanish, it tended to be sparse. Since the students are just learning how to write informational books, Lara's beginning sample was understandably shorter and simpler at the beginning of the instructional unit. As evidenced by this early sample, the content in Spanish is

short with simple sentences, especially in comparison to her first composition from the beginning of the year, which was written in English. Each page has just one sentence on it. She, however, did demonstrate a strong understanding of writing conventions by incorporating capitalization and punctuation, but her subject verb agreement is mismatched on her first page. This could have just been a simple error of omitting a letter since it is correct on the second page. The English translations are only an approximation as it is difficult to transcribe Spanish to English in such a way that a non-Spanish speaker could fully understand language errors in syntax and spelling.

Figure 4.3

Lara's First Informational Book on Tigers (Benchmark Writing Sample for the First Nine Weeks)

	
<p>Los tigres vive en el bosque. [Tigers lives (sic) in the forest.]</p>	<p>Los tigres comen pez y conejos. [Tigers eat fish and rabbits.]</p>

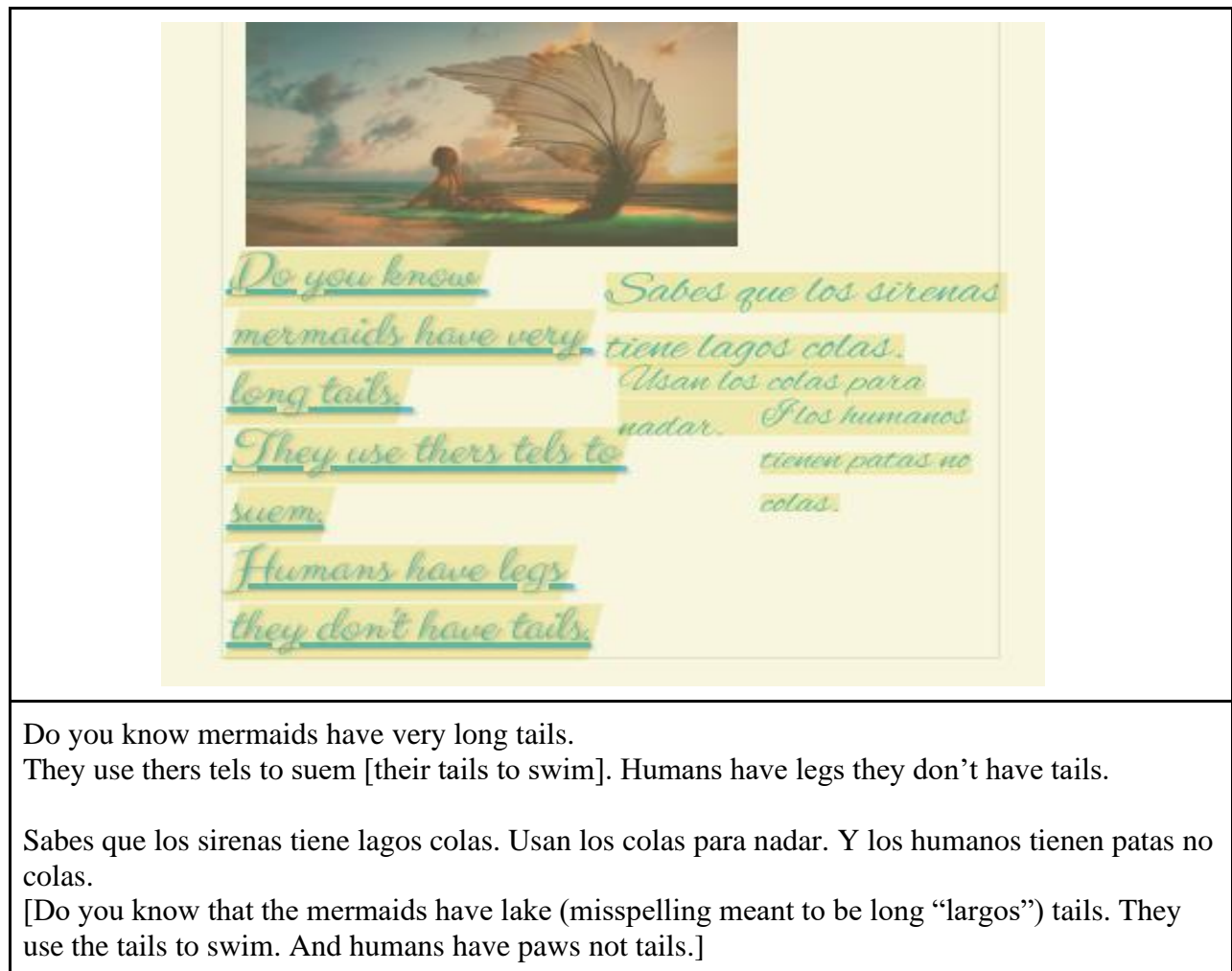
While these two samples illuminated Lara's language identity and affiliation, a writing sample produced midyear indicated that Lara may benefit by accessing her entire linguistic and

semiotic repertoire. The students were introduced to, and allowed to explore, Book Creator just before the winter break. This is a digital book writing application that facilitates the incorporation of an array of multiple modes into students' compositions. The linguistic modes enable students to utilize either digital text (using various fonts, sizes, and colors) or their own handwriting, text to speech, voice record, and whatever language they chose. This program even included a spell check function for use with different languages. The visual mode permitted the students to import pictures from the application's digital library, take photos or videos of their own, or use the drawing feature. Students could record their voice, other sounds, or even use the application's library to import sounds or videos in the aural modes (which sometimes overlapped other modes). In the spatial mode, students could lay out their text and visuals and add other modes in any design desired. The students explored and practiced using the application to familiarize themselves at the end of a grading period before starting a formal instructional unit, so as to not waste valuable time learning how to navigate the application.

During this exploration phase, Lara had complete autonomy and agency to write and create anything without restriction (see Figure 4.4). She designed a bilingual book, starting first in English and then Spanish, incorporating the linguistic, visual, and spatial modes to create meaning. Again, while there were orthographic errors in English, the syntax and subject verb agreement was correct. In contrast, in Spanish, the orthography was correct, but the subject-verb agreement and article-noun agreement were not consistently correct.

Figure 4.4

Lara's First Digital Creation While Exploring Book Creator

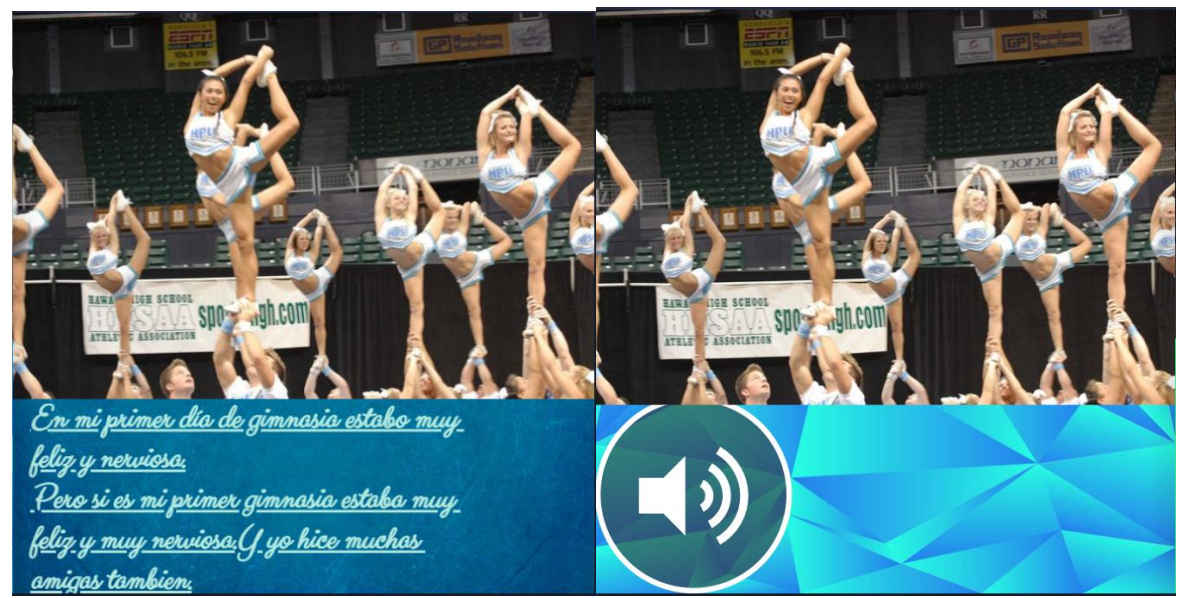


Once Lara began to utilize the digital application with its multiple modes and translanguageing is when her writing began to undergo a significant transformation. Although still in the mind frame of producing first in Spanish, Lara created a bilingual version by incorporating written Spanish and spoken English by using the voice record option to translate through her own voice what it said (see Figure 4.5). As before, she used translanguageing in order to make her message comprehensible through the use of the linguistic, visual, spatial modes, but this time she added the aural mode to add to the linguistic mode by recording her translation. Through the use

of multiple modes, where one mode may have been lacking, the other modes assisted in conveying her message. When reading Lara's text in Spanish, the meaning is not entirely clear to the reader due to the misspelling and some of the syntax and grammar. The visuals assist the reader to understand that the book is about a gymnastics class, but it is through the audio in English that Lara clarifies her meaning of what she wanted to say in Spanish. She used something called transduction in her narrative. While transduction is mainly used to mean "remaking meaning across modes" (MODE, 2012), such as speech to drawing, the process of taking the linguistic mode of written speech in Spanish and changing it to the aural mode of speech and translating it to English can be considered transduction. Interestingly, she did not use the aural mode after that first book, but it was available for her to use. Perhaps because access to a translanguaging space and permission to write bilingual books, beginning with English, replaced Lara's need to use the aural mode to support her meaning-making.

Figure 4.5

Lara's Personal Narrative Digital Version Using Voice Recording



Spanish	Possible intended meaning	English audio
<p>En mi primer día de gimnasia estabo muy feliz y nerviosa. Pero si es mi primer gimnasia estaba muy feliz y muy nerviosa. Y yo hice muchas amigas tambien.</p> <p>(There are deviations from standard orthography, syntax, and subject-verb agreement.)</p>	<p>On my first day of gymnastics, I was very happy and nervous. But it was my first day so I was happy and very nervous. And I made a lot of friends too. (My interpretation of what she was trying to say when I put the writing and the audio together. There were a couple of areas that I was not sure of her intended meaning and are difficult to convey from her written text to an English translation,)</p>	<p>When I got at Thunder Extreme I was very nervous and happy. It was my first day and I made some new friends too.</p>

Soon after implementing the use of her entire linguistic repertoire, Lara began to produce more complete texts with complex structures in both languages. Figure 4.6 is a page from her report card assessment (RCA) written about 8 weeks into the data collection phase. Lara wrote the composition on paper rather than Book Creator because it was used for an RCA for the writing unit. My partner teacher did not agree that the TEKS support the use of digital

technology, so I compromised by having the students write the RCA on paper, since we were both responsible for language arts. Lara's inclusion of the multiple modes compensates for any possible lack of clarity due to any errors in orthography or subject-verb agreement. Bilingual text in the linguistic mode and the pictures in the visual mode, which includes speech bubbles in English (most likely because the interaction happened in that language), each carry a different part of the communicative load.

Figure 4.6

Lara's Report Card Assessment for Her Personal Narrative

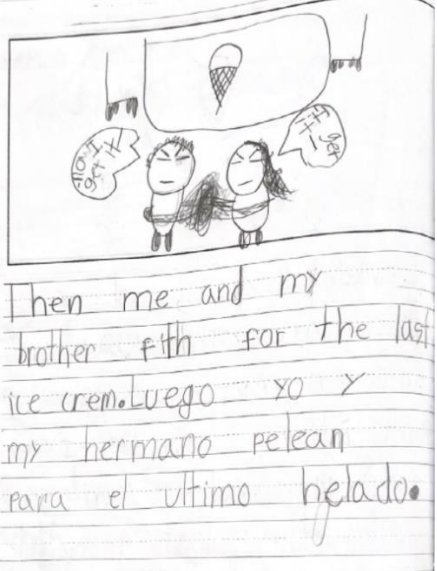
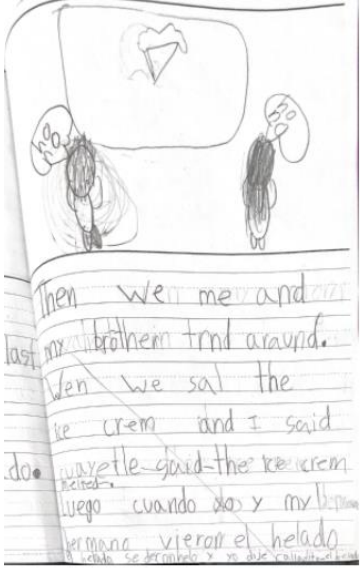
 <p>Then me and my brother fith for the last ice crem. Luego yo y my hermano pelean para el ultimo helado.</p>	 <p>Then we me and my brother trnd around. Wen we sal the ice crem and I said do. cuayette-gaid-the ice crem. luego cuando dos y my hermano vieron el helado</p>
<p>“Then me and my brother fith for the last ice crem.” [Then me and my brother fight for the last ice cream.]</p> <p>“Luego yo y my hermano pelean para el ultimo helado.” [Later I and my brother fight for the last icecream.]</p>	<p>Then we me and my brother trnd around. Wen we sal the ice crem and I said cuayette-said-the ice crem melted-.</p> <p>[Then we me and my brother turned around. When we saw the ice cream and I said -quietly-said the ice cream melted-.]</p> <p>Luego cuando yo y my hermano vieron el helado el helado se desconhelo y yo jije calladito-el helado. [Later when I and my brother saw the ice cream the ice cream unfroze and I said, quietly, the ice cream.]</p>

Figure 4.7 is a digital example of how Lara used multiple modes to create meaning, including translanguaging, for her presentation on historical figures. Beginning with her English repertoire as the basis, Lara then incorporated Spanish in the linguistic mode, added pictures, both user created and digital stock images, to create a multimodal presentation to represent what she learned about an historical figure. Each mode communicated a different part of the meaning to convey a whole representation: the text (linguistic), the pictures and drawing (visual), and the intentional placement of each part (spatial).

In Figure 4.7, Lara is using her text written in English to create an identical text in Spanish. Lara wrote first in English “Abigail Adams died at age 73 in 1818.” Her Spanish text reads verbatim: “Abigail Adams se murio en año 73 en 1818. [Abigail Adams died in year 73 in 1818.] The second image Figure 4.6 is Lara’s finished page with a visual depicting the gravesite of Abigail Adams as a supplement to her bilingual text.

Figure 4.7

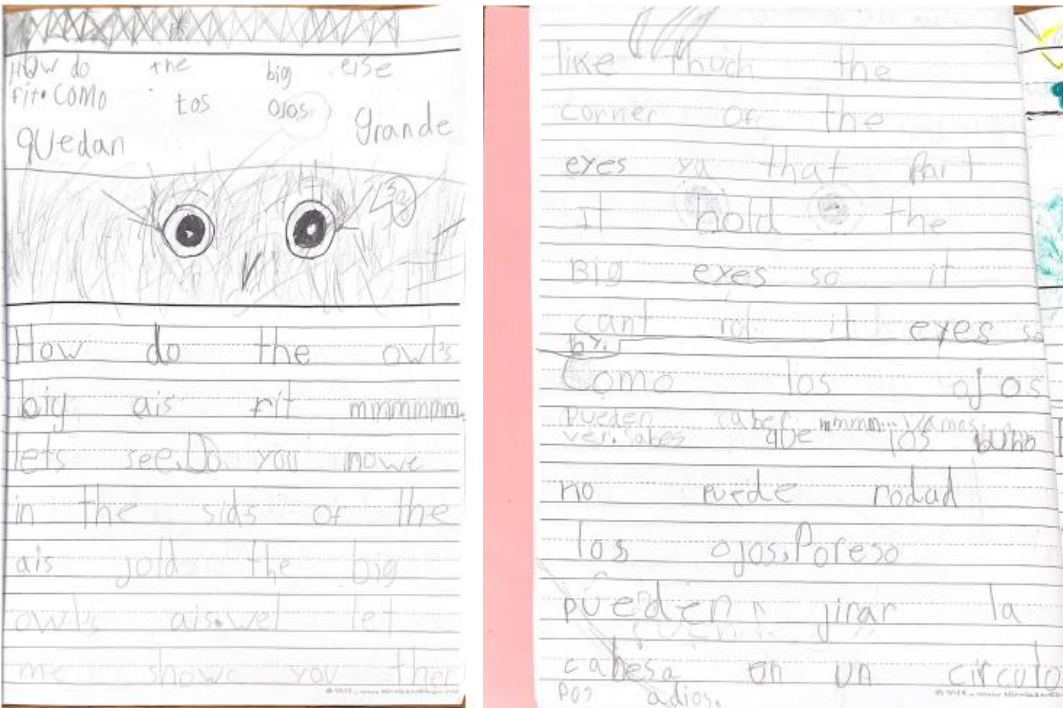
Lara’s Digital Presentation of a Historical Figure for Social Studies



By the end of the year, Lara developed more content rich compositions with complex sentences in Spanish. It appeared that writing in English first seemed to influence the Spanish sentence composition through an increase in complexity and syntactical meaning (see Figure 4.8). While the composition may not be perfect in either language, Lara created multimodal representations of her learning in both languages that, together, clarified her intended meaning. The translation of the text in Figure 4.8 is only an approximation due to the nature of the errors and the differences between Spanish and English.

Figure 4.8

Lara's RCA: A Bilingual Book on Owls for Science and Informational Writing

		
English	Intended meaning	Spanish
<p>How do the big eise fit.</p> <p>How do the owl's big ais fit mmmmm. let's see. Do you nowe in the sids of the ais jold the big owls ais. wel let me show you ther</p>	<p>How do the big eyes fit?</p> <p>How do the owl's big eyes fit mmmmm. Let's see. Do you know in the sides of the eyes hold the big owls eyes. Well let me show you there like touch the corner of the eyes. Ya that part. Hold the big eyes so it can't roll its eyes. So bye.</p>	<p>Como los ojos grande quedan</p> <p>Como los ojos pueden caber mmmm... vamos a ver. Sabes que los buho no puede rodad los ojos. Poreso pueden girar la cabeza en un circulo pos adios.</p>

Zelda



Zelda, a sequential EB (having learned Spanish first and then English) self-identified as a Spanish speaker and focused on communicating better in English. She, like Lara, also utilized

translanguaging and bilingual books, but concentrated on developing English. Zelda frequently told me in conferences that she wanted to learn English and identified strongly as a Spanish speaker. During one conference, when asked why she was writing in English and not Spanish, Zelda replied, “Mi mamá dice que tengo que aprender más inglés. Yo estaba escribiendo en inglés porque no sé mucho.” [My mom says I need to learn more English. I was writing in English because I don’t know much.]

Also, like Lara, Zelda wrote her baseline personal narrative in the first 9 weeks completely in English (see Figure 4.9). Zelda exhibited an intermediate grasp of English and some of the writing conventions. She used some capital letters and inserted periods at places, even though they were not where they belonged, as evidenced by starting the next sentence with a lowercase “and.” Zelda also relied on the Spanish phonemic and phonetic system to spell words like “I” which she spelled different ways: “hay,” “I,” and “A.” She also displayed some knowledge of the more complicated English orthography such as “stairs” and “excided” and the word “famyli” even though she did not always have the correct letters or in the right order.

Figure 4.9

Pages From Zelda's Baseline Personal Narrative From the First Nine Weeks Written in English

 <p>I WAKE UP and is it my birthay and hay when my room. and hay woke up my famyli</p>	 <p>I got dow stairs. and I was so excided alot. yay!!! and A woke up my famyli yay Ay like it.</p>
<p>I wake up and is it my birthay. and hay when my room. and hay woke up my famyli. [I wake up and is it my birthday. and I went my room. and I woke up my family.]</p>	<p>I got dow stairs. and I was so excided alot. yay!!! aand A woke up my famyli. yay ay like it. [I got downstairs and I was so excited alot. yay!!! and I woke up my family. yay I like it.]</p>

As the year progressed, if Zelda began her composition in English, she was easily persuaded to ensure it became a bilingual text. The students began to understand the importance of developing their biliteracy and enjoyed having the space to write in both languages. Figure 4.10 is an image of Zelda's first digital book, after learning to use Book Creator. She chose to write using a mixture of English and Spanish, translanguage within her book, for her personal narrative. Translanguage within her book meant that she did not always provide a direct

translation of what she was saying in Spanish or English. She explained, when asked why, that the conversations had taken place in English.

As can be seen on the first page in Figure 4.10, Zelda produced a bilingual text with Spanish produced first at the top of the page and English at the bottom. Interestingly, she included punctuation features in Spanish, the equivalent of quotation marks (a long dash called a *raya*), in her English text to indicate speech taking place, but she did not include it in her Spanish text. The speech bubbles included speech in English when she spoke to her sister but in Spanish on the next page when she was speaking with her mother. On the second page of this sample, there was no Spanish translation of the text like on some of the other pages from the same book. This is an example of Zelda's translanguaging within her text as opposed to being a bilingual book reflecting her real-life experiences.

Figure 4.10

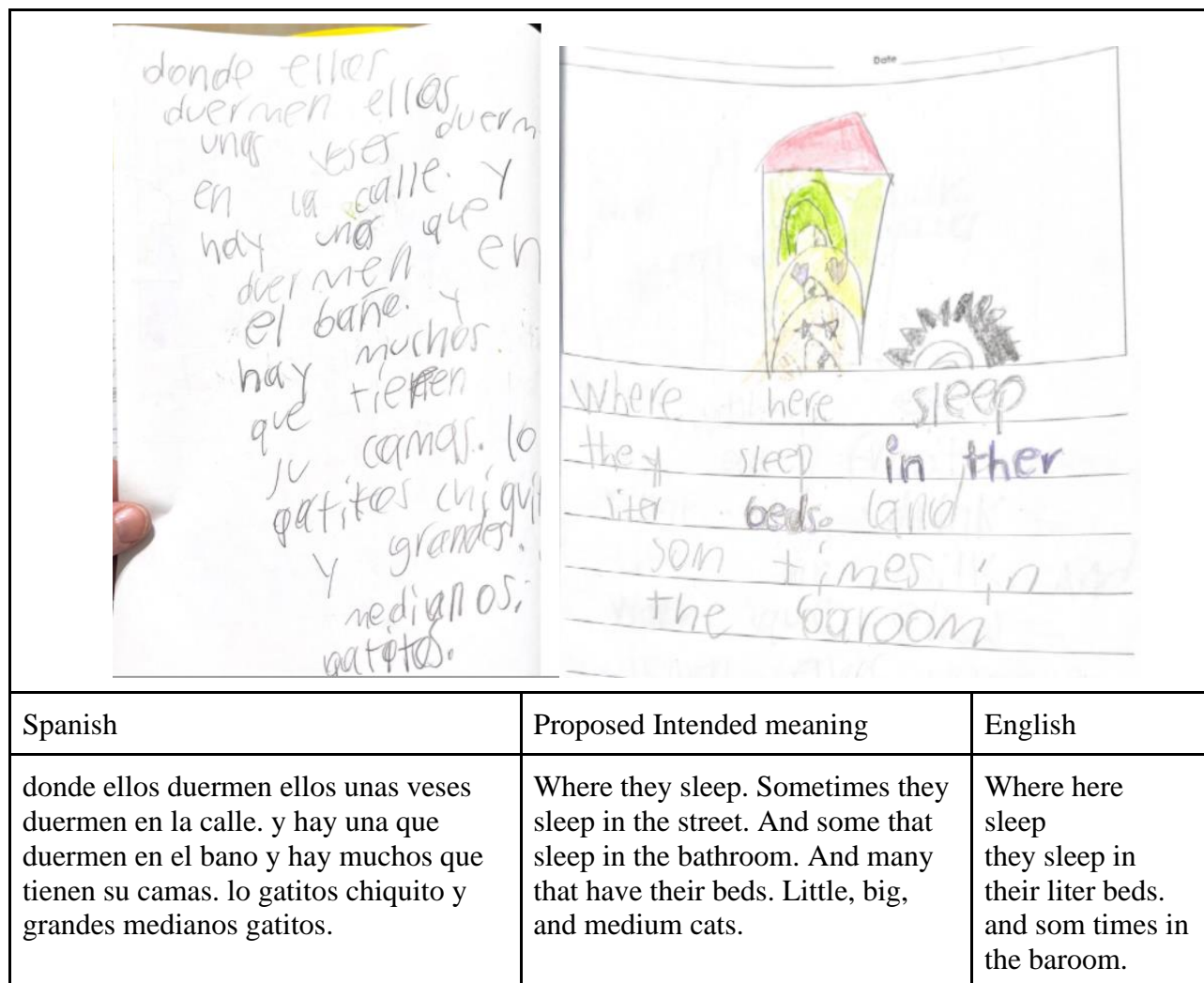
Pages From Zelda's Personal Narrative Using Translanguaging in Different Forms

<p>Y luego fui al cuarto de mi hermana y dije jugamos con nuestro juguetes en la piscina yo dije</p> <p>[And later I went to my sister's bedroom and said lets play with our toys in the pool I said.]</p> <p>then i go to my sister room and - said 'we should Play are toys in the pool-i said</p>	<p>then I go to the diving board and I was scared and my mom said are you goin to jump from the diving board said my mom and I jump and sid aaaaaa!!!!!! a said and then I said oh it was fun mom i thogh it was scared</p>

As time progressed, Zelda began to incorporate more bilingual books but tended to write first in English. In Figure 4.11, Zelda wrote about cats, first in English and then, on the page opposite on the left, in Spanish. Again, while neither her Spanish nor her English are perfect, together they can be used to create meaning as she develops her biliteracy.

Figure 4.11

Zelda's Bilingual Book About Cats



By the end of the year, Zelda had developed her English skills considerably, although she did not always write in Spanish. Since the objective was to improve students' biliteracy, no one was limited to one language and so Zelda actively engaged in developing both languages. For the final composition for the year, Zelda wrote about cats again and this time, used more complex sentences and spelling patterns. The majority of the book was in English, (Figure 4.12) but she wrote her last two pages mostly in Spanish with a short phrase in English (see Figures 4.13 and

4.14). Thus, while she did not produce a bilingual book with Spanish and English translations, she translanguaged within the book.

Figure 4.12

Zelda's Informational Book on Cats for Her RCA for Informational Writin: English

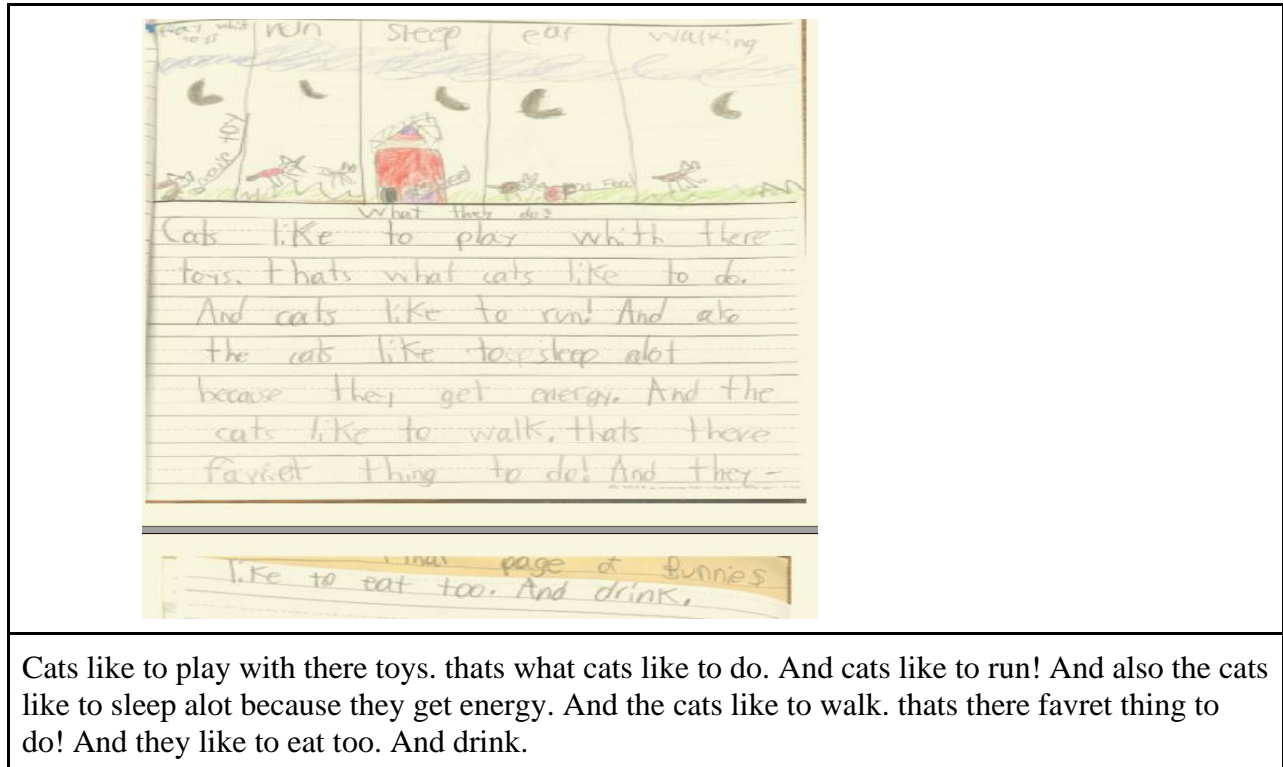
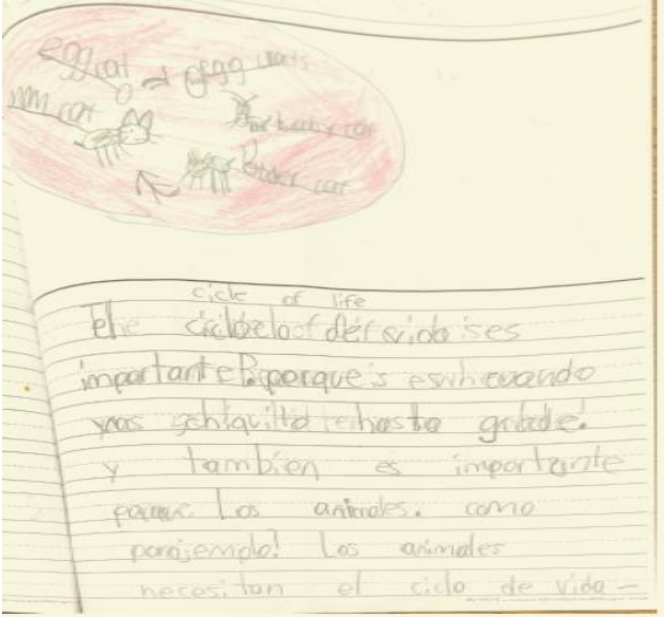


Figure 4.13

Zelda's Informational Book on Cats for Her RCA for Informational Writing:

Spanish and English



The visual image says (starting top left and going clockwise):
egg cat-egg crafts (cracks?)-baby cat-older cat-mom cat

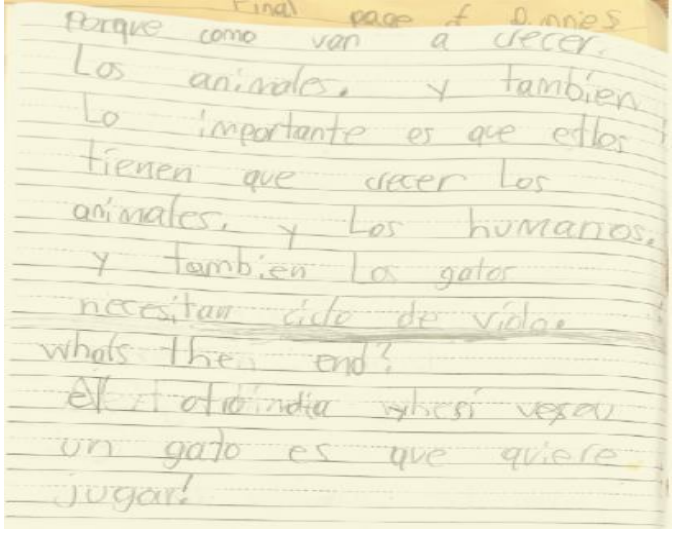
The title of this page is in English:
cicle of life

The text reads in Spanish (it looks like it was first written in English because the text is erased but still visible):
el ciclo de de vide es important porque es cuando vas chiquito hasta grade! y tambien es importante porque Los animales. como porejemplo! Los animales necesitan el ciclo de vida-

[the life cycle is important because is when you go small to big! and also it is important because
The animals like for example! the animals need the life cycle]

Figure 4.14

Zelda's Informational Book on Cats for Her RCA for Informational Writing: Spanish and English


<p>Porque como van a crecer Los animales. y tambien Lo importante es que ellos tiene que creer Los animales. y Los humano y tambien Los gatos necesitan ciclo de vida. what's the end? El otro dia ywhen ves un gato es que quiere jugar. [Because how are they going to grow The animals. and also The important thing is that they have to grow The animals. and The humans and also The cats need life cycle. Next time when you see a cat it is they want to play with you!] (I used some of the words underneath her Spanish that were not erased to add to the translation to convey what she was trying to say and I kept the same capital letters as it was written in Spanish).</p>

Liliana

Liliana was also a sequential bilingual who self-identified as a Spanish speaker. She, however, appeared to be more centrally positioned on the continua of biliteracy and concentrated on expanding her biliteracy skills. While always writing first in Spanish. Liliana eventually created bilingual books similar to Lara and Zelda.

Unlike Lara and Zelda, Liliana wrote her first book in Spanish (see Figure 4.15) including the text in the speech bubbles. Since she wrote a personal narrative about her birthday, it reflected her reality that the interaction took place in Spanish. The sentence structure in Spanish was grammatically correct in syntax, verb tense and subject-verb agreement, and it was almost perfect in orthography, although some accent marks were missing. Additionally, most of the writing conventions were used correctly, i.e., capitalization and punctuation.

Figure 4.15

Liliana's Beginning of the Year Writing Sample

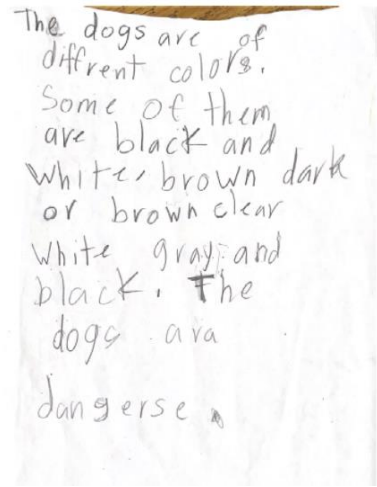
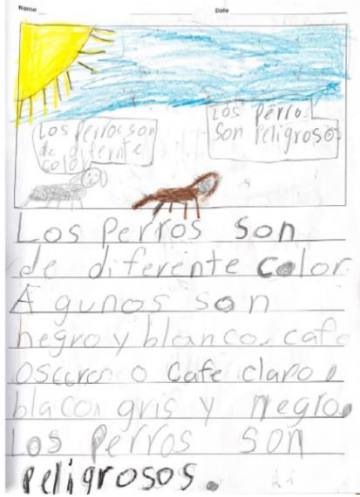
<p>Fui con mi Papá el estaba a fuera. Yo dije buenos dias. Mi Papa dijo buenos dias tambien. Mi mamá dijo que mi cumpleaños empieza en la noche.</p>	<p>Fui con mi papá el estaba a fuera. Yo dije buenos dias. Mi papa dijo buenos dias tambien. Mi mamá dijo que mi cumpleaños empieza en la noche. [I went with my dad he was outside. I said good morning. My dad said good morning too. My mom said that my birthday starts in the night.]</p>
--	--

I encouraged Liana early in the year to write bilingual books because she appeared to be quite skilled in Spanish, wrote lengthy compositions quickly, and was such a prolific writer that she needed an extra challenge. Figure 4.16 is a sample of one of her first bilingual books in Spanish created during the informational unit in the second 9 weeks. In Spanish, Liliana spelled most words correctly and included the correct syntax for colors. She made even more use of

writing conventions like commas. In English, which was on the left-hand side, opposite to her text written in Spanish, Liliana also spelled most of the words correctly and used a lot of writing conventions like capital letters for the beginning of sentences, although not perfectly. Her syntax followed English language norms except for the colors, “brown dark” and “brown clear,” which reflected the Spanish syntax.

Figure 4.16

Liliana’s First Bilingual Book

Preceding page where Liliana wrote the English translation	Page with original text in Spanish
	
<p>Text: The dogs are of different colors. Some of them are black and white, brown dark or brown clear White gray and black. The dogs ara dangerse.</p>	<p>Text: Los perros son de diferente color. A gunos son negro y blanco, cafe oscuro o cafe claro. blaco, gris y negro. Los perros son peligrosos.</p>

Once multimodal instruction became the focus in phase 2 of the study, Liliana seemed to enjoy the affordances of multimodal writing. From the introduction to Book Creator until the end of the semester, she created 18 digital books, although not all of them were complete. While only

a few were bilingual, she quickly learned, and made the most of, the affordances available. In a conference, Liliana mentioned that she really enjoyed Book Creator because it "es muy fácil para poner el texto y cosas donde quieres. Y puedes encontrar fotos y cambiar la escritura a cursiva o no." [it is very easy to put text and things where you want. And you can find pictures and change the writing to cursive or not.] She enjoyed the engagement factor and creativity that it offered. She quickly learned how to use many of the affordances.

One of the first books that Liliana created on Book Creator was a bilingual book. She wrote the book in Spanish quickly and then, because she had time, made it into a bilingual book. It was ten pages long. Although Liliana did not incorporate all of the writing conventions that were included in her compositions written on paper previously, she was just learning how to type. She did not yet know how to add the accent marks (tildes) and she did not include punctuation, which would have helped with clarity. Most of the pages throughout the book were as long as those in Figure 4.17. In spite of the fact that her verb tenses were not entirely correct in English; they were not all in the past tense as they were in the Spanish text; she did translate the intended meaning and made it comprehensible.

Figure 4.17

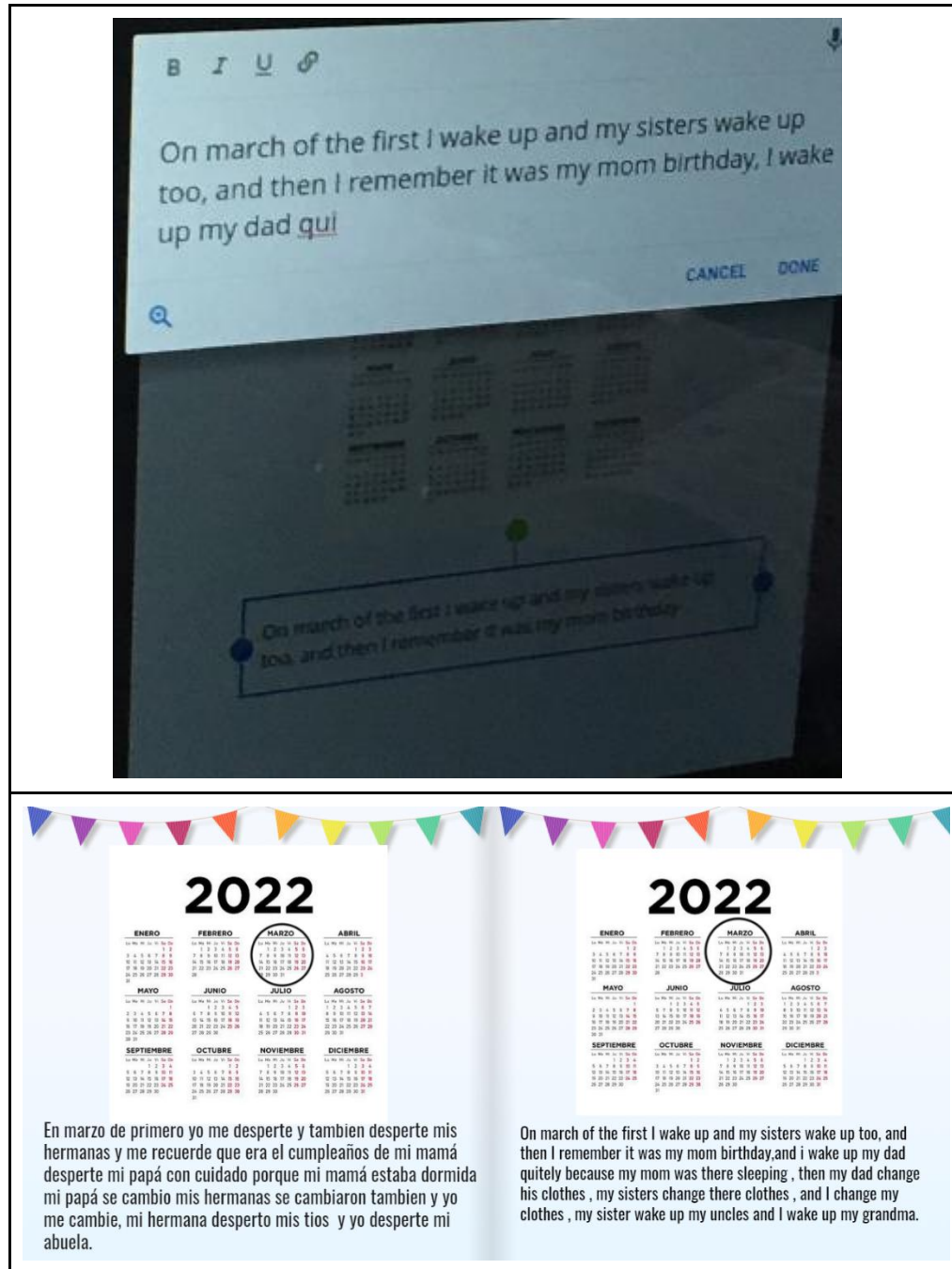
Liliana's First Digital Bilingual Book



Figure 4.18 is a snapshot of how Liliana used some of the multimodal tools while writing her bilingual book. She can be seen typing the English text to accompany her Spanish text. She found an image through Book Creator's image library with a calendar showing the months in Spanish and MARZO [March] circled to indicate her mother's birthday month.

Figure 4.18

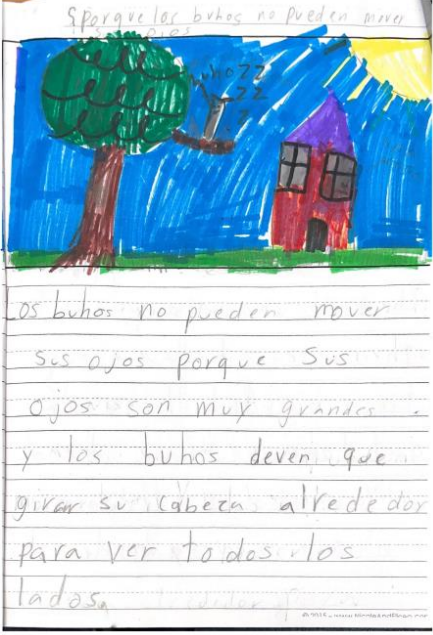
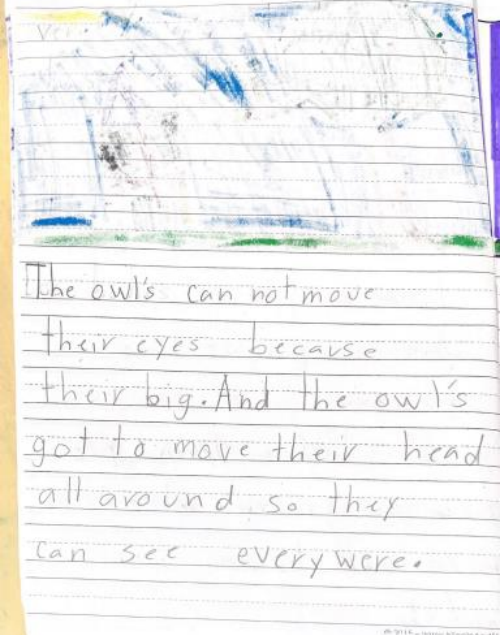
Liliana Learning to Use the Multimodal Features on Book Creator for Her First Digital Bilingual Book



Liliana's final book of the year was a bilingual informational book on owls, written on paper, for the same reasons as mentioned earlier (see Figure 4.15). Once again, she utilized the correct writing conventions in both English and Spanish by using capital letters and punctuation. There was only one spelling error in Spanish in the word "deven" which is spelled "deben" but is often confused by many Spanish speakers since the /b/ and /v/ make the same sounds. In English, while she misspelled some words, she showcased an advanced knowledge of English orthography by including apostrophes and the spelling of "their," even if they were used incorrectly.

Figure 4.19

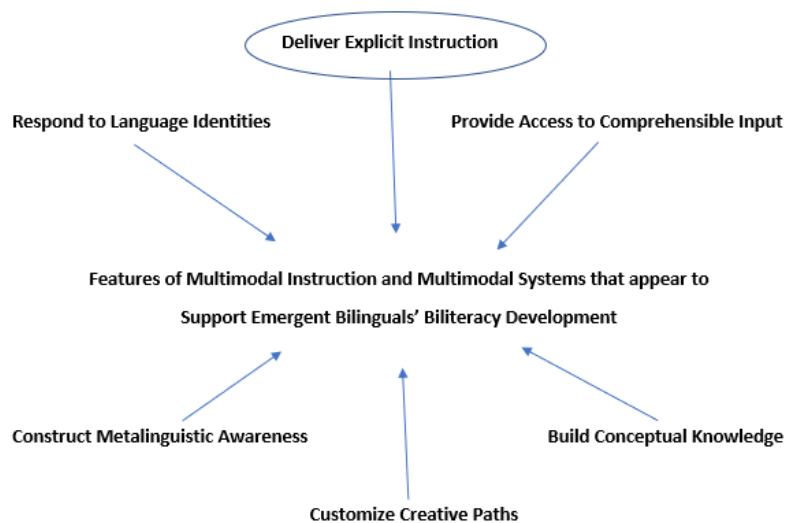
Liliana's End of the Year Writing Report Card Assessment for the Science Unit and Informational Writing

 <p>Sp porque los buhos no pueden mover sus ojos</p> <p>los buhos no pueden mover sus ojos porque sus ojos son muy grandes y los buhos deven que giran su cabeza alrededor para ver todos los lados.</p>	 <p>The owl's can not move their eyes because their big. And the owl's got to move their head all around so they can see everywhere.</p>
<p>Los buhos no pueden mover sus ojos porque sus ojos son muy grandes y los buhos deven que girar su cabeza alrededor para ver todos los lados.</p>	<p>The owl's can not move their eyes because their big. And the owl's got to move their head all around so they can see everywhere.</p>

As seen in the transformation of these three students' writing throughout the academic year, when they had space to use their full linguistic repertoire and multimodal systems at their disposal, they appeared to develop their biliteracy skills. However, they were not likely the only factors that contributed to this transformation. Another key component was the recognition of their linguistic identities and affiliations, in conjunction with the multimodal systems, and providing them the freedom to access them in order to flourish.

Figure 4.20

Overview of the Findings: Deliver Explicit Instruction



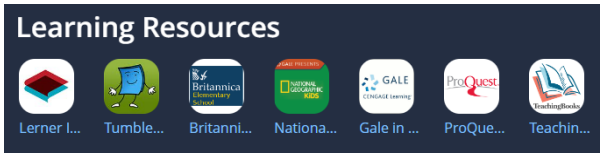
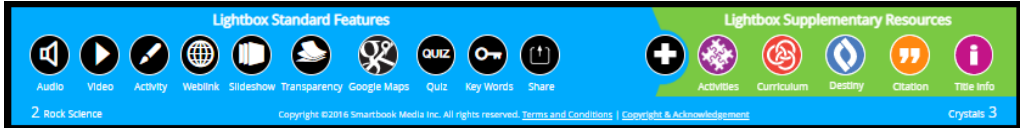
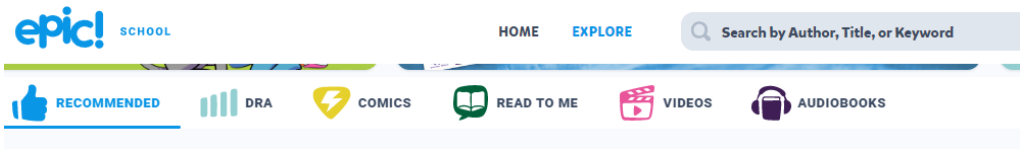
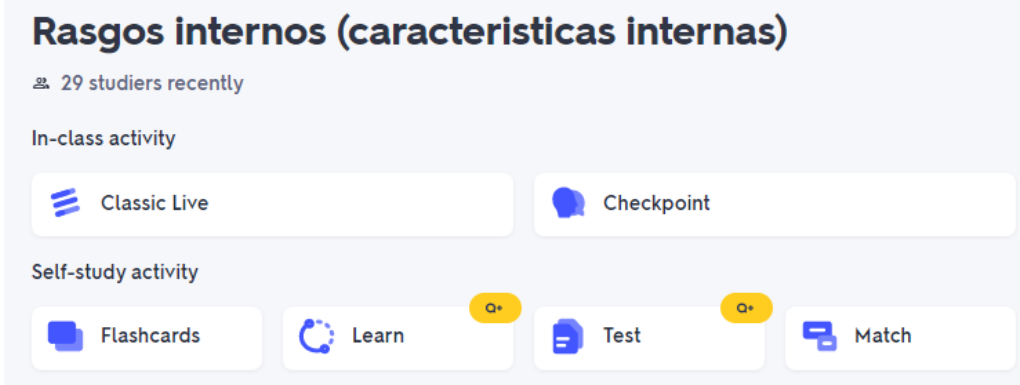
Deliver Explicit Instruction

The next instructional move was to provide students with access to multimodal systems for learning (input) and explicit instruction on how to wield them (see Figure 4.20). In the United States, schools have begun to increasingly use computers in the classroom and Henderson Elementary (a pseudonym) has ensured that each student has a Chromebook assigned to them that can be used for instructional purposes. The school has made sure to add digital resources through the student portal that students can access, and they have tried to obtain as many resources as possible in Spanish since there is a large population of EBs enrolled in bilingual programs. However, these resources are not always sufficient in quantity or quality, so students often use English resources as well. At times, the teacher may need to find and add additional resources that will assist in learning.

While there were books in the classroom, they were limited on many subjects that the students wanted to use. Through the district student portal, students could access additional content such as digital books and videos. One of the digital resources available was Epic Books, which allows students to access their content for free during school hours. They have many books on a plethora of topics, many of them written in Spanish, but not in the same quantity as in English. Additionally, students were able to find available books in the library and check them out, in person or digitally. They also learned how to access digital multimodal content from Lightbox Books, purchased by the school librarian, which contained information in both Spanish and English. These included many modes such as audio narration, videos, weblinks, quizzes, activities, maps, and infographics (see Figure 4.21 for some examples of the available resources and modes). Besides learning how to access these modes for their learning, they also learned how to use Google images and Google Translate to help them if they did not understand some of the content.

Figure 4.21

Multiple Digital Resources and Available Modes

Source	Example of Resources and Available Modes
Destiny Discover	
Lightbox Books	
Epic Books	
Quizlet	

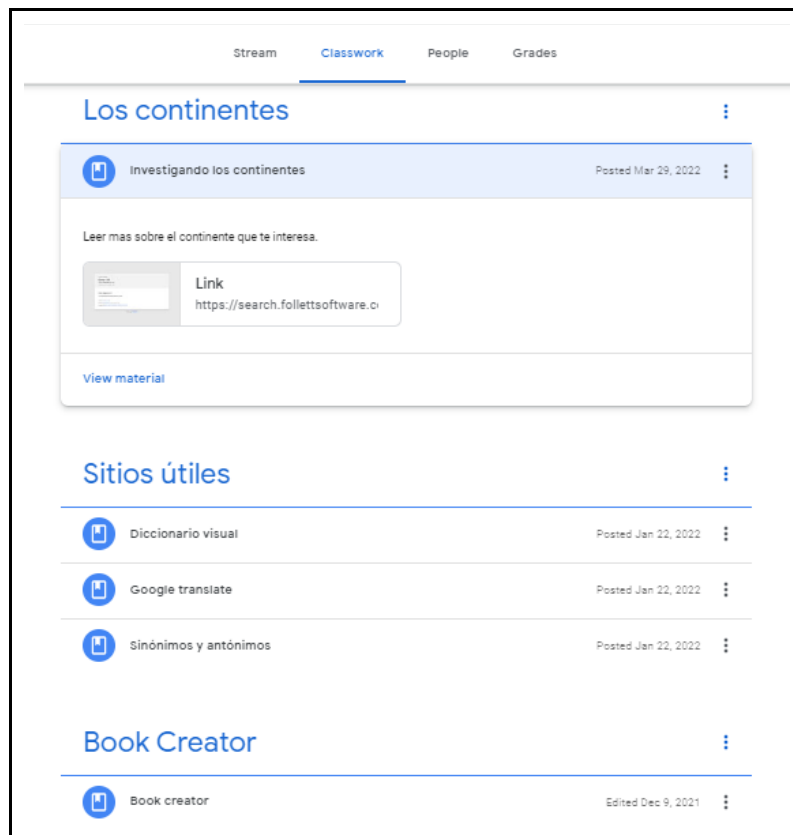
Modeling how to access and interact with the resources required explicit instruction. The students needed to learn what resources were available since there were many options to choose from and second grade students are only 7 to 8 years old. I would project either my screen or a student screen onto the board and explore the different resources with the students to show them the features. Then I allowed them to explore each resource. Creating links on Google Classroom, a classroom management system, facilitated access (see Figure 4.22). However, students also needed to actively learn how to navigate the pathways to find the multimodal systems they

wanted to access and then learn how to navigate within them to individualize their learning. For example, when teaching the students how to use Quizlet, a vocabulary learning application, I made the following journal entry:

This day was devoted to teaching again how to use Quizlet. I had my students use it the first semester and learn all of the different functions that Quizlet offers. When I first started, I needed everyone to do the same thing until they learned how to navigate it and then eventually go to the program that best suits their needs.

Figure 4.22

Google Classroom With Links to Material to Facilitate Navigation



Students needed to learn not only how to navigate between and within the resources, but also how to navigate through the multiple modes available to be able to fully utilize the interactivity of the resource. As EBs, it is important that students are able to access content in whatever language is comprehensible to them, and sometimes it may mean accessing the content in both languages to utilize their full linguistic repertoire. Another example from a journal entry explains how I had to address the issue of students accessing the different languages:

I decided to see how the students were incorporating digital resources for research into their writing. It took me a while to understand why some students were choosing to use the English version of Pebble Go even if they often would have used the Spanish resource, when I realized that the links that the children were using were from a resource provided by the curriculum writing team and were in English.

Students also needed to learn that there were resources and modes available within the resources that they were using that provided access to more content. Following is an incident that exemplifies this with Gael, who needed explicit instruction on using linked content to learn the definitions of unknown words:

Gael is sitting by his bilingual partner. He has his Pebble Go open to a continent (we are studying continents in order to do a project) while his partner has his open in English to the same continent. He [Gael] is listening in Spanish. I noticed that he does not click on the words that are in red. When I asked if he knew why they were in red, he said he did not. I explained that it is to define words using audio and visuals and showed him how to do it.

A final example of explicit instruction was related to assisting students in creating a multimodal project. While most students became quite adept at using the multimodal systems,

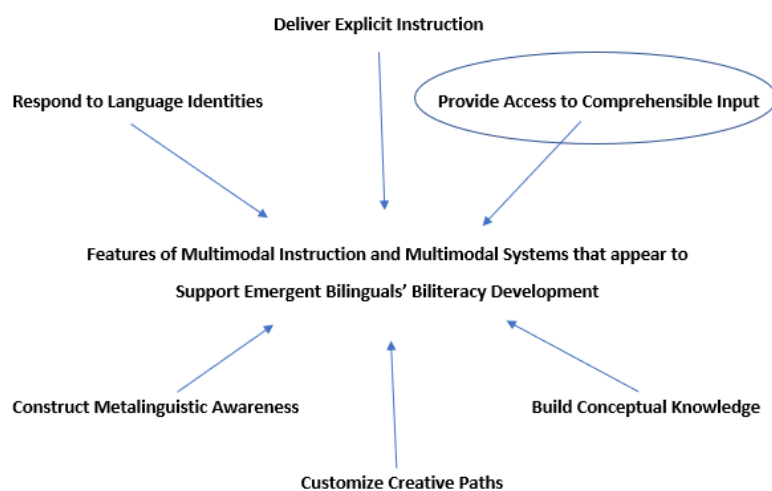
there were still times when they needed direct assistance. One such instance was when Cecilia was trying to create a timeline but was looking for ready-made images, not realizing that it would have to be something that she created:

Cecilia went to Google slides images and typed "linea de" and then clicked on where it suggested "linea de tiempo" in order to search images. She is scrolling for a long time through the images and just keeps looking. There were mostly ready-made timelines of unrelated content and unrelated images, but she keeps scrolling. I finally intervened because I realized that she was looking for a way to draw a line on her slide. I helped her.

In conclusion, as evidenced by these few examples, students first needed access to a broad range of resources, digital and non-digital in multiple modes. Additionally, they needed direct and explicit instruction to be able to fully utilize the resources that had been made available to them. These incidents suggest that educators must be aware and tailor instruction to their students' individual needs, which may cover a broad range of topics.

Figure 4.23

Overview of the Findings: Provide Access to Comprehensible Input



Provide Access to Comprehensible Input

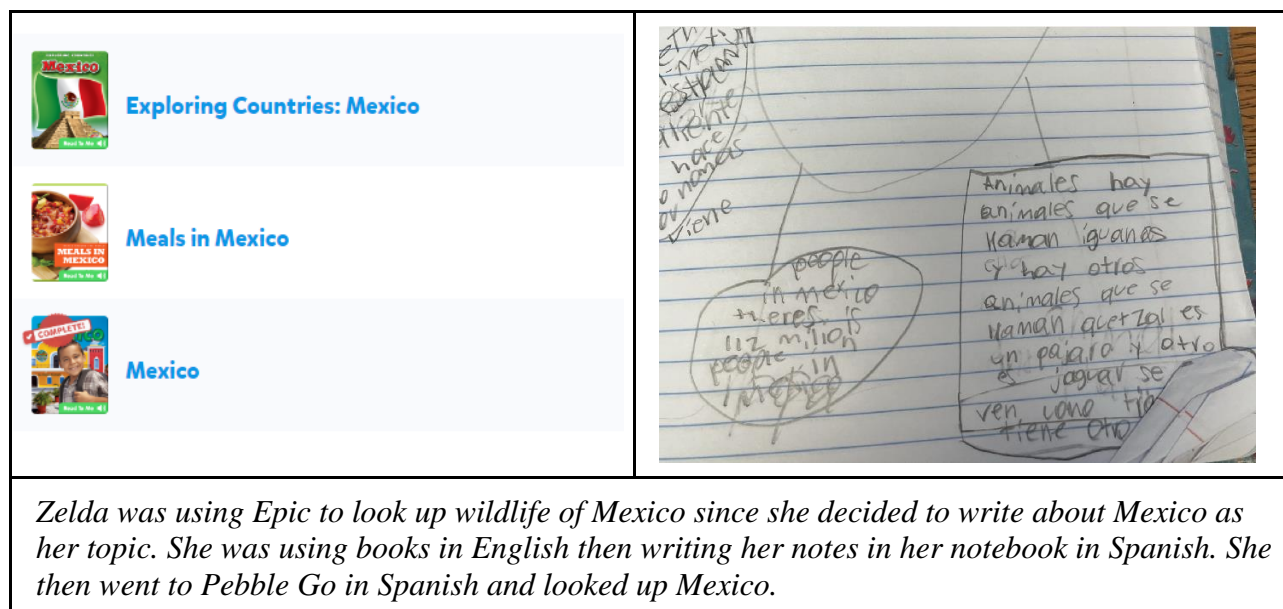
As stated previously, an important step was to provide access to multiple resources in a variety of formats with multiple modes. This included traditional books as well as digital technology through the internet. Besides having these available and explicitly model how to navigate them, students needed to have comprehensible input (see Figure 4.23). By providing access to a translanguaging space and a choice of multimodal systems, the students became both consumers and producers of knowledge in English and Spanish, utilizing their entire linguistic repertoire.

Perhaps the most frequently used modes for accessing content were the text to speech, (the aural mode) or through videos (audio-visual). Because this was the first year that the students were receiving instruction in English language arts, these modes augmented students' comprehension of the more complex English texts. Students also employed these modes to learn content vocabulary in both languages by utilizing the different resources and the various modes they offered. Translanguaging was the medium through which they synthesized their learning. An example of this is when students used the audio feature while reading English, they would then take notes in Spanish. As their teacher, I challenge the students to take it a step further and learn any vocabulary they did not know, in both languages. I wanted them to be cognizant that, even though they have a whole linguistic repertoire they can utilize for consuming information, when they need to produce a message to an interlocutor that does not have the same linguistic repertoire, they need to make their message comprehensible for them. As they grow and enter into the community, they will find that there is a broad range of repertoires and acquiring that skill will be very useful.

In Figure 4.24, Zelda was using digital books via Epic (an online book collection made free to educators and students during school hours) to research Mexico. Many books were in English, and she also accessed other materials (not shown) in Spanish. These books were “read to me” so she was able to listen to them while reading them, using both the aural (audio), visual (images), and linguistic modes to learn. Then she alternated writing notes in Spanish and English using her whole linguistic repertoire to comprehend the material.

Figure 4.24

Zelda’s Note Taking for Her Research Book for Social Studies



Cecilia also used resources in both English and Spanish. Figure 4.25 exhibits two contrasting examples of how she used them. While using some of the resources in Spanish, she took her notes in Spanish and in the other instance, she took notes in Spanish while reading the text in English. However, she did write the words “deer,” “zebras,” and “gazelles,” in English,

perhaps because she did not know the Spanish translation. This incident reinforces the idea that students need more direct instruction in how to utilize resources to learn unknown vocabulary.

Figure 4.25

Cecilia Using Digital Resources in Both Languages

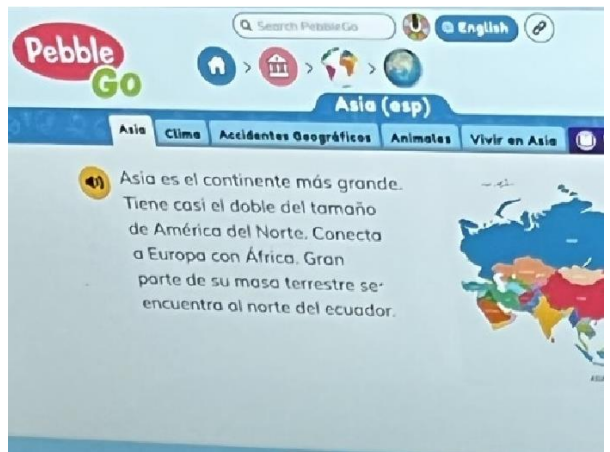
<p><i>Cecilia used digital resources in both English and Spanish while researching wildcats. When researching leopards, she read and listened in English but then her notes reflected translanguaging as she translated the information into Spanish but the words “deer,” “zebras,” and “gazelles” are written in English.</i></p>	

In another example, Gael, by accessing resources in both languages and using the audio function, was able to use his whole linguistic repertoire to make sense of what he was learning and intentionally develop his biliteracy (see Figure 4.26). Like Cecilia, above, he was using Pebble Go, a district digital resource for social studies and science content that offers identical content in both languages. Gael was increasing his bilingual lexicon while reinforcing his knowledge of the content by listening in both languages and then producing writing in Spanish. A journal entry of our conference read:

He told me he listened first in Spanish and later in English because he said he knows what it is about and understands some of the words in Spanish. Then he listens in English because he knows some of the words in English. He said that way helps him to learn English. He then wrote about Asia in Spanish.

Figure 4.26

Gael Using Digital Resources to Develop His Biliteracy

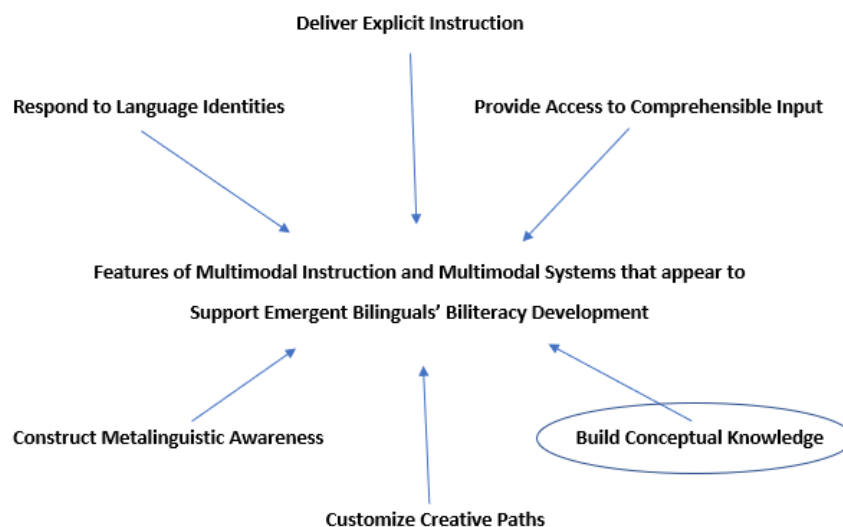
Gael using a digital resource in Spanish	Description of incident from daily journal
	<p>A picture of Gael who is listening to Pebble Go in Spanish. An entry in my daily journal read “He told me he listened first in Spanish and later in English because he said he knows what it is about and understands some of the words in Spanish. Then he listens in English because he knows some of the words in English. He said that way helps him to learn English. He then wrote about Asia in Spanish.</p>

Thus, as evidenced by these examples, multimodal instruction served as a means through which students learned to access comprehensible input according to their individual needs. By

learning to navigate the available multimodal systems and utilize the available modes, students actively expanded their biliteracy skills.

Figure 4.27

Overview of the Findings: Build Conceptual Knowledge



Build Conceptual Knowledge

Multimodal systems also assist students in building their conceptual knowledge (see Figure 4.27). Once knowledge is acquired, EBs can add the corresponding vocabulary in both English and Spanish. This is perhaps the one area where teacher instruction is vital, to make sure that students know how to interact with the digital resources in such a way that they can fully understand the concept they are learning. Being in second grade, this was a higher order task in which students needed direct assistance.

Liliana, whose work was shown previously, mostly wrote in Spanish, even though she also wrote bilingual books. While she was learning to use all of the available multimodal systems

for research, she was able to simultaneously build her conceptual knowledge and develop her biliteracy. Once Liliana saw what was available and with a little guidance, she became quite skilled at using them. In Figure 4.28 she can be seen accessing information on a continent in English, listening to the audio, using the images, and then accessing another digital tool, Google Translate, to help her make sense of it. The journal entry for this conference reads as follows:

Liliana has her notebook open and is writing notes in Spanish while looking at the page in English and listening to the audio. She is using the visuals, the text, and the audio recording. When I asked if she was reading in English and writing in Spanish, she explained that she was using Google Translate a little to help her understand the words in English that she does not understand.

Figure 4.28

Liliana Using Multiple Modes to Access Content and Build Conceptual Knowledge for Research

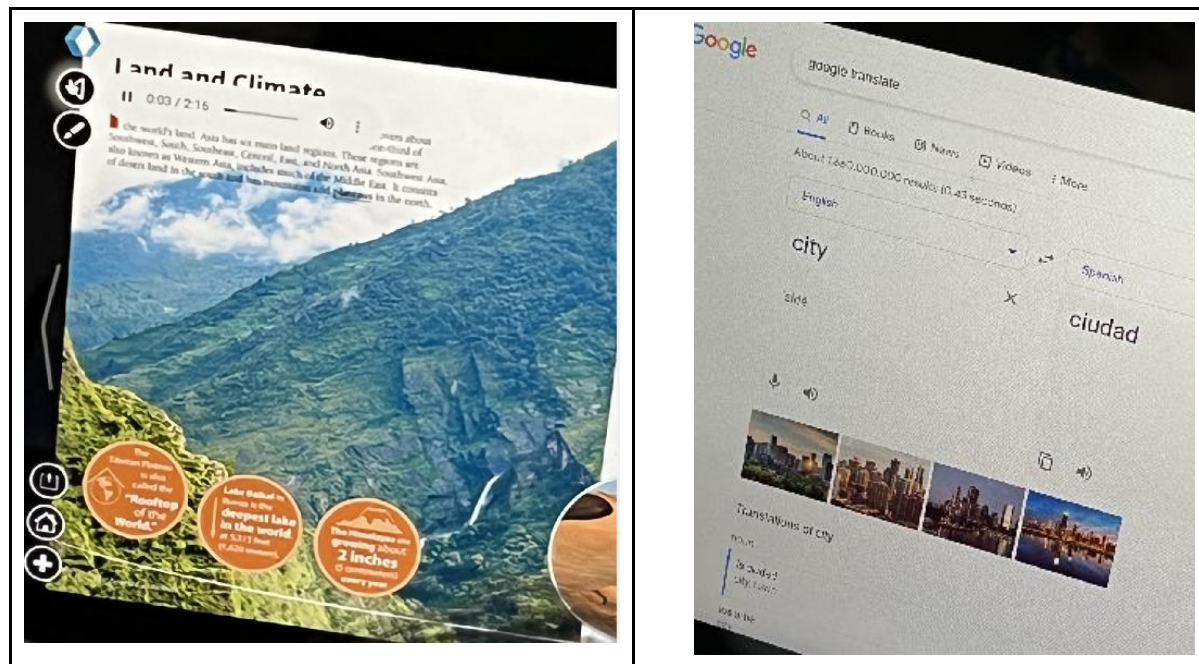


Figure 4.29 shows how Gael also used multimodal systems, with assistance, to try to understand a concept he was struggling with, while learning the content vocabulary in English and Spanish. He could not understand the meaning of the word “órbita” [orbit] in a text he was reading. A detailed journal entry from this encounter shows how we worked through the different available systems to try to understand it:

Gael is reading in Spanish ...I noticed that the page had a word in negrita "orbita." I made him go back and asked him if he noticed something about the word "órbita." He said he did not. It took a while for him to understand that it was a key word and that he needed to understand it. I asked him how he was going to learn what the word meant. He told me he would go to google translate which I let him do. Since the word came out as orbit, this still did not mean anything to him. He then went to the glossary, at my prompting since he seemed to forget about the existence of a glossary. Again, the definition contained words that he also did not understand so I encouraged him to go to encyclopedia Britannica where he was able to look up the word and see a video that helped him to visualize what it meant. He was smiling and said that now he understood it. I used it as an opportunity to explain that he needs to not just read and copy words but that he needs to read to understand and use the resources available. However, I noticed that it is difficult to always know what resources to use. I knew what to use to help him because I knew what the word meant.

Through this process, Gael not only learned what a content word meant, he added a mental image by accessing the multiple modes and additional resources that included the action, which goes beyond what a photo can provide, and also learned the vocabulary in both Spanish and English.

Figure 4.29

Gael Using Multiple Modes for Building Conceptual Knowledge

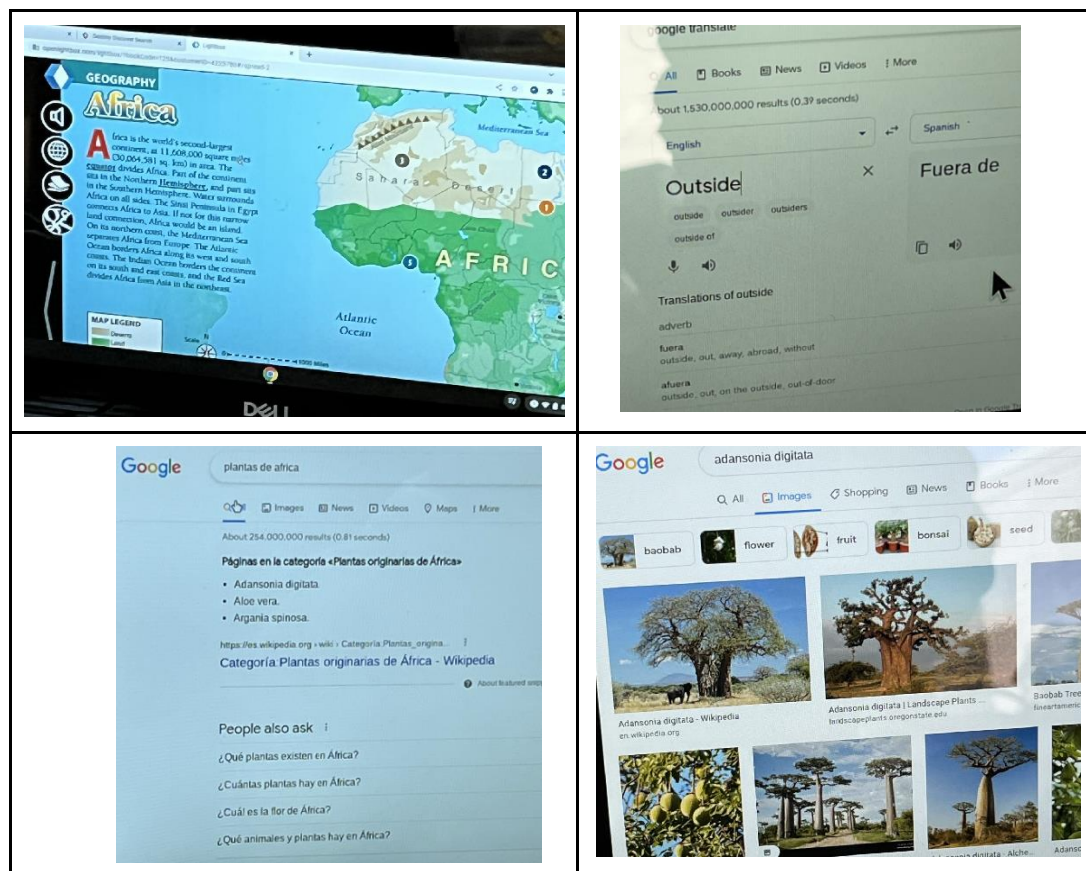
Content with a key word that Gael did not understand: órbita	Encyclopedia Britannica in Spanish with a video, voice narration, and subtitles to explain the concept
<p>La Luna tarda alrededor de un mes en completar una órbita alrededor de la Tierra. La luna nueva es el comienzo de una nueva órbita. En ese momento la Luna está entre la Tierra y el Sol.</p>	

Similar to Gael, Alan used multiple modes to increase his conceptual knowledge, in this case, around Africa. Sometimes, especially at this young age, children just copy information without really understanding it. This is where teacher guidance comes in, by actively teaching students to continue to search for information until they understand it and solidify their knowledge (see Figure 4.30). My journal entry for this conference reads:

Alan was writing about a continent and making a list of plants there. He was using google search for plants of Africa but was just copying scientific names. I asked if he knew what they were. He said no. I told him he could look at images and see what they are. I explained again that it was a scientific name and he looked at the common name that was provided with the photo. He saw what the common name was and changed it in his book.

Figure 4.30

Alan Using Multiple Modes and Translanguaging for Building Conceptual Knowledge



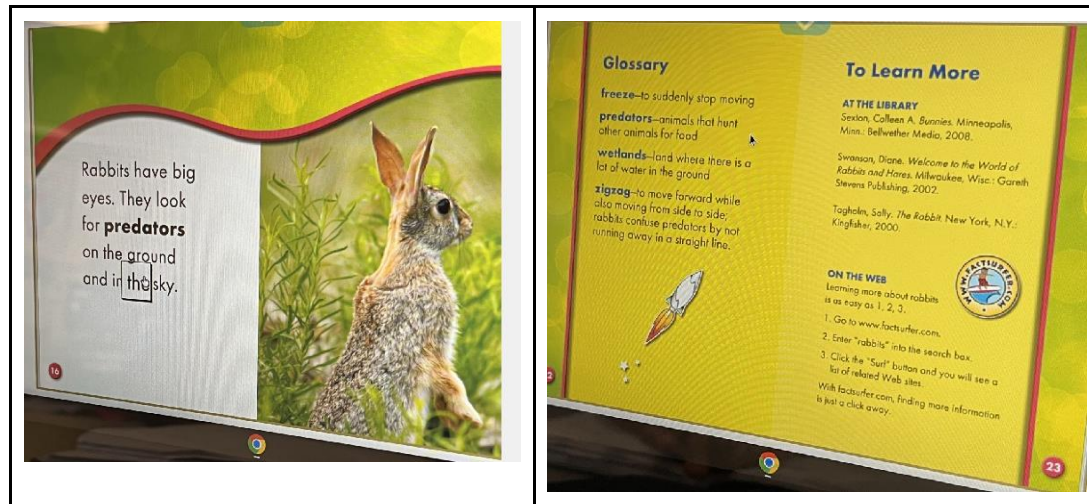
Another example is when Zelda was reading about rabbits in English. She did not understand what the word predator meant which interfered with her understanding of the content she was reading in English (see Figure 4.31). Sometimes, even accessing the modes may not be enough, and students may require direct teacher assistance. However, the goal is to have them try different routes and, if necessary, recognize that they need that further assistance as evidenced by this lengthy encounter recorded in my observation journal:

Reading in Epic in English about rabbits. Taking notes in her notebook in English. But then turns to me and begins to explain in Spanish what she is learning. She points to the ebook and tells me they (rabbits) "tienen ojos grandes para ver predators y en el cielo

pero no sé porque en el cielo." [they have large eyes to see predators and in the sky but I don't know why in the sky.] I ask her if she knows what predators are. She says she doesn't know. We talked about how it is a key word in bold and she needs to know what it means in order to understand what this is about. I ask her how she is going to find out what it means (I was wanting to see if she would know to go and use the glossary.) She answered "Leerlo" [read it]. But I told her that if she doesn't understand it, just reading it would not help. There were not enough context clues in the book so I knew that would not help her. We went to Google Translate and she typed the word in English, but she had not noted that she was writing it in the side for Spanish, so it was translated into English as exactly the same thing. Then I explained how she needed to change languages and learn how to switch back and forth (I had not thought about the need to teach that explicitly) So she typed it into the English side, and it was translated into Spanish as "depredador" which she still did not know what it meant. We then went to the glossary, but the definition still did not make sense to her in English, so we went to google definitions and read a more simplified version and then I had to explain to her what it meant. I explained that we could not just write a word without understanding it.

Figure 4.31

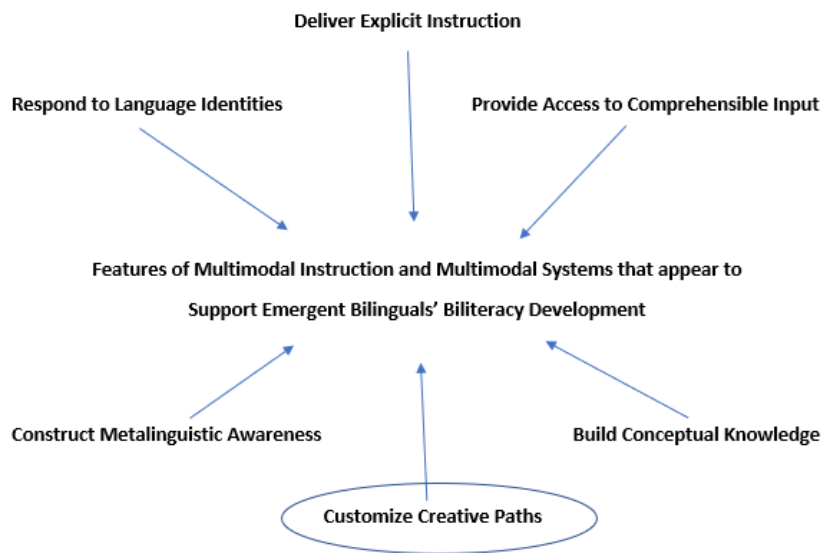
Zelda Reading About Rabbits on Epic Books and Not Understanding the Word “Predator”



Multimodal instruction on how to use multimodal systems equips students with the tools necessary to build their conceptual understanding of more complex topics. Once they understand a concept, they can also use the same systems to then build their linguistic knowledge around it, building upon their biliteracy and expanding their linguistic repertoire.

Figure 4.32

Overview of the Findings: Customize Creative Paths



Customize Creative Paths

Students chose a variety of multimodal systems to use their entire linguistic repertoire for input and output. Access to multimodal systems and a translanguaging space also enabled students to incorporate their entire semiotic repertoire within their compositions. Individualizing instruction, and then giving them agency and autonomy to use the multimodal systems creatively, opened up another pathway for them to develop their biliteracy (see Figure 4.32). Students had the freedom to exercise their creativity by choosing alternative forms to the traditional literacy of pen and paper to demonstrate their learning.

Once the students learned how to effectively wield the multimodal systems and build their conceptual knowledge, they were then able to use these same systems to assist them in creating meaning. When combined with digital technology, but not limited to it, they learned to design and create their own products using the affordances of the different modes to synthesize

and demonstrate what they had learned. This was achieved by adding audio (digitally), as seen previously in Lara's work, and visual means (both digitally and on paper) as well as using the spatial mode in their design. This served to supplement and clarify within their compositions their intended meaning as they all assist in carrying the communicative load.

One example of creating a multimodal design is a page toward the end of Lara's bilingual book on historical figures as previously shown (see Figure 4.7). She wrote a bilingual text on Book Creator using the text box writing feature, composing it first in English and then adding the Spanish translation, correcting some of the spelling and syntactical errors in Spanish from the previous pages. She then used her own created image, drawing a timeline by using the drawing feature, and combined it with digital images from the app's digital library to complete her representation of what she learned about Abigail Adams (see Figure 4.33).

Figure 4.33



Lara Uses Multiple Modes to Create Meaning and Represent Her Learning



Zelda also wrote a book about Amelia Earhart and incorporated different modes. She created a bilingual text and used a mixture of stock photos and her own digitally drawn pictures. She conveyed her understanding that Amelia Earhart was a pilot that flew over the ocean with her pictures. The following two pages portray this information in different ways, one with her own rendition of Amelia Earhart and the other with a photograph of Amelia in the cockpit of her digitally drawn airplane over a digitally drawn ocean (see Figure 4.34). While her meaning is not entirely clear linguistically, due to errors in her writing, when applied along with the visuals, the reader is able to understand the general concept that she wanted to convey.

Figure 4.34

Pages From Zelda's Bilingual Book About Amelia Earhart

 <p>In 1917 shes was a nurse. And in 1920 she rode a airplane in her first day. She earned her linces pilot.</p> <p>En 1917 ella era una doctora. Y en 1920 ella manejo un avion en su primer dia. Y ella obutuvo su lincecia.</p>	<p>in 1928 she flew to uninated and go back. And she travel to the ocean.</p> <p>En 1928 ella volo hasta unidos y fueron delvolvieron donde estaban. y travalon en un oceano</p> 
<p>In 1917 shes was a nurse. And in 1920 she rode a airplane in her first day. She earned her linces pilot [pilot license]</p> <p>En 1917 ella era una doctora. Y en 1920 ella manejo un avión en su primer dia. Y ella obtuvió su licencia.</p> <p>Loosely translated: [In 1917 she was a doctor. And in 1920 she drove a plane on her first day. And she obtained her license.]</p>	<p>In 1928 she flew to uninanted and go back. And she travel to the ocean.</p> <p>En 1928 ella volo hasta unidos y fueron delvlvieron donde estaban y travian en un oceano.</p> <p>Loosely translated: [In 1928 she flew to the (United States) and went back where they were and crossed the ocean]</p>

In another example of a multimodal representation (see Figure 4.35), Elena has written a Spanish informational book on golden retrievers. On the first page, she included the modes of text and image, each of which are an example of using the different affordances. She used one type of text for the table of contents and then a different one for her representation of the reader, using a speech bubble to render what she thought the reader would ask when reading her book. She also has the reader imagine a golden retriever puppy to represent what they look like. She even attempts something similar to a hyperlink with her text on the top right of the page, when

she tells the reader that if they want more information, they can go to page 13 for “fun facts”
(written in English amongst the Spanish text) about golden retrievers.

Figure 4.35

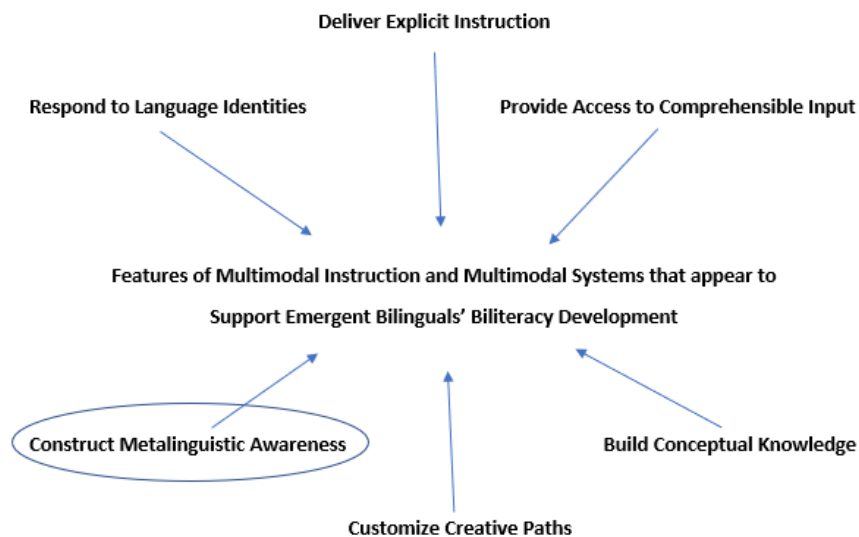
Elena's First Page in Her Book on Golden Retrievers

 <p>Tabla de Contenidos</p> <p>Como ablan los perro perdiguero de oro juntos.</p> <p>Que tan grande pueden crecer.</p> <p>Que tan rapido puede correr un perro perdiguero de oro.</p> <p>Que comen los perro perdiguero de oro.</p> <p>Quanto tiempo duermen los perro perdiguero de oro.</p>	<p>Quieres aprender mas de este libro ve a la pagina 13 de los fun facts</p> <p>De que vamos aprender de este libro?</p>
<p>Tabla de Contenidos</p> <p>Como ablan los perros perdiguero de oro juntos.</p> <p>Que tan grande pueden crecer.</p> <p>Que tan rapido puede correr un perro perdiguero de oro.</p> <p>Que comen los perro perdiguero de oro.</p> <p>Quanto tiempo duermen los perro perdiguero de oro.</p> <p>[Table of Contents</p> <p>How golden retrievers talk to each other.</p> <p>How big can they grow.</p> <p>How fast can a golden retriever run.</p> <p>What do golden retrievers eat.</p> <p>How long do golden retrievers sleep.</p>	<p>Speech bubble:</p> <p>De que vamos aprender de este libro?</p> <p>[What are we going to learn from this book?]</p> <p>Quieres aprender mas de este libro ve a la pagina 13 de los fun facts</p> <p>[Do you want to learn more from this book go to page 13 for fun facts]</p>

Multimodal systems furnish EBs with the opportunity to create alternative ways to demonstrate their learning that go beyond the linguistic form of traditional literacy. They are able to use multiple modes to supplement their meaning and, when used in conjunction with others, carry a different part of the communicative load to create meaning together.

Figure 4.36

Overview of the Findings: Construct Metalinguistic Awareness



Construct Metalinguistic Awareness

Multimodal systems also contributed to developing students' biliteracy by increasing their awareness of metalinguistic concepts around the specific characteristics of each language (see Figure 4.36). Students began to compare and contrast features and look for patterns governing their uses. Students engaged in activities carefully designed to focus on metalinguistic concepts, which varied across modes and mediums, digital and non-digital. The modes included linguistic, visual, aural, spatial, and gestural/tactile modes. Additionally, these activities were

designed and chosen intentionally to be multimodal, as opposed to bimodal with traditional pen and paper, because it required the students to engage more of their mind and body into the activity.

Conferences with the students and snapshots of them engaging in the activities revealed how the students used them and grappled with the metalinguistic concepts. My accompanying journal reflections also helped me understand what further instruction was needed so that students could benefit more fully from them. Unfortunately, due to the pressure of the demands of the curriculum and the structure of dual language, there was a lack of time and space that would have enabled students to be able to use these and similar activities more frequently.

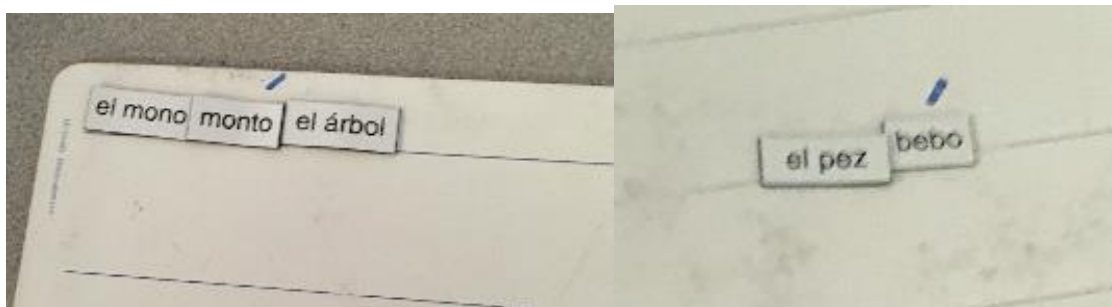
Some of the activities were gestural and tactile like the magnetic word tile activity that had words or phrases, Spanish on one side and English on the other, and picture/vocabulary cards with both languages. Other activities were digital, such as a computer application called Quizlet, that offered a variety of activities to practice vocabulary, each using different modes, and Seesaw, another computer application, with activities for metalinguistic awareness. These activities, although consisting of different modes, functioned in focusing on different aspects of language learning. Observing student use of these activities highlighted the ways in which students' attention was focused on different metalinguistic aspects of language that they had not noted before and how they used it to develop their linguistic skills in both languages.

While using the magnetic tiles, Cecilia immediately constructed a sentence: "el mono monto el árbol." [the monkey I climb the tree] intending to use the word "montó" [climbed] in the past tense. However, when told to flip the word "monto" around to English she saw that it was "I ride" and not the past tense "rode" like she was using it. When shown that if she added the tilde, or accent mark, on the white board over the letters, and that it would make it in the past

tense, she incorporated this feature the next time she came across a word that was in present tense and did not fit the context. In another sentence, she added a tilde on the whiteboard to make it past tense: "el pez bebó" [the fish drank] (see Figure 4.37). While children have seen accent marks in their reading, they seem to rarely use them, so this proved to be a valuable activity to draw attention to this feature. Not everyone learned this, and this does not mean that Cecilia consistently used accent marks after this activity, but it brought an awareness that, if exposed frequently, may possibly have led to increased incorporation into her own writing.

Figure 4.37

Cecilia Creating Sentences From Magnetic Word/Phrase Tiles



Similarly, Elena used the tiles, but slightly differently. She was comparing the difference between the English and Spanish syntax of the adjectives (Figure 4.38). She then created sentences out of them in an effort to try to understand them, but she was using the Spanish syntax. Once she understood the noun-adjective placement in English and Spanish, she also noticed the noun-adjective agreement in gender (see Figure 4.39). My journal entry stated: After some time, Elena, who had "el pastel roja" then told me that since it said "el" the word should be "rojo" with an "o."

Figure 4.38

Elena Making Sentences Out of the Adjectival Phrases

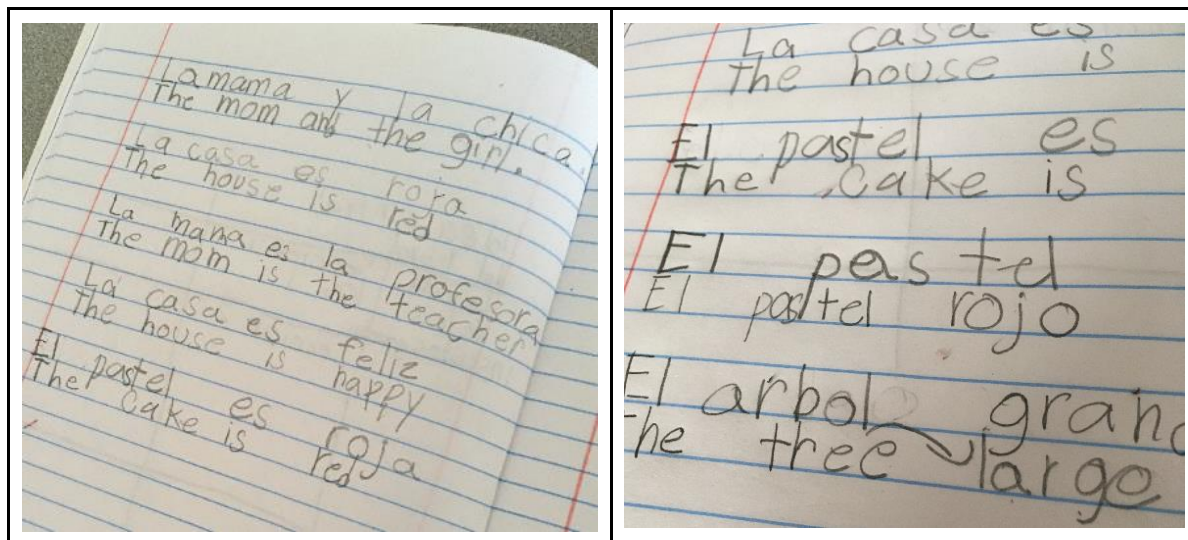


Figure 4.39

Elena Creating Phrases in Spanish With the Tiles

the special sister the big night the pink bike	La noche grande the night la bicicleta rosa the bicycle pink

Quizlet was another example of a multimodal tool that helped students develop their metalinguistic awareness by offering multiple modes for students to learn vocabulary. There was the linguistic mode for the word, in both English and Spanish. They were able to write it in either language or quiz themselves on it. There was an aural mode that enabled the students to hear the

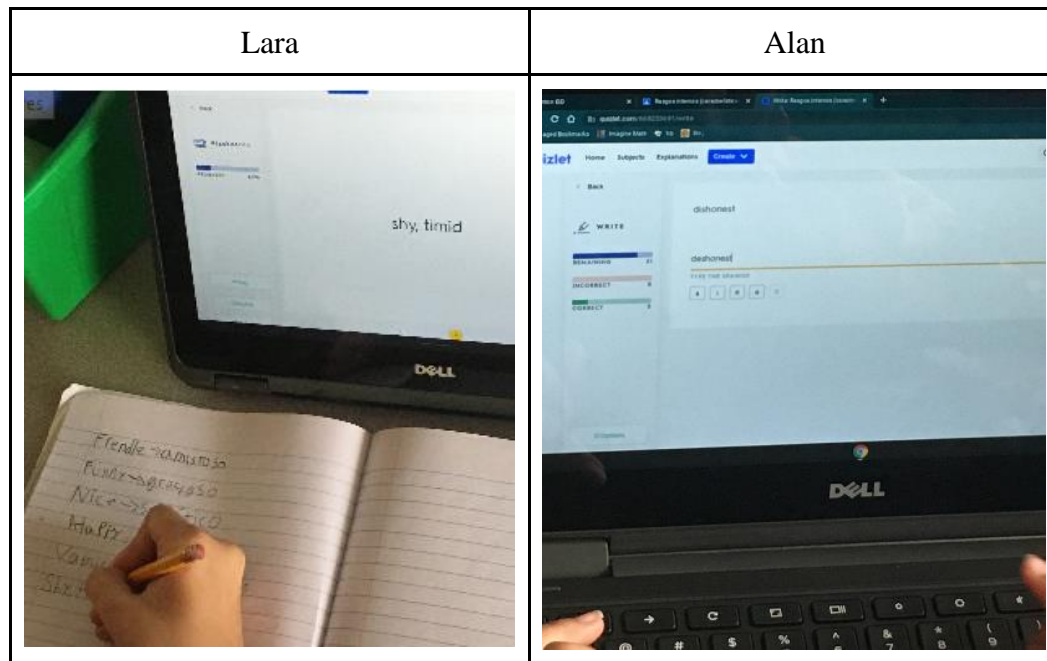
word pronounced in both languages and a visual mode with a picture to depict the meaning of the word. Students were also able to play a game where they were paired up in random teams that changed after each round and used the linguistic and aural modes as they interacted together to negotiate the meaning of words as they competed with other teams to match the words in both languages. While working independently, the students had the autonomy to use most of the choices as they desired. Some, like Lara, wrote the words in a notebook. Jisel practiced listening to the words in both languages and tried to guess them in English. Alan and Liliana liked to try to practice writing the words in Spanish. Figure 4.40 depicts two journal entries of my observations of Lara and Alan while they used the features differently:

Lara: Lara is reading words in both languages. She is reading in Spanish first without sound and then reading /respetuaoso/-reading it with the incorrect pronunciation. Then she begins to write the words in a notebook.

Alan: I see him in the "write" function. He says, "Me gusta escribir en espanol" (I like to write in Spanish). In response to my question if he likes this program, he said yes. "Puedo escribir en español. Puedo escribir cosas que no sé. Aprendo como se escribe" (I can write in Spanish. I can write things I do not know. I am learning how to write them.)

Figure 4.40

Lara and Alan Using Quizlet Differently for Learning



Seesaw was another digital activity that was also a gestural/spatial tool that focused on metalinguistic awareness. Students had to manipulate figures and words digitally and put them into categories corresponding to the type of noun they were. They enjoyed the activity and noticed features of the language they had not consciously noticed before. Lara, while using the activity, said that she noted that in Spanish they all had “el” or “la” in front of the nouns, which is a feature in Spanish that denotes the gender of each noun.

In addition to the visuals, there was an audio recording that explained the instructional concept of the accordance of the noun with the article in number and gender. It also included directions on how to do the activity (see Figure 4.41). While not everyone used them, Elena did and reported that using the audio recordings helped her understand both the concept and what to

do. Two journal entries during the implementation of this activity exemplify how it assisted in creating a metalinguistic awareness. Alan said:

La foto me ayuda ver la palabra, entiendo y luego voy a entender. Pongo un círculo y puedo ver todo. Me gusta porque puedo ver y cuando la muevo me hace pensar.” [The picture helps me to see the word, I understand and then I am going to understand. I like that activity because I can see it and when I move it, it makes me think.] In other words, he liked the activity because it made the nouns visual and the act of moving them into the space made him think about it.

And Zelda explained: “Me enseña que es un sustantivo y ayuda poner la foto en su lugar. Veo la cebra y pongo la foto de cebra.” [It teaches me what a noun is and it helps to put the picture in its place. I see the zebra and I put the picture of the zebra.]

Figure 4.41

Seesaw Activity With Audio Explaining Concept and Instructions for How to Complete Activity

Page 1 of 3

Page 2 of 3

Page 3 of 3

Metalinguistic awareness is a very important factor for language learning. When students had the opportunity to engage in activities that focused on different elements of the language,

and compared and contrasted them across languages, they began to apply and incorporate these concepts beyond the activities. These served as an engaging means to build their biliteracy skills.

Summary

In Chapter 4, I have shown how multimodal instruction for EBs on the use of multimodal systems can assist in developing their biliteracy, especially when underlying SLA principles and a multilingual turn lens are incorporated into that instruction. By providing a safe space for children's translanguaging practices, students were able to draw upon their entire linguistic repertoire in order to create meaning and represent their learning, both through input and output. Additionally, other multimodal systems provided students with increased access to content and the means to create and consume messages in a variety of modes and languages according to their needs and desires. This afforded them agency, autonomy, and ownership in how they were able to wield their linguistic system, semiotic repertoire, and the multimodal tools at their disposal. They also served to draw students' attention to metalinguistic concepts that increased their awareness of the specific characteristics of the languages when they were able to engage in meaningful multimodal activities, enabling them to compare and contrast features and look for patterns governing their uses.

CHAPTER V

DISCUSSION

Features of multimodal instruction and multimodal systems that appear to support EBs to develop bilingualism and biliteracy were the focus of the study. The purpose of the study was to design a pedagogy that provides EBs access to multimodal systems and semiotic resources for learning that extend beyond the written and spoken words, and encourage more target language output, Spanish. As a result, EBs appeared to access a full linguistic and semiotic repertoire to continue developing bilingualism and biliteracy. The question guiding this study was: What are the features of multimodal instruction and multimodal systems that appear to support EBs' biliteracy development in a second-grade two-way dual language bilingual classroom?

Statement of the Problem

EB students have fewer opportunities to develop proficiency in their heritage language beyond the elementary level, and thus become biliterate. Furthermore, there is a failure within the educational system to explicitly teach for biliteracy (Babino & Stewart, 2017, 2018; Brinton et al., 2017; Montrul, 2018; Sánchez-Muñoz, 2016) while there is a clear need for fluent bi/multilingual speakers in professional capacities (Brecht & Ingold, 2002). Research on instruction using digital tools and multiple modalities appears to support EBs' linguistic development (Si et al., 2022; Smith et al., 2021; Yi & Choi, 2015). However, these investigations focus on English language development, rather than heritage language development. If biliteracy instruction, maintaining heritage languages is sparse, and multimodal instruction appears to support linguistic developments, then more must be known about how multimodal instruction promotes bilingualism and biliteracy.

Review of the Methodology

A qualitative descriptive research design (Merriam & Tisdell, 2015; Seliger & Shohamy, 1995) was utilized. I was both the researcher and the teacher of record for the class. The data included daily observational field notes, student conferences, researcher/teacher reflections, and artifacts. The artifacts consisted of student writing samples and pictures of students interacting with the multimodal systems. The participants were eight EB students enrolled in the class.

Descriptive coding (Miles et al., 2020) was used for first cycle coding where labels or short phrases were used to summarize the data to create an inventory and search for any existing patterns. Further dissecting the research question into three analytical categories: the instructional moves, students' responses, and how multimodal systems appeared to help EBs develop their biliteracy, I applied pattern coding for the second cycle analysis. I searched for themes and patterns and interpreted the data through the theoretical framework of multimodality, SLA theories, and a multilingual turn lens, resulting in themes that describe features of the pedagogy.

Summary of the Results

I identified six themes supported by evidence from the data. The features of multimodal instruction that appear to assist EBs in building their biliteracy follow. Multimodal instruction needs to be responsive to language identities, explicit, provide comprehensible input, build conceptual knowledge, enable customized creative paths, and build metalinguistic knowledge.

Six interconnected themes linked closely to the students' linguistic identity. The pedagogy provided accessibility to multimodal systems and a translanguaging space. In those spaces students developed agency and autonomy to choose the needed multimodal systems to further develop their linguistic repertoire. Each student created customized creative paths. While

each student's path was unique, all students needed explicit instruction on navigating multimodal systems within a translanguaging space.

Lastly, by engaging in activities purposefully designed and created to incorporate multimodal systems, students began to develop metalinguistic knowledge. By engaging with components of multiple languages and comparing and contrasting, students began to detect patterns that govern usage. Furthermore, students began to develop the metalanguage needed to verbalize the concepts they were discovering. This metalinguistic knowledge contributed to developing EBs' biliteracy.

Discussion of the Results

The Traditional Model of Bilingual Education

The traditional bilingual model of education tends to focus on using a student's "first language" to develop their "second" using the premise that students receive instruction on content in a language they can comprehend while acquiring the English language (García & Homonoff Woodley, 2012). Historically, there has been a tendency to have a strict mandate to not mix languages (García & Homonoff Woodley, 2012; Gomez et al., 2005). Spanish is to be used during Spanish instruction and English only during English instruction. In recent years, there has been a slight relaxation in the model with the recognition of the benefits of translanguaging, students using their entire linguistic repertoire, moving toward a more dynamic model (García & Homonoff Woodley, 2012). However, translanguaging is still a relatively new, and frequently unknown, concept for many educators who tend to continue to adhere to the strict separation model, viewing EBs through a monolingual lens (García et al., 2017).

In the same vein, the traditional view of literacy that does not stretch much beyond the oral and written word on paper seems to still exist in the 21st century classroom instead of

incorporating multiple modes, i.e., linguistic, aural, visual, gestural/tactile, and spatial, especially in the form of digital technology (Daniels et al., 2020; International Literacy Association, 2019). This is no different in the majority of bilingual classrooms, where there is an inequity in digital access, despite the evidence that multiple modes and access to digital technology can prove to be beneficial and contribute to a more equitable education for EBs (García & Kleifgen, 2018).

In this study, I challenged this traditional bilingual educational model and literacy classroom. I encouraged students to use their entire linguistic and semiotic repertoires in order to fully access content and create meaning. Furthermore, I ensured that students possessed the knowledge, space, freedom, and guidance to access the multimodal systems they needed.

The Multilingual Turn

Students' language identities made me realize how important it is to understand the theoretical stance of the multilingual turn. With a multilingual turn lens, the focus shifts from a monolingual bias to a multilingual competence (May, 2014). EBs are not dual monolinguals in one person and monolingualism is not the norm (Ortega, 2014). Students' language identities are tied to their social world in which they find themselves and this affects their communication and their attitudes towards language (Norton, 2014). We, as educators, need to look at the student holistically and understand who they are and that includes their identity as multilinguals and multimodal learners who possess two or more languages, each with an accompaniment of multiple semiotic resources (Block, 2014).

Language Affiliation

Researchers interested in identity and language teaching need to look beyond the language input and output of the learner and more into their relationship with the larger social world (Norton, 2014). In essence, when engaging in literacy events, it is more than an activity

but rather a social practice. Furthermore, the social context in which the user finds themselves also influences the linguistic choices. EBs may use one language more than the other or both equally, creating a sort of “language identity.” I use the term “language identity” or affiliation to designate the language in which a student seems to prefer to communicate, whether in speech or in writing, because it is hard to define what a child’s language identity is when they can move fluidly between languages. This supports this major finding in my study. Students’ social world, consisting of their families, communities, and school, often influence a student’s language identity by implicitly placing communicative demands upon them. It was through this lens of students’ “language identity” or affiliation that I interpreted the findings.

A Relationship Between the Speaker and the World Around Them

This research illuminated that there seems to be a relationship between the speaker and the world around them that shapes their language choices and we, as educators, need to understand this relationship more deeply. This was a surprising finding for me, manifested through conversations with the students, observations of them as they engaged with the multimodal systems, and the written artifacts that they produced. Conferences frequently revolved around language: in the choice of language in which they spoke to me or their classmates, how they chose to use translanguaging, which language they wrote in, and even in their choice of content input.

I discovered that I had unconsciously assumed that the term “emergent bilingual” was all encompassing and my instructional moves tended to reflect this assumption by not differentiating and recognizing the different linguistic identities. I quickly learned that I needed to acknowledge the differences among students and their language learning because there are many varieties in students’ language identities and how they use their linguistic repertoire. Students’ feelings

toward language use within the classroom, orally and in their writing, were often influenced by their language affiliation and what they felt was important in certain contexts. As a result of my research, I have had to do away with the notion of a first language (L1) and a second language (L2), terms that are frequently used in second language and bilingual education research and instead help EBs build their linguistic competence to serve their individual communicative needs (May, 2014).

The Link Between Multimodal Systems and Language Affiliation

As a result of the students' linguistic identities and language affiliations, I quickly realized that students experience multimodal instruction and choose multimodal systems accordingly. Multimodal systems, including translanguaging, were used broadly in both learning (input) and communicating that learning (output) and appeared to be valuable tools in helping students develop their entire semiotic and linguistic repertoires, semiotics being the signs and symbols used to communicate. In response, I recognized the need to tailor instruction according to each student's individual needs so they could continue along their own trajectory towards biliteracy.

In the previous chapter, I portrayed how three focal students wielded their linguistic identities. I chose the three because they spanned across the spectrum of the continua of biliteracy as outlined by Hornberger (2004). Lara identified as bilingual but also as a heritage English speaker wanting to develop more Spanish. Zelda identified as a heritage Spanish speaker who desired to develop English. And Liliana identified as a heritage Spanish speaker but whose language abilities seemed to position her more in the middle of the continua of biliteracy. Thus, each chose different paths to develop their biliteracy.

Every bi/multilingual has their own identity and should have the ability to choose their own pathway towards biliteracy. I, as the teacher, recognized students' language identities and encouraged them to utilize it for their benefit. However, at the same time, I also stressed the need to continue to develop biliteracy and not rely solely on one language for their communicative needs. By adding content vocabulary to the lexicon from all linguistic resources, EBs then have the ability to tailor messages for any interlocutor.

Multimodal Systems

Multimodal instruction is designed around systems that offer linguistic, visual, audio, tactile/gestural, and spatial modes that can be used together to create meaning. When students have access to a space to employ multimodal systems and translanguaging, they are given the freedom to use the entire linguistic and semiotic repertoires. Digital technology is one of those spaces, offering a multitude of resources and modes (Kress, 2009).

Incorporating digital technology, or information and communication technologies (ICTs) as they are formally known, are important for any students as they become skilled at using them in order to be prepared to be competitive in society, since they are entrenched in our everyday lives in the 21st century (García & Kleifgen, 2018). They are especially vital for EBs because they offer more affordances that can help them make meaning from content than would be available using the traditional methods in the classroom of books and papers. ICTs also promise accessibility, retrievability, interactivity with those affordances, and a platform for creativity (García & Kleifgen, 2018)

Translanguaging as a Multimodal System

Translanguaging as a multimodal system served as an important affordance of the linguistic mode that appeared to be instrumental in the students' development of biliteracy

(García & Wei, 2014). Translanguaging encompasses “the different ways multilingual speakers employ, create and interpret different kinds of linguistic signs to communicate across contexts and participants and perform their different subjectivities” (García & Wei, 2014, p. 28). I define translanguaging based upon Cen Williams’ initial concept “who developed a bilingual pedagogy in which students were asked to alternate language for the purpose of receptive or productive use” (García et al., 2017, p. 2). But I take it a step further by defining it as using their entire linguistic repertoire that may include using the linguistic mode in its different affordances of spoken and written form, through different mediums, in Spanish and English, for learning and communicating. In terms of multimodality, I believe this particular form of translanguaging between Spanish and English may be considered a socially and culturally shaped resource that, once considered almost taboo, is gaining more acceptance in academic spaces.

Students utilized translanguaging to access their entire linguistic repertoire for both input and output. Translanguaging as input meant utilizing resources and modes in such a way to make content comprehensible. For example, students accessed Pebble Go, a children’s online database for science and social studies content, in English and Spanish, in both print and audio.

Translanguaging as output manifested in student-created bilingual books where languages were used side-by-side, and at other times consisting of a mix of languages within sentences or paragraphs without any translation.

Modes, Affordances, and Mediums

Modes are means through which communication takes place and are defined broadly as the linguistic, visual, aural, spatial, and gestural modes (Kress, 2003, 2009). Multimodal means that communication may take place across two or more of these modes, each possibly carrying a different part or quantity of the communicative load. For example, text combined with a picture

related to the text can each communicate meaning about a subject but do so differently, and when combined, add to the overall meaning (Kress, 2009).

While writing, a linguistic mode, was the main mode of communication in this study, it frequently included images (visual modes) within the compositions. On paper, the spatial mode was limited to the space available to draw images. When digital technology was integrated into instruction, students began to incorporate aural and more spatial modes within their compositions, to augment, or as alternatives to, the linguistic mode. For example, the aural and visual modes were used to augment the linguistic mode (text) by enabling the viewer to listen to the content while watching a video that demonstrated a concept in either language.

Furthermore, each mode has different affordances, meaning they have different potential uses according to its properties, but also according to the agent and the situation in which it may be used (MODE, 2012). To illustrate this, the linguistic function may be verbal speech or print, and verbal speech may be loud or soft, a whisper, or a song, etc. Written speech could have letters in different sizes, fonts and colors to represent different intended meanings. On the other hand, these modes may also have constraints, such as a picture may be interpreted differently by different people in the absence of words that may explain it or lack of prior knowledge that would add context to understanding it.

In terms of affordances, students used either handwriting, or printed text in different fonts, styles and colors. Different affordances manifested in the visuals, being either hand drawn, or pictures retrieved from an image bank from the book application they were using. Another affordance in the linguistic mode was translanguaging. In one instance, translanguaging was utilized to alter the linguistic form from the written affordance in one language and, through the process of transduction, transform it into the aural form in another language.

Lastly, each mode includes a medium in which the communicated message is created and/or distributed (MODE, 2012). Using the linguistic mode again, as an example, speech may be delivered in person, on television or radio, over a telephone or cell phone, or a recording on a computer, among other mediums. Print could be on paper, on a computer screen, a metal sign, on a rock, etc. Most importantly to note, is that these modes, along with their affordances and potential mediums are socially and culturally shaped. An example of this could be a meme, which is composed of various possible different modes such as visual, aural, spatial, and the dominant medium is an electronic device over social media, but not everyone in the world would have access to this or understand it if they did. It is shaped by the social and cultural circumstances surrounding it.

In the traditional classroom, children may only be allowed to use the medium of compositions on paper or reading a book. To a certain extent, the participants in this study were limited due to the interpretation of the TEKS and district curriculum by my partner teacher, whose understanding differed from mine regarding the use of digital technology to compose writing. The students were only permitted to write on paper for our shared assessment in writing for language arts. While the students in this study still had access to the medium of books for both input and output in the form of compositions on paper, they also had access to alternative mediums in my classroom. These mediums included digital books and various digital and non-digital resources for writing and engaging in activities across various applications such as Seesaw, Quizlet, magnetic tiles, and vocabulary cards.

Second Language Acquisition Theories for First Language Development

Another finding from this study was that pedagogical instruction needs to be driven by second language acquisition theories for input and output. These theories serve to support and to

increase students' metacognitive understanding of how to best wield the available multimodal systems to develop biliteracy.

Second language acquisition theories guided my pedagogical decision-making for multimodal instruction: the interdependence hypothesis, comprehensible input, and pushed output. However, rather than focusing on the “second language,” I applied SLA theories to the “heritage” language due to the disparity in development of the heritage language and English (Brinton et al., 2017; Montrul, 2018). In this study, the participants’ heritage language was Spanish.

Common Underlying Proficiency

The common underlying hypothesis (Cummins, 2016) is an SLA theory that undergirded my multimodal instructional choices. Cummins (2016) states that concepts learned in one language will transfer to the second language. Thus, after learning a concept and the accompanying vocabulary, the concept does not need to be relearned, only the related vocabulary in the second language.

In bilingual education, the traditional educational model is designed for EBs to develop the heritage language first in order to increase their cognitive capacity for developing their second. While theoretically sound, the reality is that the pressure to comply with state (and federal) mandates for developing English language proficiency causes a tension (Menken, 2010), often at the cost of fully developing the heritage language. Additionally, simultaneous bilinguals are developing both languages. Thus, an instructional emphasis needs to be applied to ensure that students are developing the heritage language (Babino & Stewart, 2018).

As a result, I believe bilingual education needs to focus on accessibility for comprehensible input and strive for more student-pushed output, to be discussed in subsequent

sections. Students need access to use their full linguistic repertoire for input and output, and they need to be encouraged to produce target language output if we want our students to continue developing their heritage language alongside English.

Comprehensible Input

One of the main SLA theories that I focused on is comprehensible input (Krashen, 1982) for educational content acquisition. In the bilingual classroom, taking into consideration students' individual language identities and position along the biliteracy continua, some concepts may be more comprehensible in the heritage language and others in English. Accessing information using a full linguistic and semiotic repertoire facilitates syncretization of the material.

Some of the participants in the study alternated between resources, stating that they were also using it as a means to “learn” language. Students are not always able to access all of the needed information in the language of choice so utilizing all of the available resources ensures that content is more comprehensive. EBs may use multiple resources in conjunction with other modalities i.e. videos, google translate, images, dictionaries.

Comprehensible Output or Pushed Output

Comprehensible output or pushed output, a concept developed by Swain (1985) posits that in order to fully develop proficiency in a language there needs to be more than just comprehensible input. By pushed output, the producer is forced to use their knowledge of the language to communicate meaning. This requires more effort than just understanding. While this was proposed as a hypothesis in the second language, it is very relevant in the heritage language within the bilingual educational model because, as EBs acquire more English, they frequently begin to produce less output in the heritage language (Brinton et al., 2017; Montrul, 2018).

When EBs produce in the target language that are simultaneously developing it, based upon Swain's four tenets that she developed to the model: the fluency function, the hypothesis-testing and metalinguistic functions, and the noticing/triggering (or consciousness-raising) function (Swain, 1985). By utilizing and communicating in the target language, EBs can improve their fluency. Hypothesis-testing enables students to attempt to communicate in the target language based on what they know, or think they know, and test the results by the comprehensibility to the interlocutor(s). This, then, based upon the success, or lack of, motivates the producer to apply the metalinguistic function to reflect upon what was said correctly and/or incorrectly, increasing awareness to the metalinguistic form. And finally, this leads to the noticing/triggering function, where the producer analyzes where the error may have occurred and then negotiates for meaning and comprehensibility.

Applying the theory of pushed output, I encouraged students to create output in Spanish or at least using bilingual books. While this was not always the case in every instance, (some students created work only in English at times) I frequently discussed and reminded students of the importance of developing their biliteracy skills by producing in Spanish. Combining this theory with multimodal systems enabled students to exercise their creativity in learning through an increased access to various alternative modes that could serve to augment the ability to communicate a desired message (García & Kleifgen, 2018).

Autonomy and Agency

Finally, students need autonomy and agency in their language learning if educators want them to be successful (Department of Linguistics University of Utah, 2022). More specifically, autonomy is the agentive engagement, and motivation and agency is necessary to achieve it. This is translated into students having access to a multitude of resources in multiple modes and the

autonomy and agency to wield them as needed according to their interests. Translanguaging in the classroom is another manifestation of agency when EBs are able to use all of their linguistic and semiotic resources to acquire language along with content. Educators should not limit students to the traditional forms of bilingual education that separates language and a literacy that is confined to oral language and the printed word on paper.

Implications for Practice

Whereas there is a critical examination of the deficit of theories of bilingualism in SLA (May, 2014), I argue that there is also a deficit of SLA theories driving instructional decisions in the bilingual educational model. In the United States, bilingual educators are instructed on the importance of bilingual education for EBs and the need for instruction to take place in the heritage language of the student. I believe that it is imperative to incorporate within instruction more attention and awareness to the theoretical aspects of language acquisition, not only as it applies to the “second” language (L2), but also the “first” or heritage language (L1), or, as even more appropriately stated, both languages in the students’ linguistic repertoire. As a result, educators are creating a more dynamic model of bilingual education so that one language does not replace the other but, instead, both are developed.

Furthermore, I also argue that a pedagogy that incorporates multimodal systems provides a more equitable educational environment in which students are able to harness all of their linguistic and semiotic resources. By doing so, EBs have the autonomy and agency to design their own paths to biliteracy and the freedom to become creative in their own academic pursuits.

Unfortunately, only 1 year of multimodal instruction is not enough. EBs need to have continuous instruction and access to multimodal systems in order to develop a strong working knowledge of how to wield these tools effectively. For this to become a reality, educators, both

bilingual and monolingual, need access to targeted and ongoing professional development and the resources to be able to effectively incorporate a multimodal pedagogy in the classroom. Furthermore, there is a need for professional leadership at the district or campus level to provide teachers with the support they need to implement multimodal systems effectively.

Recommendations for Further Research

This study was unique in that it examined how the features of multimodal instruction may assist in increasing EBs' heritage language development. Instruction was interwoven with SLA theoretical concepts and the students were viewed holistically through a multilingual turn lens. In response to this instruction, EBs learned to leverage the multimodal systems, their full linguistic and semiotic repertoires, and the various modes and affordances to learn and create meaning,

Research on the current use of multimodal systems in schools, especially at the elementary level, is scarce. The results of this study show that even young children are able to leverage multimodal systems successfully according to their needs and interests. One suggestion for further research would be to understand current accessibility to multimodal systems.

Understanding what constraints prevent the implementation of multimodal systems could provide valuable information on needed changes in teacher preparation programs, professional development for teachers, and perhaps even in policy, recognizing the importance of preparing students to be productive citizens of the 21st century.

Because this study did not measure language development due to the focus on multimodal instruction, a suggestion for further research would be a yearlong longitudinal study to examine how multimodal instruction appears to develop language competence, in both the heritage language and English. Researchers could measure oral and written language at three points during the year to see if there is a relationship between multimodal instruction and

language growth. The results could provide valuable information for stakeholders to understand if the investment is worth the outcomes.

Conclusion

The data collected in this study revealed that students' linguistic identities are very individual and closely tied to their linguistic output. As educators striving to help our students obtain the best possible educational outcomes, we must value our students' linguistic identities while encouraging them to continue developing their heritage language. The evidence from this study suggests that educators need to recognize students as multilingual and multicompetent with complex linguistic identities. Considering the changing nature of the global world and an increased awareness of social justice, it is important to value what our students bring into the classroom and help them to develop their bilingualism and biliteracy. Educators must act in their own classrooms by identifying and implementing the pedagogical practices that can empower EBs. Access to multimodal systems and the autonomy and agency to leverage them according to their needs enable them to create their own trajectories for learning.

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APPENDIX A

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS (TEKS) FOR COMPOSITION

<p style="text-align: center;">§110.4. English Language Arts and Reading, Grade 2, Adopted 2017</p>	<p style="text-align: center;">§128.4. Spanish Language Arts and Reading, Grade 2, Adopted 2017</p>
<p>(11) Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to:</p> <p>(A) plan a first draft by generating ideas for writing such as drawing and brainstorming;</p> <p>(B) develop drafts into a focused piece of writing by:</p> <ul style="list-style-type: none"> (i) organizing with structure; and (ii) developing an idea with specific and relevant details; <p>(C) revise drafts by adding, deleting, or rearranging words, phrases, or sentences;</p> <p>(D) edit drafts using standard English conventions, including:</p> <ul style="list-style-type: none"> (i) complete sentences with subject-verb agreement; (ii) past, present, and future verb tense; (iii) singular, plural, common, and proper nouns; (iv) adjectives, including articles; (v) adverbs that convey time and adverbs that convey place; (vi) prepositions and prepositional phrases; (vii) pronouns, including subjective, objective, and possessive cases; (viii) coordinating conjunctions to form compound subjects and predicates; (ix) capitalization of months, days of the week, and the salutation and conclusion of a letter; (x) end punctuation, apostrophes in contractions, and commas with items in a series and in dates; and (xi) correct spelling of words with grade- 	<p>(11) Composition: listening, speaking, reading, writing, and thinking using multiple texts--writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to:</p> <p>(A) plan a first draft by generating ideas for writing such as drawing and brainstorming;</p> <p>(B) develop drafts into a focused piece of writing by:</p> <ul style="list-style-type: none"> (i) organizing with structure; and (ii) developing an idea with specific and relevant details; <p>(C) revise drafts by adding, deleting, or rearranging words, phrases, or sentences;</p> <p>(D) edit drafts using standard Spanish conventions, including:</p> <ul style="list-style-type: none"> (i) complete sentences with subject-verb agreement; (ii) past, present, and future verb tense, including the difference between ser and estar; (iii) singular, plural, common, and proper nouns, including gender-specific articles; (iv) adjectives, including articles; (v) adverbs that convey time and adverbs that convey place; (vi) prepositions and prepositional phrases; (vii) pronouns, including personal, possessive, and objective, and the difference in the use of formal pronoun usted and informal pronoun tú; (viii) coordinating conjunctions to form compound subjects and predicates; (ix) capitalization of proper nouns and the salutation and closing of a letter; (x) punctuation marks at the end of declarative sentences and the beginning and

appropriate orthographic patterns and rules and high-frequency words; and (E) publish and share writing.	end of exclamatory and interrogative sentences; and (xi) correct spelling of words with grade-appropriate orthographic patterns and rules; and (E) publish and share writing
(12) Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to: (A) compose literary texts, including personal narratives and poetry; (B) compose informational texts, including procedural texts and reports; and (C) compose correspondence such as thank you notes or letters.	(12) Composition: listening, speaking, reading, writing, and thinking using multiple texts--genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to: (A) compose literary texts, including personal narratives and poetry; (B) compose informational texts, including procedural texts and reports; and (C) compose correspondence such as thank you notes or letters.
(13) Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to: (A) generate questions for formal and informal inquiry with adult assistance; (B) develop and follow a research plan with adult assistance; (C) identify and gather relevant sources and information to answer the questions; (D) identify primary and secondary sources; (E) demonstrate understanding of information gathered; (F) cite sources appropriately; and (G) use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.	(13) Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to: (A) generate questions for formal and informal inquiry with adult assistance; (B) develop and follow a research plan with adult assistance; (C) identify and gather relevant sources and information to answer the questions; (D) identify primary and secondary sources; (E) demonstrate understanding of information gathered; (F) cite sources appropriately; and (G) use an appropriate mode of delivery, whether written, oral, or multimodal, to present results.

APPENDIX B

RESEARCH JOURNAL OF INITIAL DESCRIPTIVE CODES AND RATIONALE

Code	Subcodes	Reflections and definitions
Description of atmosphere	<ul style="list-style-type: none"> Difficulties Worked well Context 	<p>I started to create a few codes. I noticed that I was talking about the atmosphere of my teaching, or in other words, what was I doing, what was happening in the school that would affect what I was able to do for my study. Some things would be school being canceled due to bad weather, testing on kids, etc. Some of these events prevented me from being able to observe students and some of these events constrained the time the students had to work using the tools or my ability to work individually with students. I think I could divide this up into subtasks because the difficulties were part of the atmosphere and what I was having the kids do (tasks) were also part of it.</p>
Tasks	<ul style="list-style-type: none"> Seesaw Quizlet Magnetic tiles flashcards Digital Book Creator 	<p>Here is where I need to code a specific activity I was doing in my classroom. These included Seesaw, Quizlet. magnetic word tiles, flashcards, and if the students were using digital resources. I am not sure if I should include digital resources here since they were used as a means for gathering information for specific projects like social studies or science.</p>
Language	<ul style="list-style-type: none"> Language practices Language identity 	<p>This is what I used when the subject of language came up in my conversations.</p> <p>Perhaps as subcategories I had previously begun coding some of the initial books according to language and one with audio recording. They are:</p> <ul style="list-style-type: none"> audio recording bilingual English Spanish <p>The reason I think of language as important is because since I am looking at how multimodal instruments can help develop biliteracy, I needed to understand the students' use of language in their writing and their everyday language use as well as their attitudes and perceptions of it. In my preliminary perceptions, it was the first hurdle I had to overcome in order to get the kids to work on developing their proficiency in Spanish. So my next step is to go and look more closely at what was being said about language and what</p>

		was happening, contextually, around the conversation. This needs to be tied in with the photos that I took as well as the notes.
Student experience	<ul style="list-style-type: none"> • Actions • Feelings 	I finally decided that I need to code by students' experience-how they are experiencing multimodal instruction-what they do and how they feel about it. And then I need to code exactly what I was doing or thinking to note my instructional moves, especially since I tend to respond to the students' needs rather than plan very intentionally.
Instructional move		There are no subcategories for this because I just need to see what my instructional move was and analyze my reasoning for the move.