

5-2019

## Digital Literacies to Develop Biliteracy: A Case Study of Latino Students Exploring Multimodal Writing in English and Spanish

Laura Berenice Ramos Lopez  
*The University of Texas Rio Grande Valley*

Follow this and additional works at: <https://scholarworks.utrgv.edu/etd>



Part of the [Curriculum and Instruction Commons](#)

---

### Recommended Citation

Ramos Lopez, Laura Berenice, "Digital Literacies to Develop Biliteracy: A Case Study of Latino Students Exploring Multimodal Writing in English and Spanish" (2019). *Theses and Dissertations*. 569.  
<https://scholarworks.utrgv.edu/etd/569>

This Dissertation is brought to you for free and open access by ScholarWorks @ UTRGV. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of ScholarWorks @ UTRGV. For more information, please contact [justin.white@utrgv.edu](mailto:justin.white@utrgv.edu), [william.flores01@utrgv.edu](mailto:william.flores01@utrgv.edu).

DIGITAL LITERACIES TO DEVELOP BILITERACY:  
A CASE STUDY OF LATINO STUDENTS  
EXPLORING MULTIMODAL WRITING  
IN ENGLISH AND SPANISH

A Dissertation

by

LAURA BERENICE RAMOS LÓPEZ

Submitted to the Graduate College of  
The University of Texas Rio Grande Valley  
In partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

May 2019

Major Subject: Curriculum & Instruction



DIGITAL LITERACIES TO DEVELOP BILITERACY:  
A CASE STUDY OF LATINO STUDENTS  
EXPLORING MULTIMODAL WRITING  
IN ENGLISH AND SPANISH  
A Dissertation  
by  
LAURA BERENICE RAMOS LÓPEZ

COMMITTEE MEMBERS

Dr. Sandra Musanti  
Chair of Committee

Dr. Laura Jewett  
Committee Member

Dr. Sandra Mercuri  
Committee Member

Dr. Carmen Peña  
Committee Member

Dr. Christian Zúñiga  
Committee Member

May 2019



Copyright 2019 Laura Berenice Ramos López  
All Rights Reserved



## ABSTRACT

Ramos López, Laura Berenice, Digital Literacies to Develop Biliteracy: A Case Study of Latino Students Exploring Multimodal Writing in English and Spanish. Doctor of Education (Ed.D.), May, 2019, 245 pp., 31 tables, 33 figures, references, 193 titles.

Schools in the United States are witnessing a rich ethnic and linguistic diversity in their student corpus. Languages spoken by these children vary from state to state; however, Spanish is the second language most spoken after English (U.S. Department of Education, 2017). As a nation, there is tremendous potential for these students to become biliterate or academically proficient in Spanish and English. Since the turn of the 21<sup>st</sup> century, the educational setting is experiencing an increased interest in the integration of technology in education, and students are prompted to become digitally literate.

The aim of this exploratory qualitative study is to describe how emergent bilingual second grade students utilize their full linguistic repertoire when using digital literacies in academic writing. This study investigates how multimodal writing facilitates the development of biliteracy.

The study reveals four findings. First, Latino students utilize bilingual practices, such as metalinguistic awareness and translanguaging to construct texts. Second, emergent bilinguals use online collaboration and modes of meaning making to develop their voice and writing while engaging in multimodal writing. Third, multimodal writing supports the development of vocabulary and spelling. Fourth, multimodal writing empowers bilingual students.

*Keywords:* emergent bilinguals, biliteracy, multimodal writing





## DEDICATION

This work is dedicated to all bilingual students who allowed me to share their stories and taught me that hope requires steady and determined action.



## ACKNOWLEDGEMENTS

I would like to thank all the people that supported me and encouraged me to follow the path of bilingual education during all these years and inspired me to reach this point in my academic career. I especially want to thank my chair Dr. Musanti for your mentorship, feedback, and support throughout this process. You have helped me grow as a scholar and writer. I would also like to thank my dissertation committee members. Thank you, Dr. Mercuri, my professor, colleague, and friend, for your guidance and support. You motivated me to complete this process. Dr. Jewett, I appreciate your encouragement and professional advice. You pushed me to write like the wind. Dr. Zúñiga, thank you for your insights and attention to detail. Dr. Peña, I appreciate your time and guidance.

I would like to thank Vivian Pratts who, almost eight years ago, convinced me to begin a Masters in Bilingual Education and shared my work through different conferences. The journey started with you; to my work leaders thank you for believing in me. Also, I want to thank Dr. Yvonne Freeman whose mentorship, friendship, and leadership inspired me to further my studies. It was in your class, when I was introduced to James Paul Gee, that the ideas of technology and biliteracy started. Thank you to my doctorate friends, Monica Sifuentes and Kelly Cox, who have been my academic sisters. I will cherish forever our friendship.

I want to express deep gratitude to my wonderful mother Dra. Lupita López for the uncountable hours of support and encouragement, *si otros pueden, tú puedes*. I want to thank my

son Adam for being my source of energy and hope. I pray you get to enjoy this journey one day.

Thank you, Adil, my husband, for your patience and understanding.

Above all, thanks to God for giving me the strength and spirit to accomplish this goal.

Please, keep guiding me in this new path that I am about to begin.

## TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
DEDICATION.....	iv
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vii
LIST OF TABLES.....	xii
LIST OF FIGURES.....	xiv
CHAPTER I. INTRODUCTION.....	1
Background to the Problem.....	2
Statement of the Problem.....	6
Purpose of the Study.....	7
Research Questions.....	8
Research Design Overview.....	8
Researcher’s Positionality.....	9
Definition of Key Terms.....	11
CHAPTER II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW.....	15
Theoretical Framework.....	16
Pedagogy of Multiliteracies.....	16
Dynamic Bilingualism Approach.....	20
Literature Review.....	24

The Legitimacy of Bilingualism .....	25
Biliteracy.....	30
Biliteracy Development .....	32
Biliteracy Instruction .....	36
Writing for Biliteracy.....	38
Language of Instruction and Bilingual Writing .....	39
Students’ Writing Cognizance .....	40
Bilingual Writing Strategies .....	41
Pedagogies Supporting Bilingual Writing .....	44
Assessment of Bilingual Writing.....	47
Digital Literacies.....	51
Use of Digital Literacies in the Content Areas and for Language Acquisition .....	53
Digital Literacies Studies Involving Bilingual Students.....	54
Challenges of Digital Literacies.....	56
Chapter Summary .....	57
CHAPTER III. METHODOLOGY .....	59
Researcher Narrative and Positionality.....	61
Research Design.....	63
Rationale for Qualitative Approach .....	64
Rationale for a Case Study Approach.....	64
Context of the Study .....	65
Gaining Access to Miltonia Elementary.....	67
Research Participants .....	68

Teacher Participant .....	68
Student Participants .....	69
Multimodal Writing Rationale .....	69
Planning with Ms. Park .....	71
Multimodal Writing Implementation .....	77
Data Collection .....	79
Observations and Field Notes .....	80
Researcher Journal .....	82
Interviews .....	82
Audio and Video Recordings .....	84
Artifacts .....	85
Data Analysis .....	86
Data Preparation .....	86
Initial Immersion .....	87
Coding .....	87
Categories and Themes .....	88
Analysis of Students' Writing .....	91
Trustworthiness .....	96
Triangulation .....	96
Ethical Considerations .....	97
Limitations .....	98
Chapter Summary .....	100
CHAPTER IV. FINDINGS .....	101



Section I: The Classroom.....	103
Ms. Park’s Classroom.....	103
Ms. Park’s Language Arts Block.....	104
Technology and Ms. Park’s Classroom.....	107
Students.....	109
Students’ Experiences in Writing and Technology.....	111
Section II: The Multimodal Writing Project.....	114
Section III: Themes.....	130
Research Question 1: Theme 1.....	130
Research Question 1: Theme 2.....	136
Research Question 2: Theme 1.....	143
Research Question 2: Theme 2.....	152
Section IV.....	156
Focal Students.....	156
Chapter Summary.....	189
CHAPTER V. DISCUSSION, IMPLICATIONS, AND CONCLUSIONS.....	191
Digital Literacies and Biliteracy Development.....	192
Students’ Linguistic Repertoire Used to Construct Bilingual Multimodal Writing.....	194
Theme 1: Bilingual Practices to Construct Multimodal Texts.....	194
Theme 2: Emergent Bilinguals Use Online Collaboration.....	200
Multimodal Writing to Develop Biliteracy.....	203
Theme 3: Multimodal Writing Makes Possible Contextualized Practice to Support	
Vocabulary.....	203

Theme 4: Multimodal Writing Empowers Bilingual Writers .....	207
Conclusions .....	211
Implications .....	213
Implications for Practice .....	213
Implications for Research .....	216
REFERENCES .....	218
APPENDIX A .....	233
APPENDIX B .....	237
APPENDIX C .....	239
APPENDIX D .....	241
APPENDIX E .....	243
BIOGRAPHICAL SKETCH .....	245



## LIST OF TABLES

	Page
Table 1 Students' Academic Profiles.....	69
Table 2 Multimodal Writing Planning Table.....	72
Table 3 Rubric to Analyze Multimodal Writing.....	92
Table 4 Literacy Squared Writing Rubric (Escamilla et al., 2014) .....	93
Table 5 Bilingual Strategies (Escamilla et al., 2014).....	95
Table 6 Jocelyn & Megan Transcription .....	123
Table 7 Oswaldo & Lizette Transcription .....	124
Table 8 Lily Interview .....	133
Table 9 Elias Field Note .....	134
Table 10 Bilingual Strategies Utilized at the Word Level (WL).....	135
Table 11 Bilingual Strategies Utilized at the Sentence Level (SL) .....	136
Table 12 Students' Responses .....	139
Table 13 Integration of Visuals to Develop Details.....	139
Table 14 Online Interactivity Gives Voice to Struggling Learners .....	141
Table 15 Megan Expresses Pride About her Role as Online Collaborator.....	142
Table 16 Editing Conversation Transcription.....	145
Table 17 Metalinguistic Awareness Transcription .....	147
Table 18 Translanguages Transcription.....	149
Table 19 Multimodal Writing Transcription.....	150

Table 20	Multimodal Writing Construct Transcription .....	151
Table 21	Emergent Bilingualism Transcription.....	154
Table 22	Google Aps Transcription.....	162
Table 23	Elias' Struggle Transcription.....	164
Table 24	Spanish Sample Analysis Transcription .....	169
Table 25	English Sample Analysis Transcription.....	170
Table 26	Full Linguistic Repertoire Transcription .....	171
Table 27	Greta's Emergent Biliteracy Transcription .....	177
Table 28	Greta Struggles Transcription.....	180
Table 29	Jocelyn Helps Greta Transcription .....	181
Table 30	Greta Reads English Text Transcription.....	182
Table 31	Zara on Google Translate Transcription.....	188

## LIST OF FIGURES

	Page
Figure 1. Continua Model of Biliteracy Development (Hornberger, 2004) .....	34
Figure 2. Ms. Park’s Classroom.....	80
Figure 3. Generation of In-Vivo Codes .....	89
Figure 4. Generation of Description Codes .....	89
Figure 5. Network Display.....	90
Figure 6. Matrix Display of Themes.....	90
Figure 7. Ms. Park’s Schedule .....	105
Figure 8. Place of Birth of Students: Simultaneous and Sequential Bilinguals.....	109
Figure 9. Students Attitudes towards Writing in English and Spanish.....	112
Figure 10. Summary of Students’ Responses .....	113
Figure 11. Writing Kernel in Spanish.....	115
Figure 12. Writing Kernel in English .....	116
Figure 13. Kernel Format Misconceptions .....	117
Figure 14. Brainstorming Writing Topics about Disrespected Spaces.....	119
Figure 15. Student Sharing his Writing Project.....	120
Figure 16. Spanish Writing with Student’s Feedback .....	121
Figure 17. English Writing with Student’s Feedback.....	121
Figure 18. Contextualized Spelling List .....	122
Figure 19. Multimodal Writing Sample.....	125

Figure 20. TPR Procedure to Copy and Paste a Text Selection.....	126
Figure 21. Google Translate Screen.....	128
Figure 22. Greta’s Multimodal Writing with Feedback.....	129
Figure 23. Handwriting and Multimodal Writing of Student .....	155
Figure 24. Alfredo’s English Multimodal Writing .....	158
Figure 25. Alfredo’s Spanish Multimodal Writing.....	159
Figure 26. Elias’ English Multimodal Writing .....	165
Figure 27. Elias’ Spanish Multimodal Writing.....	166
Figure 28. Greta’s English Multimodal Writing.....	174
Figure 29. Greta’s Spanish Multimodal Writing .....	175
Figure 30. Online Collaboration to Convey Meaning .....	179
Figure 31. Zara’s English Multimodal Writing .....	185
Figure 32. Zara’s Spanish Multimodal Writing.....	186
Figure 33. Multimodal Writing Project .....	194

## CHAPTER I

### INTRODUCTION

“The problem our schools face is—how do you get someone to learn something long, hard, and complex, and yet still enjoy it?”

—James Paul Gee

The process to develop biliteracy is complex and a journey that only some fortunate students experience in United States’ schools. For the majority of bilingual students their fate is to abandon one of their languages and embrace the language of the majority, in this case, English. According to Marshall and Rossman (2011), research involving children should be devoted to listening to their voices; therefore, learning from emergent bilingual children about biliteracy development when using digital literacies is imperative.

The aim of this study is to describe how emergent bilingual second grade students utilize their full linguistic repertoire when using digital literacies in their academic writing, in English and Spanish. Furthermore, this study investigates how multimodal writing facilitates the development of biliteracy.

In this chapter, I provide the background to the problem of study by first discussing the schooling experiences of bilingual children in the United States. Then, I present the most common uses of digital literacies in school, as well as the challenges that they represent. Furthermore, I discuss the uses of technology to learn languages and connect this to my own



experiences. Following that discussion, I state the research problem, as well as the purpose of my study that served to frame my research questions. I briefly summarize the research design and discuss my position as an emergent researcher. I conclude this chapter with the definition of terms that will be frequently used in the remaining chapters.

### **Background to the Problem**

Schools in the United States are witnessing a rich ethnic and linguistic diversity in their student corpus. Languages spoken by these children vary from state to state; however, Spanish is the second language most spoken after English (U.S. Department of Education, 2017). As a nation, there is a tremendous potential for these students to become biliterate or academically proficient in Spanish and English. To achieve this goal research suggests that the most effective instructional approach is to provide comprehensive instruction that merges the teaching of language features in tandem with academic content areas in the students' native language and English (Freeman, Freeman, & Mercuri, 2018).

One of the most prevalent trends in schools is the unequal status of languages, as well as the core curriculum and pedagogical practices that emergent bilinguals receive. In the case of Spanish, the extent and degree in which this language is utilized, to teach and learn, vary across programs and across the nation. According to Rumberger and Tran (2010), about half of emergent bilinguals nationwide receive bilingual instruction in the form of English as a second language, and less than 5% of students receive instruction in their native language. That is to say, the majority of emergent bilinguals in most schools receive their education under a monolingual and subtractive ideology even in bilingual programs (Beeman & Urow, 2012).

A monolingual approach in bilingual, foreign, or ESL classrooms, conceives the native and the second language of emergent bilinguals as two separate and unrelated tongues (Beeman

& Urow, 2012; Orellana & García, 2014). Furthermore, this approach urges the limited use of native language during the students' educational trajectory. In some cases, students are placed in programs with a total immersion into English-only curriculum; other times they are allowed to utilize their native language but only temporarily until students demonstrate some fluency in English. Although the academic success of emergent bilinguals is multifactorial (Cortes, 1986; Freeman & Freeman, 2011; Gandara & Contreras, 2009; Suarez-Orozco, Suarez-Orozco, & Todorova, 2008), the school context is a central factor that contributes to the failure or success of emergent bilinguals.

Since the turn of the 21<sup>st</sup> century, the educational setting is experiencing an increased interest in the integration of technology in education, and thus, students are prompted to become digitally literate. In part, this boom is a result of the demands of becoming digitally literate in a world that requires skills that were not demanded in the past (The New London Group, 1996). For instance, new competencies include the asynchronous collaboration of students beyond space and time, the use of practical communication skills for different purposes, and the use of various digital mediums to do so. For emergent bilinguals, this trend can represent an opportunity since recent research indicates that technology can be motivating for students (Giannakos, 2013; Tancock & Segedy, 2004).

It is important to consider that the integration of digital literacy experiences can range from superfluous to complex applications. Burnett (2010) describes the role of technology within literacy with three pedagogical categories. The first category relates technology used as a deliverer of literacy, which refers to the use of teacher-led computer programs to support the development of literacy, reading comprehension, decoding skills, and phonological awareness as a set of isolated skills. For example, electronic books read by a computer, videos, and animations

to reinforce phonological awareness, and digital games to drill decoding skills. The second implementation of technology is as a site for interaction around texts, which refers to digital literacies used as a stimulus for students to dialogue and reflect. Some applications include browsing the Internet to find specific information or projections of books or other written materials for students to analyze in groups. This form of implementation follows a sociocultural model of literacy because literacies are constructed through collaboration between the students and technology. The last category depicts technology as a medium for meaning-making, allowing students to become not only passive consumers but active producers of digital literacies. Some of these applications can also enhance the status of marginalized communities. For example, research projects that involve children in looking and producing digital materials to report their findings, networked activities that reach audiences beyond the classroom, or the production of digital materials that allow students to express their position towards social and academic topics of interest to them. In brief, a digital literacy experience can resemble a traditional literacy experience in that activities can range from the mechanic and superfluous to authentic, rigorous, and contextualized (Burnett, 2010; Gee, 2012).

According to the literature reviews conducted by Burnett (2010) and Godwin-Jones (2018), there are few studies related to digital literacies and language acquisition (Shin, 2014). Studies examining digital literacies and biliteracy development are also scarce (Burnett, 2010; Godwin-Jones, 2018; Neuman & Neuman, 2014; Murray & Olcese, 2011). Furthermore, some of the scant studies involving bilingual studies, technology and biliteracy, are conducted outside the instructional time of students in the form of an enrichment program or extracurricular activity (Axelrod & Cole, 2018; Garcia, 2014; Machado-Casas, Alanis, & Ruiz, 2017; Martinez-Roldan, 2015; Prieto et al., 2016).

During my experience as educator and multilingual program specialist, I witnessed both traditional and meaning-making approaches to technology. For instance, as an educator during my first years, I followed traditional approaches with websites that focused on phonics and with only one computer in my classroom. Later on, the district invested in using technology with the focus of promoting digital literacies among educators and students. I remember that all teachers received online training in 11 tools for digital learning, including how to use blogs, avatars, word clouds, wikis, and Google Apps, among others. The goal was for us teachers to enrich our instruction and become digitally literate so that we could promote more digital activities for learning. I remember that the staff at my campus had several levels of implementation with a minority of three or four teachers, including myself, trying to apply digital literacies at a higher level; however, the training failed in showing teachers how to make explicit connections between the standards that we were to teach and the digital tools that we had learned. For example, I knew how to create an avatar, but I did not know what I could do with it to teach my students, and more importantly for my students, to create something aligned to their knowledge and skills. We were given training on just one component, technology, but we left aside two important components, the integration of language for learning, as well as the content knowledge and skills.

Several years later, having a role out of the classroom as a specialist, I noticed that in some classrooms, emergent bilinguals utilized technology in a way that reflected a monolingual and subtractive approach. To illustrate, students completed digital worksheets that emphasized the repetition of spelling patterns and phonics, in English and Spanish, while the teacher conducted small groups. Often times, when classrooms were equipped with technological

devices, activities seemed to be an add-on to keep practicing reading or writing skills in the form of drills.

The use of digital literacies for emergent bilinguals seems to be inconsistent. In some districts, efforts have existed to improve the quality of technology applications; whereas, in other districts, technology has not been a learning focus, especially those that serve racial and linguistic minorities. Latinos, the largest minority in the United States, hold the greatest number of school withdrawals during high school (Gandara & Contreras, 2009). As a nation, this translates into an alarming call that strives for quality and equitable education for all students, including access to quality digital literacies and biliteracy. From a theoretical platform, it appears that there is a niche to explore and improve the use of the technology available for emergent bilinguals since there is a shortage of research on this topic. For practitioners and researchers, the use of high-quality and purposeful activities that can support the biliteracy and digital literacies of emergent bilinguals demands more attention.

### **Statement of the Problem**

The majority of the pedagogical applications of technology and digital literacies in schools seems to promote literacy as a set of isolated skills (Burnett, 2010; Labbo & Reinking, 2003). Furthermore, the number of studies that target Latino emergent bilinguals and the use of technology as a tool for language acquisition during the instructional time is limited and focused on decoding and reading passages to test comprehension (Burnett, 2010; Ching-Ting, Ming-Chaun, & Chin-Chung, 2014; Yelland, 2018). Other studies for that aim at developing biliteracy and digital literacies of Latinos, consist of afterschool programs where only a fraction of Latino students are enrolled (Garcia, 2014; Prieto et al., 2016).

Latino students, as well as other linguistic minorities, seem to be at a disadvantage in terms of access to high quality digital literacy experiences. According to Cooper (2002), Latino students are a minority that lacks access to computers and other technologies at home in comparison to Anglo-Saxon mainstream students. This digital divide has negative impacts in the educational journey of Latino students since, according to Anderson and Perrin (2018), students with less access to technologies can fall behind their more digitally savvy classmates. Furthermore, there seems to be evidence that students who have access to a computer have more chances to graduate from high school in comparison to those students who lack a device (Anderson & Perrin, 2018). Therefore, if schools are the only spaces that can guarantee access to technology for bilingual students, it is imperative to ensure that the application of those resources provides high-quality digital literacy experiences.

For these reasons, if we want to promote equitable and quality education for all students, including Latinos, it is necessary to pay more attention to the uses of technology in the field of bilingual education and in particular, on the biliteracy development of Latino students. This study contributes to this literature by addressing the scarce research regarding biliteracy development and digital literacies of emergent bilinguals.

### **Purpose of the Study**

The purpose of this study is to explore how second-grade Latino emergent bilinguals, in a language arts class, utilize their linguistic repertoire when using digital literacies in their academic writing in both English and Spanish. This study investigates how multimodal writing facilitates the development of biliteracy.

This study employs technology as a “medium for meaning-making” (Burnett, 2010, p. 254) where “premium-grade” (Gee, 2012, p. 418) literacy experiences are designed for emergent

bilinguals to respond to different writing tasks. In this study, I draw from the multiliteracies pedagogy framework (The New London Group, 1996) to emphasize a broader view of literacy that includes multiple forms of meaning. Furthermore, I utilize a conception of dynamic bilingualism (García, 2009a) to understand the development of biliteracy as a dynamic cycle that adjusts to multiple discursive practices. I ground my research in a holistic view of biliteracy and biliteracy development as a new and complex linguistic repertoire product of two interconnected languages (Beeman & Urow, 2012; Escamilla et al., 2014; Grosjean, 1998).

### **Research Questions**

Two research questions guide this study. These questions arose from the literature review on digital literacies, in particular, multimodal writing and biliteracy development:

1. How does multimodal writing facilitate the development of biliteracy in emergent bilinguals?
2. How do emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing?

### **Research Design Overview**

This qualitative study is exploratory and follows a case study approach (Creswell, 2013; Yin, 2009). The case studied is a second grade dual language classroom using digital literacies, in the form of multimodal writing, to develop biliteracy during the language arts block.

The study was conducted for ten weeks and consisted of collecting data of two multimodal writing experiences designed for the students to respond in the language of their choice during the language arts writing block three times per week. I decided for this study to focus on writing because this linguistic skill allows for physical manipulation of language. For example, writing can effectively become the instrument through which students can visualize

cross-linguistic connections (Escamilla, Geisler, Ruiz, & Hopewell, 2005). Furthermore, digital writing in the 21<sup>st</sup> century is a rich form of communication that allows for multiple layers of meanings (Elola & Oskoz, 2017). Most types of writing include some sort of visual through pictures, graphics, or images, as well as sounds, such as music or voice over text.

My role was a participant observer, as I worked together with the teacher in the planning of the multimodal writing experiences and delivery of the project. The planning of these experiences included the integration of writing, social studies, and technology knowledge and skills. The classroom teacher and I utilized the content scheduled at the time of the data collection. The teacher and I co-taught students how to use the digital tools and Google Apps for their writing project.

The data collection included participant observations prior and during the study, audio and video recording, students' writing samples, teacher's writing planning tables, student and teachers' interviews, and a researcher's journal. This body of data was analyzed qualitatively following the structure proposed by Leavy (2017), including data preparation and organization, initial immersion, coding, categorizing and theming, and interpretation.

### **Researcher's Positionality**

The personal interest in this topic is the result of my previous experiences implementing technology during a time span of nine school years across disciplines while I was an elementary teacher. As a first grade teacher, I remember utilizing technology for students to listen to eBooks or practice their English phonics. At that time, I only counted with one computer. This changed when I was moved to fourth grade and started my master's program. During my courses, I was introduced to the work of James Paul Gee. I was impressed by his passion on digital literacies and videogames for learning. As far as I remember, I have always counted with videogames at



home and found that most of my students also shared that passion. I remember that my fourth and second grade students would exchange tips for playing video games, which in turn helped me to create a class on videogame design for bilingual students where they were able to challenge traditional literacies with digital literacies in the form of gaming for all content areas.

With the support of the school district, I received training on digital tools for teaching and learning. That training, in conjunction with the work of Gee, my experience in communication sciences, as well as the classwork of my master program in bilingual education, allowed me to keep creating more meaningful activities for my bilingual students during my classroom instruction and afterschool. After a couple of years, my campus administrator also supported this immersion in digital literacies by providing me with enough devices for my students, as we received district recognition for my work.

In my classroom, the use of technology served as the medium through which students explored digital genres. I designed learning experiences for students to develop their listening, speaking, reading, and writing in English and Spanish while they conducted research projects, created and developed electronic books, interactive writing journals, podcasts, videos, interactive posters, and e-correspondence through a safe and secure social media among the classroom members, as well as the e-pals from other countries abroad. I remember how my bilingual students were motivated and proud to utilize their languages, Spanish and English. The inclusion of technology allowed for a constructive environment and a learning community beyond time and space, where all my students were able to create, showcase, witness, and comment on each other's projects, capitalizing on both social and academic ways of communication in English and Spanish.

## **Definition of Key Terms**

The definitions presented below guided and served as the foundation for the theoretical framework that I will further describe in chapter two. These terms were essential in this study and are utilized in the remaining chapters of this study.

### **Biliteracy**

Biliteracy in this study is understood as a new and complex linguistic repertoire product of two languages (García & Woodley, 2015) within specific cognitive, sociocultural, and sociological dimensions that allows bilinguals to “experience a range and variety of literacy practices and transact with two literate worlds to create knowledge and transform it for meaningful purposes” (Gort & Bauer, 2012, p. 2).

### **Biliteracy Development**

Biliteracy development is understood as part of a continuum (Hornberger, 2004) that is flexible and dynamic (García, 2009a) and that allows students to navigate bidirectionally from the reception to the production of language. Biliteracy development explains how literacies are used and learned.

### **Digital Genres**

This term refers to new textual practices of the 21<sup>st</sup> century promoted via the Internet and digitally designed. These digital genres are socially situated and culturally embedded and include different multimedia projects, such as online collaborative writing, wikis, digital storytelling, gaming, multimodal essays or presentations (Godwin-Jones, 2018).

### **Digital Literacies**

This term encompasses computer literacies (the competence to use a technology device), information literacy (the skill to find and evaluate information online), and media literacy (the

critical selection of media representation) in an internet-and technology-mediated space (Elola & Oskoz, 2017). Digital literacy is also about acknowledging the role that language and communication play to build and transform a community.

### **Dynamic Bilingualism**

Dynamic bilingualism is a contemporary and comprehensive view of bilingualism that acknowledges the complexity of social and cultural realities of bilingual speakers. The dynamic bilingualism model “acknowledges that children hold different degrees of bilingualism because their families speak different languages or because they have lived and worked across national contexts” (García & Woodley, 2015, p.133). Bilingualism is not conceived as a linear process but as a dynamic cycle that adjusts to multiple discursive practices.

### **Emergent Bilinguals**

In this study, I adopt the term emergent bilinguals to refer to bilingual children instead of English learner or students with limited English proficiency. I decided to use this term to allude to the dynamic and growing expertise that young students develop as they think, speak, read, and write in two or more languages. Furthermore, I capitalize in the use that Gort and Bauer (2012) give to the word “emergent” to emphasize that bilingual children are in the process of developing reading and writing competencies. The term emergent bilinguals utilizes a sociocultural approach to biliteracy development, emphasizing the growing linguistic abilities of students in both languages (García & Wei, 2014).

### **Holistic Bilingualism Approach**

A holistic view of biliteracy is defined as an approach that understands biliteracy development as a new and complex linguistic repertoire product of two languages (Dworin, 2003; García, 2009a). It acknowledges that biliteracy is part of a continuum that is ongoing,

flexible, and dynamic instead of a rigid and linear procedure. A holistic view takes into consideration the bilinguals experience of students in different contexts.

### **Literacy Squared Writing Approach**

In a literacy squared writing approach, a holistic bilingualism view is taken and acknowledges that bilingual students perform some linguistic task better in one language than in another based on different factors. The co-existence of two or more languages in the brain creates a unique mesh of knowledge that biliteracy cannot be measured or understood by strictly separating the languages (Hopewell & Escamilla, 2014). Therefore, the students' bilingual experiences are analyzed together for cross-language comparisons as part of a biliteracy development.

### **Multimodal Writing**

In this study, I define multimodal writing as a digital text that employs the use of two or more modes of meaning making (The New London Group, 1996). Within digital literacies, multimodal writing is one use of literacy where visuals, audio, gestural, spatial, or linguistic modes of meaning making are combined to construct a text (Elola & Oskoz, 2017).

### **Sequential Bilingualism**

A sequential bilingual is a person older than six years old who develops solid proficiency in their native language before acquiring a second language. Regularly, a sequential bilingual possesses a dominant native language, and the majority of his language knowledge and skills are showcased in his dominant language (Baker & Wright, 2017).

### **Simultaneous Bilingual**

A simultaneous bilingual develops biliteracy from infancy to five years old by being exposed to two or more languages (Baker & Wright, 2017). A simultaneous bilingual may not

have a dominant tongue, and the linguistic features, vocabulary, and skills are divided among the languages that he possesses.

## CHAPTER II

### THEORETICAL FRAMEWORK AND LITERATURE REVIEW

This chapter presents the theoretical framework and literature review that I utilized in this study to situate the need for this project, as well as to guide my interpretation of the findings. The theoretical framework is based on the pedagogy of multiliteracies of The New London Group (1996) and on the assumption that biliteracy development can benefit from learning that is culturally responsive, linguistically, communicative, and technologically responsive (García et al., 2007). The dynamic bilingualism approach (Garcia, 2014) is also part of the theoretical framework because, from a critical perspective, it argues for the development of heteroglossic language ideologies in the classroom as a way to positively transform and address the current needs of emergent bilinguals in the United States.

In addition, this chapter includes the literature review relevant to this study. First, I address the literature on bilingualism in the United States as a phenomenon impacted by political, cultural, and social ideologies throughout time. The objective of this section is to provide a case for the legitimacy of bilingualism as an educational approach that is not new and that has been valid for several periods. Second, I discuss research on the bilingual education approaches and the impact that these approaches have on the educational trajectories of emergent bilinguals. Third, I discuss literature on biliteracy and the importance of teaching with a bilingual lens. In particular, I distinguish two crucial topics of biliteracy, the research on biliteracy development and the literature around best instructional practices to foster learning in two

languages. Finally, I present studies in which technology serves as a learning tool through digital literacies. In this section, I describe how digital literacies promote knowledge and skills in different content areas. Also, this section highlights some of the few studies on Latinos and technology and the need for research to focus on biliteracy and digital literacies as part of the students' daily instruction.

The overall aim of this chapter is to present a case to justify the need of exploratory research that focuses on describing how digital literacies provide biliteracy development opportunities that foster bilingual practices that can empower emergent bilinguals as writers.

### **Theoretical Framework**

In what follows, I discuss the theories I draw from to frame this study, specifically pedagogy of multiliteracies (The New London Group, 1996) and dynamic bilingualism approach (Garcia, 2014).

#### **Pedagogy of Multiliteracies**

In response to the different “channels or modes of communication” (García et al., 2007) available in the 21<sup>st</sup> century, as well as cultural and linguistic diversity, The New London Group (1996) suggests a broader view of literacy that includes multiple forms of meaning and a pedagogy of multiliteracies.

A pedagogy of multiliteracies challenges traditional literacy approaches that are “restricted to formalized, monolingual, monocultural, and rule governed-forms of language” (The New London Group, 1996, p. 61). That is, a multiliteracies approach confronts rigid forms of teaching and learning literacy by explaining the multiple cultural and linguistic contexts of the modern society and by arguing that literacy pedagogy should encompass new and different forms of texts that are products of the information and multimedia technologies in the 21<sup>st</sup> century. That

is, a multiliteracy pedagogy expands the scope of learning to new forms of communication channels and media supports in a society that is culturally and linguistically diverse.

For The New London Group (1996), human knowledge is situated in social, cultural, and material spheres. Within and across different spheres, the acquisition of knowledge occurs as individuals engage in learning communities that allow for the collaboration and interactions with other people of similar and different backgrounds, skills, and perspectives. Furthermore, a pedagogy of multiliteracies includes a balanced classroom design where ideally four practices are featured: situated practice, overt instruction, critical framing, and transformed practice.

Situated practice refers to immersing students in a learning community that allows participants to practice their knowledge and skills in authentic ways including interactions, discussions, and sharing of ideas. This component emphasizes the importance of sociocultural contexts to develop knowledge and promote comprehensible input through connections to the prior knowledge of the other members of the community. That is, literacy is framed as a social practice and learning relates to the ability of humans to recognize patterns that allow them to act and respond flexibly to different contexts.

The next component is overt instruction which fosters the awareness and control of knowledge acquired through situated practice. It is through overt instruction that teachers model, engage, and monitor students with learning tasks. According to Biswas (2014), overt instruction promotes an understanding of systematic, analytic, and cognizant explanations of different modes of meaning making.

According to a pedagogy of multiliteracies, once students develop some mastery through situated practice and a conscious control of their learning through overt instruction, teachers can present opportunities for students to critically analyze and apply their learning to “historical,



social, cultural, political, ideological, and value-centered relations of particular systems of knowledge and social practice” (The New London Group, 1996, p. 86). That is, learners are prompted to develop the ability to reflect, inquire, and interpret the underlying ideology and value of texts within social and cultural contexts. This ability is defined as critical framing, and is developed by students when they analyze functionally and critically (Kalantzis & Cope, 2012) different literacies. When students analyze functionally, the focus is on the functions of a literacy design, its structure, context, cause, and effects. Analyzing critically involves evaluating the purpose of the designer, i.e. the writer, of a text.

The last element refers to transformed practice where students integrate, use, and re-create discourses using real life purposes. That is, the activities are juxtaposed with action and change. Students acknowledge their agency as they place side by side their views of the word and the perceived reality.

In this study, I acknowledge the importance of situated learning and overt instruction to develop biliteracy in a collaborative learning environment where interactions and discussions are promoted. Overt instruction is a component necessary for students to develop specific linguistic and digital skills. For example, direct instruction is necessary to develop spelling, metalinguistic awareness, or the ability to compare and contrast linguistic features (phonology, syntax, grammar, cultural norms, etc.), in two languages. In regards to digital literacies, educators need to use overt instruction to explain how to use different platforms, such as Google Apps, prior the design and creation of multimodal texts.

In addition to the four practices that constitute the framework of multiliteracies, The New London Group (1996) stresses six different modes of meaning making or metalanguages

available in the literacies of the 21<sup>st</sup> century. Those modes of meaning making include linguistic design, visual design, audio design, gestural design, spatial design, and multimodal design.

A linguistic design focuses in the power of language to convey meaning. That is, language helps to describe different representational resources, such as tone, lexicalization, word choice, cohesion, and genre, within a contextual meaning, and transformation based on social aims. In this sense, grammar is conceived as “a range of choices one makes in designing communication for specific ends” (The New London Group, 1996, p. 79) that respond inevitably to relations of power. The main goal of a linguistic design is to develop critical language awareness.

Visual designs include representations such as images, pictures, illustrations, or colors. Audio meanings refer to music and sounds. Gesture meanings focus on body language. Spatial meanings relate to the meaning or influence of a context. Multimodal designs allow for the combination of two or more of the previously mentioned modes of meaning making.

In this study, I explore a multimodal approach to writing where students choose the type of design or mode of meaning to be included in their text. This involves understanding writing as a meaning-making process that transcends the traditional paper-base approach and instead capitalizes on different digital formats and features that engage different modes of meaning making, such as visuals (illustrations, font size, color and style, and pictures), audio-visuals (videos), linguistic (sentence structure and word choice), spatial (text layouts, font size, color and style), as well as gesture (visual or audio meanings that reflect feelings). From this perspective, the students, as authors or designers of meaning, experience the responsibility of choosing from available designs to transform them into something new.

A multiliteracies pedagogy framework is relevant to this study because it accepts and encourages a wide range of linguistic, cultural, communicative, and technological perspectives and tools being used to help students better prepare for a rapidly changing, globalized world. More to the point, a multiliteracies approach can support the planning of writing units that welcome the bilingual abilities of the students holistically while acknowledging and fostering the technological skills needed in the 21<sup>st</sup> century. In the following section, I will discuss the dynamic bilingualism approach that aligns with a multiliteracies approach.

### **Dynamic Bilingualism Approach**

In the United States there is an extensive debate about the best bilingual approach for language minority students. Traditionally, there are two categories to classify instructional bilingual orientations as subtractive or additive (Baker & Wright, 2017; García, 2009b).

Subtractive bilingualism refers to the pressure that language minority students experience to replace their first language for the language of the dominant society (Baker & Wright, 2017) in ways that reflect “raciolinguistic ideologies” (Flores & Rosa, 2015). Raciolinguistic ideologies are evidenced in instructional practices that exclude the sociocultural backgrounds of emergent bilinguals for instruction, punish students who utilize the home language during school, and encourage educators and staff to exclusively use the majority language with students for all purposes (Agirdag, 2010; Pulinx, Van Avermaet, & Agirdag, 2016).

Contrastively, the term additive bilingualism challenges the coercive learning conditions of subtractive bilingualism. Cummins (2017) defines additive bilingualism as the situations where “students add a second language (L2) while continuing to develop academic skills in their home language (L1)” (p. 404). In other words, the acquisition of a second language does not replace the first language or culture of the students (Baker & Wright, 2017). Instead, the

maintenance of the native language plus the acquisition of another language is an asset to the educational journey of a student.

This additive bilingualism orientation is utilized in particular as a favorable outcome of middle-class students and private educational settings, where learning a second language is linked to added status and economic advantages. When this happens, the terms prestigious or elitist bilingualism are coined because adding a second language is seen as a “value-added” benefit (Guerrero, 2010). Elitist bilingualism has the characteristics of being voluntary, involving two or more languages for learning, including majority groups, and leading to additive bilingualism (De Mejia, 2002).

More recently, a debate has challenged the traditional additive bilingualism construct for language minority students. For instance, some scholars (Flores & Rosa, 2015; Flores & Schissel, 2014; García, 2009a; Heller, 2007) affirm that bilingualism cannot be defined merely as “one plus one,” as framed in additive approaches or in the “two solitudes” orientation (Cummins, 2007) that conceptualizes the construct of bilingualism as the sum of two monolinguals. García (2009a) advocates for a reconceptualization of bilingualism by including the constructs of recursive and dynamic bilingualism as well as translanguaging. Recursive bilingualism refers to the cases where specific communities reconstitute their ancestral language after having suffered its suppression. On the other hand, the dynamic bilingualism model “acknowledges that children hold different degrees of bilingualism because their families speak different languages or because they have lived and worked across national contexts” (García & Woodley, 2015, p. 133). Bilingualism is not conceived as a linear process but as a dynamic cycle that adjusts to multiple discursive practices. In other words, dynamic bilingualism is transformative because it calls for a critical perspective of language that responds and acknowledges the contexts in which students

are circumscribed by exalting that the languages of emergent bilinguals have the power of promoting change and action in a subtractive school environment. Dynamic bilingualism responds to fixed structures or power and acknowledges the impossibility of neutrality in language (García & Wei, 2014).

In response, Cummins (2017) articulates that additive bilingualism understood as an instructional orientation for emergent bilinguals has never been incompatible with heteroglossic perspectives of bilingualism, and the appearance of conflict relies in ascribing legitimacy or not, to terms such as *home language* and *school language*, both of them denied under a dynamic bilingualism approach (García & Wei, 2014). For Cummins (2017), the major issue with rejecting the constructs of home and school languages is that it brings problematic implications for instructional practice. For example, the impossibility of teaching for language transfer, metalinguistic awareness, or cross-linguistic connections since dynamic bilingualism approaches deny the existence of languages as linguistic entities (Cummins, 2017). To synthesize the dynamic aspect and social justice perspective of dynamic bilingualism approaches, Cummins (2017) suggests to utilize the term active bilingualism/multilingualism and removes the word additive in an effort to avoid monolingual connotations. Therefore an active bilingualism approach endorses

the legitimacy of dynamic heteroglossic conceptions of bi/multilingualism in ways that reinforce the importance of teaching for two way transfer across languages, and highlighting the impact of societal power relations and their reflection in patterns of teacher-student identity negotiation as determinants of the achievement gap between social groups. (Cummins, 2017, p. 420)

Both, active bilingualism/multilingualism or dynamic bilingualism approaches consider the communicative abilities and linguistic repertoires of emergent bilinguals as resources (Ruiz, 1984) in that together they convey meaning across languages through translanguaging.

Translanguaging is defined by Otheguy, García, and Reid (2015) as “the deployment of a speaker’s full linguistic repertoire without regard to watchful adherence to the socially and politically defined boundaries of name languages” (p. 283). Translanguaging includes practices such as code-switching, translation, and interpretation (García, 2014; Lewis, Jones, & Baker, 2012). Translanguaging practices demonstrate how bilinguals utilize their language naturally and authentically to communicate and learn (Cummins, 2017; Musanti & Rodriguez, 2017). Therefore, translanguaging, as a practice of active bilingualism/multilingualism or dynamic bilingualism, exhorts a reconceptualization of bilingual practices as a complex mesh of exchanges that are normal and acceptable.

In addition, translanguaging is a trans-system because it occurs in different social spaces where practices are delimited by the experiences of the individuals, hence its dynamism (García & Wei, 2014). For example, in schools, translanguaging empowers educators as it transforms power relations in ways that replicate the authentic ways in which bilinguals communicate in real life, and hence, do not involve a strict separation of languages (Ortega, 2019; Wei, 2018). As a learning strategy, translanguaging practices can support the development of biliteracy (García & Wei, 2014; Velasco & García, 2014). According to Pontier and Gort (2016), translanguaging as a pedagogy can serve three main purposes. First, as content development, students can learn how their languages inform when presented new content in a different language. Second, as a linguistic development tool, translanguaging allows students to support the use of any of their languages. Third, as a tool for sociocultural integration, translanguaging guides students to

comprehend and communicate with communities native of different languages; thus, it serves as a tool for language brokering (Alvarez, 2014; Orellana & García, 2014). Finally, according to Axelrod and Cole (2018), a peculiar characteristic of translanguaging is that it counteracts the hegemonic and monoglossic effects of socially dominant language over students of minority languages.

The dynamic bilingualism approach is aligned with the purpose and research questions of this project because it acknowledges the social, cultural, and linguistic abilities of Latinos. Furthermore, it capitalizes on the fluidity of languages and the aptness of speakers to adapt their languages to different purposes and contexts. Therefore, a dynamic approach allows observing critically different bilingual practices employed by students to adapt and decide how they use their languages, as linguistic entities, in writing using technology as another medium to convey and strengthen meaning.

To summarize, by understanding the different bilingual approaches in which bilingual students are immersed, one can reflect, understand, and reconceptualize the classroom practices into pedagogies that empower students instead of alienating them. The type of bilingual approach permeates the fundamental choices in the educational journey of students. According to the literature, subtractive approaches do not do justice to the capabilities and needs of linguistic minorities (Cenoz & Gorter, 2013; Chumak-Horbatsch, 2012; Creese & Blackledge, 2010; Cummins, 2007; Gandara & Contreras, 2009; Herdina & Jessner, 2002; Makalela, 2015).

### **Literature Review**

To situate the need for this exploratory study, the literature begins presenting a brief historical description of bilingualism in the United States. After this, special attention is given to the concept of biliteracy and effective pedagogical approaches for emergent bilinguals.

Following the instruction methods is a section on writing for biliteracy. I conclude the literature review with a discussion of research conducted in the field of digital literacies in which multiliteracies pedagogies were applied including studies involving Latino emergent bilinguals.

### **The Legitimacy of Bilingualism**

The linguistic tension in the United States is not a new phenomenon. The United States has always been linguistically rich and diverse. Schmidt (2000) asserts “the dispute over language policies is essentially a disagreement over the meanings and uses of group identity in the public life of the nation-state, and not language as such” (p. 47). That is, political, cultural, and social ideologies have led to tensions between the acceptance and rejection of a language other than English. Positions are still divided with supporters and opponents to bilingual education with a strong tendency to the subordination of minority languages to English. Ruiz (1984) developed three language orientations to explain that language policy and educational aims are influenced by different factors. An orientation of language as a problem perceives the linguistic and cultural practices of ethnic minorities as troublesome (Zúñiga, 2016). For example, for scholars in the field of bilingual education, the label English learner does not conceptualize the full picture of speakers of languages other than English at school as it resembles language as a problem. According to Ruiz (1984) and Skutnabb-Kangas (2000), an orientation of language as a right demands that a native language be acknowledged by members of linguistically diverse communities as a human civil right. Finally, a language as a resource orientation considers that the students’ native language is a useful resource for learning (Santa Ana, 2004). To illustrate, the term emergent bilinguals acknowledges that students utilize their whole linguistic repertoire to develop new emerging languaging patterns (García & Wei, 2014) in two or more languages where language is considered a human right and resource. Throughout this section, I make



references to these language orientations to show how they do not follow a particular order but instead respond to sociocultural, political, and economic contexts (Zúñiga, 2016). Knowing the history of bilingual education in the United States can help to understand the common questions about the legitimacy of biliteracy. Opponents advocate for the instruction of English-only in the classroom, while proponents support the maintenance and acquisition of two or more languages in school. This tension is reflected in events dating from the arrival of European immigrants to the United States. For this group of immigrants, the acquisition of English was as crucial as their native language, and language was considered a resource. In 1694, the first bilingual schools were established in Philadelphia and offered German-English education (Crawford, 2004). These schools prospered without any antagonism until 1750, when Benjamin Franklin took an anti-germanic stance and rejected the propagation of customs, as well as a foreign languages over English following a language as a problem orientation.

Notwithstanding, until 1855, more bilingual schools continued to be opened and offered different languages. For instance, French-English schools were established in Louisiana; Swedish, Norwegian and Danish bilingual education was available in Wisconsin, Illinois, Iowa, North and South Dakota, Nebraska and Washington; while, Spanish was offered in the Southwest, among other languages (Baker & Wright, 2017), as language was considered a resource. During this period, more than 300 Indian languages continued to be utilized and taught by different tribes and settlers where language was also considered a human right.

Between 1855 and 1960 a profusion of repressive linguistic policies took place. During this period, any language other than English was severely restricted in educational settings; all languages of linguistic minorities were considered a problem. For instance, Indian languages were oppressed through a period known as the linguistic genocide of the United States. In this

period, the languages spoken by Native Americans were suppressed, and most of the culture was annihilated through boarding schools whose purpose was the indoctrination and language-learning of English through violent methods (Deyhie & Swisher, 1997). In addition to these measures, across the nation, the Americanization Department of the United States favored the implementation of English-only instruction in the classrooms (García, 1992). This linguistic intolerance had as a consequence a declined interest in learning foreign languages.

This English-only ideology changed in 1957 when the USSR launched Sputnik into space. Suddenly, there was an urgent desire to promote bilingualism as a resource that could lead to an advantageous position in the world; language was considered a resource. At the same time, the Civil Rights Movement took centerpiece in the nation, and issues of inequality, equity, racism, and segregation were passionately discussed. It was then that bilingual education flourished again, and its promotion was supported at the federal and state levels with incentives for schools that offered a foreign language in addition to English (Baker & Wright, 2017). Language learning was considered a human right. Several cases, including *Brown vs. Board of Education*, as well as *Lau vs. Nichols*, contributed to encouraging the fair treatment of bilingual students and resulted in positive outcomes for bilingual education.

This pro-bilingual period of schooling stopped in 1980 and is reflected in our days, with the appearance of English-only movements including California Proposition 227, Arizona Proposition 203, and Massachusetts Question 2, Chapter 386, as well as punitive policies such as No Child Left Behind Act of 2001. Currently, in the 21<sup>st</sup> century, the schools in the United States continue witnessing a rich ethnic and linguistic diversity in their student corpus. The languages spoken by these children vary from state to state. However, Spanish is the language most spoken by emergent bilinguals. According to the U.S. Department of Education (2017), in the 2014-

2015 school year, schools across the nation reported that at least 50 different languages were used as the students' native language. From all languages, Spanish/Castilian held the majority of speakers with over 3.7 million pupils. Furthermore, states such as California, Texas, Arizona, Idaho, Colorado, Kansas, Oklahoma, Missouri, North Carolina, South Carolina, and Washington DC reported serving 80 percent or more Spanish speaking students (U.S. Department of Education, 2017). As a nation, there is a tremendous linguistic potential in the students attending school to become Spanish-English literate. Notwithstanding, according to Rumberger and Tran (2010), nationwide

overall, only about half of English learners receive any form of specially designed instruction to serve their needs, with most students receiving specially designed instruction in English (such as English as a second language) and only about 5% or less receive native language instruction. (p. 92)

Denying and limiting the use of their native language to emergent bilinguals has adverse academic and social outcomes. Academically, a hegemonic view of language influences the normalization of monolingualism through policy and research. Escamilla (2009) explains that theoretical and conceptual frames for bilingual students are deeply rooted in monolingualism approaches. To illustrate, Zúñiga (2016) explains how the efforts of bilingual programs to value bilingualism can be diminished due to the pressure and demands of monolingual assessments and curriculum. In her study, educators seemed to follow a conflicting dichotomy where Spanish language was considered both a problem and a resource. On the one hand, Spanish was perceived by educators as an obstacle to pass a standardized assessment, while at the same time, bilingual practices in the classroom continued to support the students learning following a dual language approach.

The lasting effect of a predominant monolingual approach contributes, in addition to other factors, to Latino emergent bilinguals' failure to complete their education in high school. Latinos' college graduation rates continue being the lowest in comparison to other ethnic groups, such as White, Asian, or African-Americans (Gandara & Contreras, 2009). Furthermore, the unequal status of languages in the pedagogical practices has a direct impact on the students' identity. Several scholars (Baker & Wright, 2017; Fu, 1995; Gandara & Contreras, 2009) have written about the negative perceptions that linguistic minorities construct around their native language and culture when immersed in subtractive bilingual programs.

In contrast, Cummins and Early (2010) conducted case studies of identity text construction and found that creative work by linguistic minority students in the form of collaborative inquiries, personal narratives, dramatic plays and multimodal performances are effective to positively negotiate the students' identities. Scholars like Anzaldúa (2007) have reflected on the resistance that bilinguals exert through language use when confronted with harsh realities. For instance, Anzaldúa describes how Chicanos created their own "secret language" to preserve their language. She explains how Chicanos speak many languages, such as standard English, working class and slang English, standard Spanish, standard Mexican Spanish, North Mexican Spanish dialect, Chicano Spanish, Tex-Mex, and Pachuco. Linguistic minorities have strategically utilized language to deny or resist any affiliation to a standard way of seeing and speaking the world.

To conclude, this section explains how the promotion or exclusion of languages other than English in education obeys to social, cultural, economical, and political circumstances. As a nation, there is a legitimate reason to explore and promote the maintenance of the students' native language as a basic human right (Skutnabb-Kangas & Phillipson, 2017). The history of the

United States shows that bilingual education responds to a dynamic dichotomy where efforts to repel and maintain education in the students' native language coexist.

This study posits itself within the efforts of other scholars to promote equitable learning in two languages, English and Spanish. This study follows an orientation of language as a human right and a resource, particularly in the 21<sup>st</sup> century where bilingualism and technology permeates most spheres of society including education; therefore, the opportunities to explore how students use their linguistic repertoire in authentic, current, and meaningful circumstances are a necessity. In the following section, I will address the seminal work of scholars around biliteracy and biliteracy development that posit language as a human right and a resource.

### **Biliteracy**

The concept of literacy has evolved over time to adjust to the needs that students require to successfully learn the sociocultural abilities needed to communicate, interact, and transact in the world. From a traditional psychological perspective, literacy refers to the mental abilities of reading and writing. However, according to Gee (2010), literacy “needs to be understood and studied in its full range of contexts, not just cognitive but social, cultural, historical, and institutional as well” (p. 10). In other words, literacy is more than a mental ability, rather a sociocultural process that allows human beings to convey meaning through language circumscribed in specific contexts.

In the same way, biliteracy definitions have adjusted to contemporary standpoints and broader conceptualizations that include the social, cultural, and linguistic aspects of the process to convey meaning using the speaker's own experiences and ways of knowing and doing (Reyes, 2001; García et al., 2007). Biliteracy defined by Gort and Bauer (2012) is a complex process that includes a “variety of literacy practices and transactions with two literate worlds to create

knowledge and transform it for meaningful purposes” (p. 2). More recently, Genesee (2015) asserts that bilinguals usually utilize each language to have different purposes, functions, and as a support for different uses. To illustrate, da Silva Iddings and Reyes (2017) longitudinal study promotes equitable biliteracy education for linguistic minority preschoolers. The study consisted of a holistic model that involved the school community in the development of literacy activities that utilized the students’ native language and funds of knowledge. The emphasis of biliteracy development was nurtured within the community’s linguistic, social, and cultural practices, and therefore, it surpassed the basic activities of learning how to encode and decode.

Furthermore, bilingual students develop the ability to decide what language to utilize based on the situation and speaker. Baker and Wright (2017) define this ability as the complementarity principle, which explains that bilinguals take into consideration the context, such as home, school, or work to use either of their languages as befitting of the situation. For example, Garrity, Aquino-Sterling, and Day (2015) demonstrated that in bilingual situations where caregivers promoted language separation practices (one parent-one language) when preschoolers were asked a question in one language, they would respond in the language that fit the specific situation without necessarily following the language in which the question was posed. Furthermore, Gort (2019) explains that the different competencies that bilinguals display in each language are normal, expected, and always developing. The degree of bilingualism and language repertoire of bilinguals grow and become more sophisticated over time. In their qualitative study, Zapata and Laman (2016) found that regardless of the bilingualism degree of elementary age students, they can achieve high levels of academic attainment as reflected in bilingual writing practices that were constructed with the collaboration of teachers and families.

Equally important, scholars (Beeman & Urow, 2012; García, 2009a; Grosjean & Byers-Heinlein, 2018; Reyes, 2012) strive to explain that the development of biliteracy is different from the development of literacy of monolingual students. According to Grosjean (2010), the backgrounds and behaviors of monolingual and bilingual students are entirely different; therefore, their language development cannot be expected to develop at the same rate.

Accepting that teaching for biliteracy is different than teaching for monoliteracy is crucial because ignorance or lack of attention to this area can result in practices that are not optimal for bilingual students (Gort, 2019; Grosjean, 2010; Kabuto, 2011). To illustrate, a common barrier to biliteracy is the lack of knowledge and communication among parents and educators who assume that children are confused because of the exposure to two languages. This misconception was evident in the trajectories of young children with several linguistic backgrounds (Spanish/English, German/English, Turkish/English and Chinese/English) enrolled in schools in the United States (Gort, 2012). In consequence, parents denied bilingual education to avoid what they perceived could be an educational delay due to the students' native language. In the following section, I will discuss how biliteracy develops and effective practices for biliteracy instruction.

### **Biliteracy Development**

Scholars in the field identify two predominant views—fractional and holistic, in which bilingual individuals become biliterate. The fractional view separates languages as independent entities and according to Reyes (2012) “considers bilinguals as developing parallel linguistic competence in both languages and simultaneously” (p. 308). Bilinguals are perceived as two monolinguals in one person. On the other hand, a holistic view understands biliteracy development as a new and complex linguistic repertoire product of two languages (Dworin,

2003; García, 2009b). In line with a holistic view of biliteracy, Grosjean (2016) proposes to understand biliteracy as part of a continuum and not a linear procedure. That is, biliteracy is understood as an ongoing, flexible, and dynamic process that bilinguals experience.

When analyzing or discussing language and literacy, bilingual educators face many dichotomies, such as first language and second language, oral language and written language, speaking and listening, and reading and writing. According to Reyes and Hornberger (2016), often times the realities of students cannot be analyzed with analytical ending points, instead each individual biliteracy development is unique. To understand how biliteracy develops Hornberger (2004) proposed a continuum (see Figure 1) where bilingual trajectories can be analyzed by positioning students within the spaces in between two ending points in a continua model of biliteracy development. This model represents the complexity, intersections, and ranges among different aspects of the biliteracy process within four different dimensions that research recommends to take into account to create a learning environment for emergent bilinguals: context, development, content, and media (Hornberger & Link, 2012). In the following paragraphs, I will explain briefly each one of those components.

The first dimension in the continua of biliteracy focuses on the context to understand where literacies are learned. Biliteracy can happen in micro or macro settings that can either accept or reject the globalization of languages (English as universal) or promote the language development of linguistic minorities. It focuses on the conceptions of the world as monolingual or bi(multi)lingual contexts.

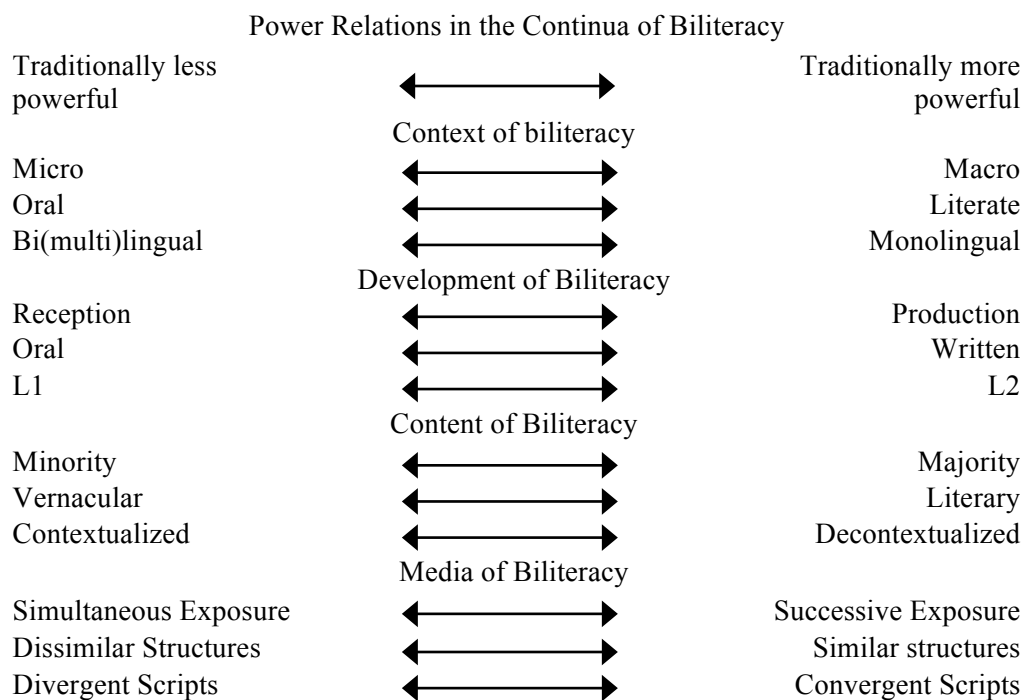
The next component involves the development of biliteracy to understand how language and literacies are used and learned. To illustrate, an emergent bilingual can be exposed to



learning that emphasizes the reception or production of languages, moving from oral to written skills and in their first or second language.

The third component studies the content of biliteracy. Languages can be classified as a minority or majority, as in, language that can be vernacular or literary and learned in contextualized or decontextualized contexts. This section focuses on the language, culture, and identity dilemma.

The last component focuses on the media of biliteracy or the different forms of multiliteracies. It positions the standard vs. the non-standard forms of languaging through simultaneous or successive language exposure. This exposure can happen through traditional or multiple communicative media available.



*Figure 1.* Continua Model of Biliteracy Development (Hornberger, 2004)

The continua model of biliteracy development is applicable to any bilingual trajectory and any language. The model has been especially utilized internationally in situations where the contexts of biliteracy reflect tensions between languages, as one language holds higher status

than the other (Hornberger & Skilton-Sylverster, 2000). For example, Hornberger and Kvietok Dueñas (2019) utilized this continua model in an ethnographic-monitoring engagement with Kichwa educators in the Peruvian Amazon to analyze the tensions between indigenous contexts and postcolonial language instruction.

Additionally, Reyes (2012) conducted a literature review around biliteracy and identified an extension to the continua of biliteracy. Reyes proposes to include emergent bilinguals within a range of biliteracy development from simultaneous to sequential bilinguals. A simultaneous bilingual develops biliteracy from infancy to five years old by being exposed to two languages or more (Baker & Wright, 2017). A simultaneous bilingual may not have a dominant tongue, and the linguistic features, vocabulary, and skills are divided among the languages that he possesses. However, they are able to exhibit the same language development milestones as monolingual children when regular and rich exposure to both languages is provided (Genesee, 2015). In contrast, a sequential bilingual is a person older than six years old who develops solid proficiency in their native language before acquiring a second language. Regularly, a sequential bilingual possesses a dominant native language and the majority of his language knowledge and skills are showcased in his dominant language. Both types of bilingual learners have the potential to develop literacy in two languages given supportive contexts (Gort & Bauer, 2012). This view of sequential or simultaneous biliteracy, needs to be carefully considered, because an erroneous conception can hold that each language develops separately, even if simultaneously, and as consequence, students can experience a teaching approach under a monolingual perspective (García et al., 2007). In schools, the difference between sequential and simultaneous bilinguals is also exemplified in the different types of dual language programs. For instance, a 50:50 dual language program promotes simultaneous bilingualism. That is, theoretically students receive the

same amount of English and Spanish instruction. Whereas, an 80:20 dual language program supports sequential bilingualism where students receive most of the instruction in the dominant language and progressively increase the amount of instruction in their second language as they change to upper grade levels.

In sum, this section explains how the conceptualization of biliteracy keeps evolving over time from simplistic to broader understandings. The type of understanding of biliteracy in schools defines the pedagogical approaches that emergent bilinguals receive. In the same way, the biliteracy development approaches adopted in schools respond to fundamental interpretations of biliteracy.

In this study, biliteracy development is interpreted from a holistic framework. It is understood as part of a continuum where different dimensions intersect. Biliteracy encompasses the growing ability of literate competencies in two languages and takes into consideration the multilingual and pluricultural world in which bilinguals transact. According to García, Kleifgen, and Falchi (2008), most emergent bilinguals are born in the United States, and therefore, they are exposed to Spanish and English from birth. That is, they are simultaneous bilinguals. Therefore, in this study simultaneous and sequential bilinguals are factors to consider when discussing the linguistic repertoire of students.

### **Biliteracy Instruction**

The success of emergent bilinguals concerning the context of school relates to the programming, pedagogical, and curricular decisions in which emergent bilinguals are immersed. That being said, pedagogical practices for emergent bilinguals can be framed into two perspectives—the psycholinguistic and sociocultural (Reyes, 2012). A psycholinguistic perspective focuses on studying the acquisition of particular language features, such as syntax,

grammar, or lexicon of emergent bilinguals and compares their results against monolingual speakers. A psycholinguistic approach to biliteracy emphasizes the memorization of rules, isolated phonological and syntactical practices, and a basic level of comprehension formulated in the repetition of information from a text. A sociocultural perspective takes a constructivist stance where interactions and social context take centerpiece in the development of biliteracy. That is, a sociocultural view takes a more comprehensive approach to biliteracy that includes all uses of language, in different settings, and under various cultural and social factors (Reyes, 2006). Furthermore, under a sociocultural perspective, scholars (Beeman & Urow, 2012; Escamilla et al., 2014) state that biliteracy education requires effective planning that allows the use of two languages during academic instruction and strategies that lead to language transfer. Specifically, research has concluded that teaching emergent bilinguals to read and write in Spanish and English promotes both biliteracy and higher levels of reading achievement in English (August & Shanahan, 2006; Genesee, Lindholm-Leary, Saunders, & Christian, 2006; Goldenberg, 2008). While the language of instruction arguments have established that the use of a child's non-English language is a benefit in learning to read or write, these arguments are mainly based on sequential bilingualism paradigms (Escamilla et al., 2014). In biliteracy approaches, students learn to read and write in both languages at the same time. If used with fidelity and quality across grade levels, a biliteracy approach can enhance and accelerate literacy development in both languages.

Furthermore, Beeman and Urow (2012) suggest building metalinguistic awareness through cross-linguistic connections. That is, emergent bilinguals can become aware of the language features, commonalities, and differences of each language through a contrastive analysis where particular linguistic features, such as phonological patterns, morphology, syntax,

and cultural-linguistic norms, are compared side-by-side. In specific, writing is a linguistic area that has great potential for exploring similitudes in the two languages (Escamilla et al., 2014).

The language features that are pertinent to a language deem direct instruction.

Effective strategies, such as preview-view-review (Freeman, Freeman, & Mercuri, 2018), develop biliteracy by using the students' native language. The preview-view-review strategy allows emergent bilinguals to preview academic content and skills in a language that they understand, their native language. Then students receive formal instruction (view) during the discipline block in their second language. After this, students review in their first language essential skills that were previously taught. The preview and review components are usually delivered during the language arts period.

In the following section, I will provide a discussion around writing and biliteracy. This discussion is important since the focus of this project is on biliteracy development through multimodal writing.

### **Writing for Biliteracy**

The research around bilingual writing is small in comparison to the solid body of research focused on monolingual writing (Williams & Lowrance-Faulhaber, 2018). Furthermore, several studies focused on the writing of bilingual students center the study of the English writing development of children without paying attention to the Spanish writing component or biliteracy. That is, within the studies in bilingual writing, there are studies that follow a monoglossic design where the majority language, English, takes centerpiece.

For the purpose of this study, I include literature about writing and biliteracy in English and Spanish of emergent bilinguals. Studies conducted with bilingual students with the aim of studying the development of English literacy only were excluded. Most of the studies involving

writing and biliteracy followed qualitative approaches, favoring case study and ethnography designs. Understanding the relation between writing and biliteracy is important not only because it can highlight best practices and recommendations for educators (Willians & Lowrance-Faulhaber, 2018) but because a comprehensive awareness of writing in bilingual students can contribute to better learning gains and academic outcomes for emergent bilinguals throughout their educational journey.

The literature is organized under the following categories: 1) language of instruction and bilingual writing, 2) students' writing cognizance, 3) bilingual writing strategies, 4) pedagogies supporting bilingual writing, and 5) assessment of bilingual writing.

### **Language of Instruction and Bilingual Writing**

The following studies aimed to study the writing development of students apropos to language of instruction. Carlisle and Beeman (2000) conducted a longitudinal study to analyze the biliteracy acquisition of two cohorts of Spanish-speaking students in bilingual classrooms. The first cohort was placed in an early-exit bilingual program that included 80% of Spanish instruction in kindergarten and 20% of Spanish instruction once in first grade. The second cohort included equal amounts of Spanish instruction, 80% in kindergarten and first grade. The students developed English and Spanish texts that were later analyzed. The findings concluded that in English both cohorts received similar scores, but in Spanish, the second cohort had higher scores. Therefore, researchers deduced that the students' native language supported the biliteracy development of the second cohort. Similarly, Manyak (2006) examined the biliteracy development of bilingual students placed in English immersion settings. In the study, bilingual teachers were allowed to code-switch, provide Spanish-language texts, and conduct translations of English written messages to Spanish, in addition to the students' opportunities to write in

English and Spanish during language arts. The teachers indicated that regardless of the inclusion of the native language during writing instruction, the students did not achieve the level of biliteracy desired. Manyak (2006) concluded that the scarce instruction in the students native language could not ameliorate the negative impact that English-only instruction had on the students' bilingual writing and recommended to focus more instruction in the students' native language. Another study conducted by Reyes (2006) supported the importance of the context and language use. In her research, she studied the bilingual writing that preschoolers constructed. In addition to the bilingual program at school for preschoolers, the community where the study took place was mainly Hispanic. Reyes found that the community and school members took an active role in the development of biliteracy through writing. Students were given a choice to write in the language of their preference to address family members, educators, or other members of the community. The students' written exchanges reflected the bilingual transactions between their literate worlds. In this case, although the languages of instruction were English and Spanish, the students' language choice for the writing directed to their school teacher was English; whereas, the language of choice for their families was Spanish.

In sum, the quality and quantity of the students' native language utilized during instruction matters. If the aim is for biliteracy, then the time and content allocation of school programs must reflect that goal. Furthermore, the role that educators and community members have in the development of biliteracy is important as students are able to participate in social interactions aware of the language of choice of the intended audience.

### **Students' Writing Cognizance**

At the preschool levels, bilingual students demonstrated knowledge about concepts of print and differentiated between drawings and writing using letters in both languages (Snow,

Eslami & Park, 2015; Soltero-Gonzalez & Butvilofsky, 2016). Furthermore, in terms of biliteracy, there are studies that demonstrate how students utilize different orthographies to represent writing in English and Spanish. For example, Reyes (2006) shows how students utilize upper case letters to convey messages in English and lower case letters to write in Spanish. In her study, when children were asked to read aloud their writing, they mentioned English words when reading their words written exclusively with upper-case letters, and provided Spanish words when reading words written with lower-case letters. Similarly, Soltero-Gonzalez and Butvilofsky (2016) observed that preschoolers utilized cursive writing for English terms and palmer-writing for Spanish.

In addition, bilingual first grade students demonstrated knowledge of written conventions for each language such as the use of accents and apostrophes (Gort, 2006; Manyak, 2006) or cultural references (Gort, 2012). Bilingual students prove that they are able to distinguish the fine nuances of language and identify the purpose and context of it, adapting their language to fit specific people and circumstances.

In sum, pre-school bilingual students understand the concepts of print in both languages. Furthermore, students at early ages are aware of the sociocultural principles of each language and are able to apply proper use of language when addressing different people from different contexts and in different languages. They are able to preserve cultural reference in writing.

### **Bilingual Writing Strategies**

There is a misconception that the native language of bilingual students can affect negatively the development of a school language (Escamilla, 2007). In the literature, there were examples of how bilingual students strategically and effectively utilized their languages, Spanish and English, strategically when learning both languages. For instance, students used



phonological Spanish knowledge, in particular diphthongs, when writing English vowels (Raynolds, Uhry, & Brunner, 2013). In the same way, some kindergarten students relied on their understandings of letter-sound relationships in English to spell Spanish words with letters, such as *v* and *b* and *ll* and *y*. Students utilized their full linguistic repertoire to problem solve English or Spanish sounds with which they were not familiar.

As students move forward in their education, the complexity of the bilingual strategies increased. Regardless of the language of instruction the students receive during language arts, children utilize their knowledge of phonics in English or Spanish to write bilingual texts. For example, Duran (2017) found that a group of first grade students who only received English phonics instruction was able to create a Spanish written text. In the same way, students who received exclusively Spanish language arts instruction were able to apply their Spanish knowledge to spell words in English (Bauer, Presiado, & Colomer, 2017; Gillanders, Franco, Seidel, Castro, & Mendez, 2017; Pendergast, Bingham, & Patton-Terry, 2015; Reyes & Azuara, 2008; Soltero-Gonzalez & Butvilofsky, 2016). This means that students experience the emergence of spontaneous biliteracy. Although several words were not spelled conventionally, the students demonstrated that they could apply their linguistic knowledge acquired in one language when writing in another one.

In addition to phonemic principles, bilingual students utilize oral language as a strategy to support their writing. Students use oral language during the prewriting stages; for instance, students orally brainstorm and discuss what they want to write about (Bauer et al, 2017; Gort 2012). Also, when facing difficult to spell words, students utilize oral language to analyze and match the sounds in words (Bauer et al., 2017; Yaden & Tardibuono, 2004). In addition, students

utilize oral language to provide meaning to visual texts (Soltero-Gonzalez, 2009) and developed oral discussions around similarities and differences among languages (Gort, 2012).

In their study, Soltero-Gonzalez, Escamilla, and Hopewell (2012) identified five essential bilingual writing strategies including phonetic transfer, syntactic transfer, intrasentential and intersentential code-switching, punctuation transfer, and loan words. Similarly, Gort (2012) found that all bilingual children utilized code switching as a metalinguistic resource to compose English texts.

More recently, scholars (Velasco & García, 2014) have focused on the potential of translanguaging as a writing strategy for bilingual students. Canagarajah (2011) explains that although translanguaging practices occur naturally, educators should plan and foster formal practice of translanguaging through writing experiences. In response, Duran (2017) created an audience-focused, genre-based writing curriculum where bilingual students were allowed the language of their choice based on the intended audience. Therefore, students were able to write in English, Spanish, or both to respond to the linguistic preferences of their audiences. Duran (2017) recommended audience-based writing approaches to empower bilingual children and to exhort them to utilize translingual repertoires. Furthermore, Bauer, Presiado, and Colomer, (2017) examined the biliteracy development of kindergarten bilingual students in a two way dual language setting using strategic pairing among students. The students were assigned a bilingual pair, and together they developed oral and written stories using metalinguistic skills taught by the classroom teacher. The students utilized their linguistic repertoires in meaningful ways as they helped each other to compose their own writing. According to the researchers, this translanguaging experience allowed the students to have positive biliterate writing outcomes. The study of Axelrod and Cole (2018) focused in a mixed grade level before-school program that

allowed students to translanguage in their Spanish writing as they translated English newsletters and developed a bilingual multimedia presentation for a school event showcasing aspects of their lives as the unique theme. According to Axelrod and Cole (2018), the students felt comfortable taking risks in their writing and engaged positively in collaborative writing with their peers and facilitators. Students drew on their full linguistic repertoire as they constructed their texts relying on oral language skills in Spanish and English phonemic awareness. In consequence, the authors argued that the children developed metalinguistic awareness and spontaneous biliteracy.

In summary, bilingual students have an understanding about phonics, syntax, and grammar of each language and are able to transfer those concepts from one language to the other. Bilingual students capitalize their full linguistic repertoire to problem solve and compose texts in English, Spanish, or both. Students see their languages as a resource (Ruiz, 1984) as they demonstrate that they are capable of writing in both languages. Furthermore, the collaboration of students to construct bilingual texts is paramount and particularly effective when English-speakers and Spanish-speakers are grouped.

### **Pedagogies Supporting Bilingual Writing**

In their literature review, Williams and Lowrance-Faulhaer (2018) identified that specific curriculum, literacy approaches, as well as use of the students' native language during instruction were supportive in the development of the students writing in English and Spanish.

In terms of curriculum, some scholars have focused on analyzing both district-mandated curriculum and researcher's proposed curriculum. For instance, Weber and Longhi-Chirlin (2001) found that basal reading series, a district-mandated curriculum, which engages students in choral readings, phonics, and development of syntactic structures, did not have positive outcomes for bilingual writers. The researchers observed that basal reading series did not provide

enough opportunities for authentic and meaningful writing, and therefore students demonstrated low bilingual writing performance. Another study (Raynolds et al., 2013) focused on evaluating the effectiveness of the phonics and word study curriculum *Foundations*. The curriculum was mandated by the school district and utilized decontextualized direct instruction to teach letter-sound correspondences. The researchers found that bilingual students were able to utilize short-vowels in a standard way even without having formal instruction in those sounds. Essentially, they developed spontaneous biliteracy. However, according to the authors bilingual students did not spell conventional words that included long-vowel phonemes. Notwithstanding, this study fails in acknowledging the accurate approximations of bilingual students when using diphthongs to represent long vowels. For example, the diphthong EI to denote the long A vowel. Instead, the study focuses on accurate phonological representations, missing the opportunity of utilizing the language of the students as a resource. The study could have mentioned as an implication for teaching the instruction of vowels through cross-linguistic activities that can foster metalinguistic awareness. Instead, Raynolds, Uhry, and Brunner (2013) recommended direct phonemic instruction in a decontextualized way to teach the spellings of words that are not existent in the students native language.

In contrast, Matera and Gerber (2008) wrote a curriculum, *Project Write!*, for preschoolers. The aim of the study was to develop concepts of print by contextualizing the instruction with authentic language and literacy activities that involved collaboration among students and the use of different language domains. For instance, the study describes how the students developed a TV show where they showcased the concept of print learned through written sentences. The writing gains of the students were statistically significant in English and Spanish writing when compared to a control group. In the same way, Lee, Mahotiere, Salinas,

Penfield, and Maerten-Rivera (2009) found that science content integration, writing, and sheltered instruction for bilingual students had positive outcomes in terms of English writing. It seems that for bilingual students, the alignment and purposeful merge of content with language, in addition with opportunities for meaningful and authentic writing can foster better bilingual writing outcomes than those obtained through traditional curriculums aimed at monolingual students. Interdisciplinary units of inquiry (Beeman & Urow, 2012; Freeman, Freeman, & Mercuri, 2018) allow for the teaching of academic content, knowledge, and skills, while at the same time, they promote the development of biliteracy in a natural context and across all disciplines of study. A valid unit of inquiry will support several reading and writing activities in both languages.

There are contradictory findings about a balanced literacy approach for bilingual students. A balanced literacy approach includes the use of oral language development, independent, shared and guided reading, reading and writing workshops, conferencing periods, whole group/mini lessons, and meaningful literacy activities (Williams & Lowrance-Faulhaber, 2018). Some scholars (Barone, 2003; Flynn, 2007) considered that balanced literacy fostered the development of writing as reflected on high performance on standardized tests (Flynn, 2007) or exceeding grade level benchmarks in English (Barone, 2003). Others (Falchi, Axelrod & Genishi, 2014) considered that balanced literacy is not the best approach for bilingual students because it provides narrow definitions of literacy, while at the same time, it does not acknowledge the rich linguistic repertoires of bilingual students. To illustrate, a student engaged in the development of writing can utilize oral language and writing in addition to visual elements, such as drawings. Therefore, Falchi, Axelrod, and Genishi (2014) argue that when those compositions are evaluated, only the writing component of a text is considered during

benchmarks, leaving aside other modes of expression and the writing process that the student experienced, which can result in the misplacement of students in remedial programs.

There seems to be consensus that in order to develop bilingual writing, the curriculum of students must include consistent writing opportunities that are intentional and authentic. Furthermore, the integration of content, literacy, and language seem to have positive outcomes in the writing of bilingual students. This study utilizes pedagogical approaches that support the development of bilingual writing and foster metalinguistic awareness, such as interdisciplinary units of study, and translanguaging.

### **Assessment of Bilingual Writing**

A traditional approach in schools to evaluate the students' writing follows a parallel monolingualism framework, which asserts that all children have an identifiable native language and aim for the separation of languages with the goal of avoiding "confusing" the students (Hopewell & Escamilla, 2014). Under this premise, a strict separation of languages is utilized when analyzing or assessing the students' writing. Any writing ability or language approximation involving the influence of a language other than English is considered an error. According to Escamilla et al. (2014), when assessing or analyzing the writing of emergent bilinguals, teachers need to take a holistic approach in order to obtain more accurate information that can lead to better instruction. This holistic approach challenges the traditional perceptions about the literacy development and evaluation of linguistically diverse students. Furthermore, Butvilofsky, Hopewell, Escamilla, and Sparrow, (2017) explain that in order to provide a trajectory towards biliteracy, it is necessary to evaluate the literacy of bilinguals in both languages.

In the literature review, the writing of bilingual students is assessed either by looking at the final writing product (Butvilofsky, Hopewell, Escamilla & Sparrow, 2017; Escamilla, 2006; Hopewell & Butvilofsky, 2016; Soltero-Gonzalez & Butvilofsky, 2016) or by looking at the writing process (Axelrod & Cole, 2018; Gort, 2006; Moll, Saenz & Dworin, 2001; Velasco & García, 2014). The assessment instruments to evaluate the bilingual writing of the students included the writing levels of Ferreiro and Teberosky (1982) to analyze Spanish writing, the model of bilingual writing of Gort (2006), as well as the paired literacy approach of Escamilla et al. (2014) to analyze both languages.

At the preschool level, scholars seem to favor the work of Ferreiro and Teberosky (1982) to analyze the Spanish writing of bilingual students. For instance, Yaden and Tardibuono (2004) examined the texts of preschoolers and found developmental patterns using the five writing levels of Ferreiro and Teberosky (1982) proposed. They found that children meaningfully employed their full linguistic repertoire to read and discuss their unconventional writing. Another study (Soltero-Gonzalez & Butvilofsky, 2016) utilized pre and post writing tasks in both languages to assess the pre-scholars biliteracy development and compared their analysis with the work of Ferreiro and Teberosky, as well. The findings pointed that the progression in writing levels in both languages was similar, even without formal instruction in English. Children demonstrated an emergence of spontaneous biliteracy. Both studies highlight the importance of analyzing the students' writing with a bilingual lens, taking into consideration bilingual approximations as such, and not as mistakes or deficiencies in the students' bilingual writing.

In addition, Gort (2006) developed a preliminary model of bilingual writing that explained how the translanguaging practices of bilingual students differed by degrees of language dominance and age. The model included strategic codeswitching, positive literacy

application, and interliteracy (see Appendix A). This instrument model was developed after conducting multiple case studies in an elementary class that followed a dual language bilingual program. The major contribution of importance of this framework is that it explains how, as students gain competency in multiple languages, the written conventions become more standard in each language.

Other scholars analyzed the bilingual writing of students by asking students to respond to different writing prompts per language (Butvilofsky et al., 2017; Escamilla et al., 2014) and analyze the final products using a literacy squared approach. The findings of both studies indicated reading and writing gains in English and Spanish across the years of the studies. The findings have been used to support paired literacy instruction for bilingual students.

The literacy squared writing approach utilized in Butvilofsky et al., (2017), takes a holistic bilingualism approach and acknowledges that bilingual students perform some linguistic task better in one language than in another based on different factors. The co-existence of two or more languages in the brain creates a unique mesh of knowledge that biliteracy cannot be measured or understood by strictly separating the languages (Hopewell & Escamilla, 2014). Therefore, the students' bilingual experiences are analyzed together for cross-language comparisons as part of a biliteracy development.

The literacy squared writing rubric (Escamilla et al., 2014) offers an alternative to traditional assessment methods. The implementation of the rubric to assess the biliteracy development of the students requires educators to position the English and Spanish writing samples of students side by side. Then, the first part of the rubric focuses on the evaluation of content, structure, and spelling using a cumulative rubric for both languages. That is, there is a list of indicators that students experience prior to score the highest level of the rubric. This data



provides specific information about the visible abilities of the students in each language for those areas. Furthermore, the rubric provides a section for bilingual strategies where teachers can identify the multiple bilingual practices that students employ to convey meaning in Spanish and English. The bilingual strategies are defined across the dimensions of academic language (Gottlieb & Ernst-Slavit, 2014) at the discourse, sentence, or word level and with the influence from Spanish to English, English to Spanish, or bidirectional.

The literacy squared approach (Escamilla et al., 2014) is suitable for this project because my research questions involve the biliteracy development of students, as well as the analysis of their full linguistic repertoire utilized in their multimodal writing. The participating students in this project developed English and Writing samples; therefore, in line with a dynamic bilingualism approach, a holistic instrument is needed to accurately observe and understand the linguistic abilities of the students. In addition, a literacy squared writing approach (Escamilla et al., 2014) is utilized to ground the design of the writing experiences and to analyze the biliteracy development of the students.

In conclusion, the writing process of bilingual students differs of that of monolingual English speakers. Bilingual students use their languages as a resource (Ruiz, 1984) and rely on the tools and linguistic skills acquired in each language and across languages to compose texts in English or Spanish or both. Furthermore, students apply bilingual strategies that can support the emergence and development of spontaneous biliteracy (Gort, 2006; Soltero-Gonzalez & Butvilofsky, 2016). The quality and quantity of the students native language utilized during instruction matters. If the aim is for biliteracy, then the time and content allocation of school programs must reflect that goal. The pedagogies and curriculum utilized also influences the writing outcomes of the students, according to the literature it is of importance to plan

meaningful writing opportunities for students. Finally, the instrument tools utilized to assess the bilingual writing of students need to be inclusive of the students' linguistic realities and should consider, capitalize, and provide holistic data that effectively informs bilingual writing instruction. In the following section, I will discuss literacy but in terms of digital literacies to illustrate how they can supplement the biliteracy development of students.

### **Digital Literacies**

A comparison of traditional literacies can help to conceptualize digital literacies. According to Pennycook (2001), traditional literacies emphasize the acquisition of knowledge and skills needed to decode and encode reading and writing within a set of predetermined rules in a monomodal format and static linguistic elements. By contrast, digital literacies are defined as “social practices that are fluid, sociocultural, multimodal, and dynamic” (Chen, 2013, p. 143) where participants learn technological skills and reasoning, as well as specific language utilized in communities (Gee, 2012). That is, digital literacies are different from traditional literacies in that the former capitalizes on the social and multimodal aspect of the learning process and are mediated through Internet and technology (Chen, 2013; Elola & Oszkoz 2017; Gee, 2012).

Furthermore, Elola and Oszkoz (2017) state that digital literacies intersect with other forms of literacies such as computer literacy which goal is to ensure that users can mechanically use technology efficiently; information literacy that focuses on browsing and selecting reliable data; and media literacy that promotes critical and reflective reading to identify the intended messages and ideologies in media representations.

In the 21<sup>st</sup> century, schools advocate for the development of both traditional and digital literacies. According to Karchmer, Leu, Mallette, and Kara-Soteriou (2005), a genuinely literate, or biliterate student, needs to effectively utilize digital devices and become proficient in both

paper-based and screen-based literacy. Some studies describe the type of products that a digital literate student should be able to utilize and create. For instance, Barone and Wright (2008) assert that innovative text in the format of multiple media, non-linear reading, and writing with virtual audiences, such as blogs or websites, are part of the minimum expectations in which students should be engaged. Furthermore, students should locate information on the Internet and on search engines, communicate using e-mails, texts, and chats, as well as use different software and word-processing programs (International Society for Technology in Education, 2007).

Notwithstanding, it is important to acknowledge that the fact of including a digital instrument does not make a digital literacy experience more productive than a traditional literacy practice. A digital literacy experience can be as mechanical and superfluous as a worksheet given in some forms of traditional literacy. That is, according to their complexity, rigor, and relevance digital literacies experiences can fall into two grades: low or premium (Gee, 2012). Low-grade digital literacy offers activities that do not require much thinking but memorization, as they do not contextualize the use of language, for example drills exercises, isolated language practices, and mechanic repetition of facts. In contrast, a premium-grade digital literacy experience requires the use of more academic and specialized language, including the vocabulary, structure, and discourse formats of academic content areas, such as science, social studies, and mathematics. A premium-grade digital literacy experience uses academic language, media production, “citizen science, and knowledge in competition with experts via collaborative problem-solving communities on the Internet” (Gee, 2012, p. 3). A premium-grade digital experience capitalizes on the academic component of language, as well as a constructive perspective of learning where collaboration takes centerpiece.

From a critical perspective, the public access that the Internet provides to websites in many languages grants the understanding that all languages are important and that they serve different functions (Beacco & Byram, 2003). That is, languages that in the past were reserved to private domains are not available to all audiences, emphasizing the variability, hybridity, and sense-making process of literacy practices today (García et al., 2007). This perspective of linguistic equality is important for emergent bilinguals in schools because, as García, Bartlett, and Kleifgen (2007) assert,

immigrants use their many languages not only in ethnolinguistic communities, but also in more public spaces such as the web, and to communicate not only with their own local community, but also with others who speak their languages worldwide, and who do so, because of contact with other languages, in very different ways. (p. 208)

That is, digital literacies represent an opportunity to explore when teaching emergent bilinguals so that broader forms of reading and writing are incorporated such as texts accompanied by images, sounds, or video (Elola & Oskoz, 2017). Furthermore, these new digital literacies seem to be promising because they can engage and motivate bilingual students (Erhel & Jamet, 2016; Gee, 2012; Warschauwer & Ware, 2006); allow for a more variable, hybrid, dynamic, and flexible language learning experience (Elola & Oskoz, 2017; García et al., 2007) and reflect a new way of meaning making process of literacy practices in the 21<sup>st</sup> century.

### **Use of Digital Literacies in the Content Areas and for Language Acquisition**

In the fields of science, social studies, and language arts, there are examples of premium-grade (Gee, 2012) digital literacies. The activities promote higher order thinking skills, and activities revolve around language, content, and digital knowledge. For example, Pandya (2012) explores the use of student video recordings in autobiographies that are later translated into the

development of media products to assess oral and writing skills, while Gennari et al. (2017) utilize student generated video games to assess the students' subject matter understanding, as well as language acquisition in the context of traditional fairy tales.

By contrast, some approaches utilized in math seemed to follow a low-grade (Gee, 2012) digital literacy approach where drills are emphasized. Giannakos (2013), as well as Nuñez-Castellar, Van Looy, Szmalec, and De Marez, (2014), utilize an online game for students to memorize basic facts and practice algorithm development. Students did not create any product nor display any linguistic development. The activity consisted in practicing addition and subtraction facts in an animated screen. The assessment results were provided in the form of number of correct facts and the amount of time required for the students to respond. Therefore, the use of digital literacies in these projects seemed to be applied as a tool to promote students' motivation in an activity that is usually not enjoyed by students (Gianakos, 2013). In other words, the activities are focused at a basic and mechanical level. Similarly, the use of digital literacies for language acquisition seemed to conceptualize literacy as a set of isolated skills. For example, Labbo and Reinking (2003) found that students were asked to practice isolated spelling patterns, drill phonics, read eBooks, and fill-in electronic worksheets.

### **Digital Literacies Studies Involving Bilingual Students**

It is relevant to mention that in the literature review (Burnett, 2010; Ching-Ting, Ming-Chaun, & Chin-Chung, 2014; Yelland, 2018) the number of studies that target emergent bilinguals and the use of technology as a tool for language acquisition were scarce in comparison to the studies developed for monolingual students. There is evidence of studies conducted with bilingual populations; although, several of them are conducted in the form of enrichment or afterschool programs.

For instance, Shin (2014) examined a blog-mediated genre based writing curriculum as part of the English language arts writing lessons of second grade students. In the study, the classroom teacher and Shin designed authentic writing experiences for the students that fostered collaboration with classmates and parents. The students blogged persuasive letters, recounts, and reports to interact with members inside and outside the school. The findings indicated that blogging allowed students to feel recognition among peers, to develop academic writing confidence, to develop social relations through writing, as well as to conceptualize writing as a tool for social action.

As an after or before school activity, Prieto, Arreguin-Anderson, Yuen, Ek, Sanchez, Machado-Casas, and Garcia (2016) analyzed programs such as La Clase Magica, an afterschool technology club guided by university mentors, that focus on the development of biliteracy and science, technology, engineering, and math-skills with Latino emergent bilinguals. To give an illustration, students selected science topics, such as sharks, and developed an investigation in English and Spanish websites using laptops, i-pads, and smartphones. Then, the students created videos where they showcase their findings, including student conducted interviews and documentation in the form of photographs and videos. Another project that focused on digital literacies and biliteracy development included digital fotonovelas (Garcia, 2014). In this study, students created digital fotonovelas using their own pictures in a digital platform where written dialogues were created using the student's full linguistic repertoire in a program afterschool.

Regardless of the literacy inclination, monolingual or bilingual, the common trend in all the previous studies was the active role of students in the learning process. Although the activities' levels of complexity and use of higher order thinking varied, students, in general, were

able to create, manipulate, display, and obtain information in a student-centered environment. The role of the teacher became the role of a facilitator who provided feedback and guidelines.

In the present study, the integration of technology happens in a situated context, the writing instruction block. That is, students develop linguistic and technological skills not as an enrichment activity or program but as social, cultural, and linguistically responsive language arts instruction for emergent bilinguals of the 21<sup>st</sup> century. Learning is physical and virtually collaborative mirroring the current realities of our society where the scope and reach of teachers and students transcends the physical aspect of the classroom. Furthermore, this study aims to foster the development of two languages while learning and using responsibly different modes of communication and meaning that are provided through the Internet and technology.

### **Challenges of Digital Literacies**

Scholars suggest that some teachers may have negative perceptions towards technology (Hutchinson & Reinking, 2011). There is a conception that technology may distract students from learning content and skills. Generally, for this group of teachers, technology is synonymous with play, and therefore, they find it difficult to integrate it in their instruction when they have the pressure of high stakes testing.

Furthermore, schools may lack resources in terms of technology, time, or administrative support in addition to the lack of teacher technological knowledge and skills (Hew & Brush, 2007; Vandommele, Van den Branden, Van Gorp, & De Maeyer, 2017). In several instances, students have to share the few devices in their classroom, making the integration of technology undoable.

In addition, there is contradictory data about the benefits or disadvantages of including technology in the classroom. For example, Korat and Shamir (2007) explain that eBooks

enhance comprehension and understanding of the features of the text, while Bus, Verhallen, and de Jong (2009) suggest that attractive multimedia richness could divert students from the actual reading. Notwithstanding, Schugar et al. (2013) recommend for teachers to demonstrate to students how to apply reading strategies from printed texts to eBooks to make the use of technologies in the classroom purposeful and meaningful for all learners.

To ameliorate possible obstacles, in this study, I provided one-one training and support to the teacher on digital literacies and technological applications. This professional development includes identifying different sources that could make the writing experience of students more meaningful by applying multimodal writing components, including visuals, sound, colors, and graphics in addition to the written text. Furthermore, this study provides rigorous and relevant forms of using the available technology in the classroom to develop the students' biliteracy.

### **Chapter Summary**

In this chapter, I issued a description of the theoretical framework as well as literature I utilize to inform and guide this study. The main concepts in the theoretical framework included multiliteracies, dynamic bilingualism, and holistic bilingual approaches. I explained that a multiliteracies pedagogy framework accepts and encourages learning different literacies needed in our globalized world, including linguistic, cultural, communicative and technological literacies which aligns to a dynamic and holistic perspective of bilingualism.

Through the literature review, I presented topics including the history of bilingual education, as well as the most common bilingual approaches in our days. I then presented a definition of biliteracy in which I addressed biliteracy development as well as a comprehensive review regarding bilingual writing. I concluded with the literature that discusses the use of digital literacies in schools and presented studies that involve bilingual students and digital literacies.



The findings and recommendations of the literature support the use of multiliteracy practices that include new technologies as a medium of communication and legitimize the students' home languages. However, the literature review also revealed the scarcity of studies related to emergent bilinguals developing multiliteracies during their daily instruction. Therefore, more work is needed in order to enhance our understanding of the potential of including different literacies to develop the language development of elementary emergent bilinguals to authentically communicate in two languages when technology is incorporated.

This chapter justified the relevancy of conducting a qualitative study that sought to explore the biliteracy development that occurs during a language arts writing block of elementary aged Latino emergent bilinguals when they are immersed in multiliteracy practices. Specifically, it is important to study what kind of opportunities allow students to utilize their full linguistic repertoire in a platform that responds to the multiliteracies demands of the 21<sup>st</sup> century, such as being digital literate and biliterate.

## CHAPTER III

### METHODOLOGY

“Ese es un castillo, algún día voy a vivir en un castillo”

[That is a castle, one day I will live in a castle]

—Greta, 7 years old

The drive to Miltonia Elementary (pseudonym) is pleasant and not an unfamiliar one. The streets resemble the cultural and linguistic diversity that the city entails. It is not uncommon to find single story traditional American homes next to shopping centers that host a wide range of goods and services ranging from family-owned restaurants, food trucks offering traditional Latino meals, such as tacos or pupusas, or chain American food restaurants. In this drive, I can also witness the contrasting realities of the residents of the area. On the one hand, I can see the signs advertising new developments with homes offering high-end features such as lake-views, gated access, open-concept floor plans, stainless steel appliances, in-home elevators, pool, and recreational centers. On the other hand, just a couple of blocks away, there are dated apartment complexes with air conditioning boxes hanging on the outside windows of the apartments, open access to the buildings allowing me to see broken mini-blinds, windows protected with rusted security bars, and dark, dusty hallways with the occasional constable patrol parked by the street. In general, I can see that the residents of these apartments are mainly Latinos.

Next to a small church that is securely gated and displays the times of service in a washed marquee is Miltonia Elementary. The campus is a clean and well-maintained building that includes plenty of beautiful old oak trees with branches to shade a well-equipped playground that includes swings, slides, and large areas to run. From the outside, I can see that the blinds of several classrooms are open during the day, probably due to the pleasant views to green areas. When I enter the school, I can feel a hospitable and inviting atmosphere. Visitors are welcomed with a seasonally decorated area where one can enjoy a cup of coffee, tea, and cookies.

The purpose of this study was to explore and document how multimodal writing in computers facilitated the development of biliteracy in second-grade Latino emergent bilinguals during a language arts class. The aim was to consider the potential of a dynamic bilingualism perspective (Garcia, 2014) with technology as a tool for meaning-making (Burnett, 2010) and a space where multiple modes of meaning converged while students utilized their full linguistic repertoire to design multimodal texts in English and Spanish (The New London Group, 1996).

This study is guided by two research questions on digital literacies and biliteracy development:

- (1) How does multimodal writing facilitate the development of biliteracy in emergent bilinguals?
- (2) How do emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing?

This case study was grounded in qualitative research methods. The data collection and data analysis focused in a dual language second grade classroom. I collected and analyzed multimodal writing products created by the students as part of their language arts block to gain insight into their interests, experiences, and knowledge of their bilingual world.

This chapter provides a rationale for the methods and procedures that I followed in the study, and how I designed the instruments and procedures to collect and analyze the data I collected.

### **Researcher Narrative and Positionality**

I am an emerging researcher with a solid background in teaching but also in communication and technology. I was born and raised in Mexico where I completed my bachelor's degree in Communication Studies. My college was a Jesuit institution with a strong foundation in the pedagogy of Paulo Freire. During my educational journey, I worked in the Center of Ignatian Faith where I developed projects to raise awareness of ethical and social issues through different technologies. For four years, I utilized technology to show different ways of viewing the world; for instance, I developed campaigns to support indigenous cultures of Chiapas, to explain the realities of the offspring of incarcerated mothers and to reveal the needs of communities affected by local disasters that had been neglected, such as underground explosions due to oil and gas leaks, among others. In these projects, the goal was to promote dialogue between oppressed groups and the school community. The final purpose was to “concientizar” (Freire, 2014) and empower both parties to take action. To achieve and maintain this awareness, I conducted interviews and observations to develop informational materials through videos, presentations, audiovisuals, and printed materials. Therefore, my past experiences have a strong influence in the way I contextualize learning through a transformative learning theory (Mezirow, 2009), but also through the meaningful integration of multiple modes of meaning making where technology played a centerpiece.

Shortly after receiving my bachelor's degree, I was offered a teaching position in the United States. I became the teacher of Latino emergent bilinguals who shared my language:

Spanish. I was able to understand their academic trajectories as a product of multiple factors. In my second grade classroom, I designed and implemented digital content-based workstations for all disciplines to develop biliteracy. The workstations served as the medium through which students explored digital genres while they conducted research projects, created and developed electronic books, interactive writing journals, podcasts, videos, interactive posters, and e-correspondence through a safe and secure social media among the classroom members, as well as the e-pals from India and Spain. During the implementation of this project, I witnessed how my second graders were motivated and proud to utilize both their languages, Spanish and English. The inclusion of technology allowed for a constructive environment and a learning community beyond time and space, where all my students were able to create, showcase, witness, and comment on each other's projects, capitalizing on both social and academic ways of communication. Furthermore, initial insights from the workstations project were published recently in a reflective article (Mercuri & Ramos, 2014) that explains the possible ways in which technology, language learning, and academic skills were utilized in these stations.

While in the classroom, I became an advocate for my bilingual students and their educational trajectories and promoted dialogue among parents and school leaders to clarify misconceptions regarding bilingualism; for instance, sometimes parents would ask me what language should they promote at home, what language should the students be using when reading or at what point they could expect their children to become bilingual. There were occasions where I witnessed how literacy specialists and teachers would pressure parents to waive bilingual education because students were “confused,” “struggling,” or “suffering” due to their emergent bilingualism. I remember that sometimes even bilingual teachers would confess they felt that the bilingual program was not effective, and they would make modifications in the

language and content allocation to prepare students better according to their own views. This created tensions, as I perceived that Latinas/os students' bilingualism was conceived as a problem (Ruiz, 1984) even though elsewhere a bilingual person was someone to be admired and respected.

For these reasons, my professional goal was to be part of a bilingual team at the district level in charge of supporting Latino students. After almost 10 years of teaching, I joined the force of the multilingual department in the largest district of Texas. In this department, I was able to promote dialogue and professional development for parents, teachers, specialists, administrators, and chiefs of regions based on current research and best practices. The topics ranged from sheltered instruction and strategies to programming decisions for Latino emergent bilinguals. I collaborated in the development of curriculum and selection of materials for Latino students. In this district, I was able to witness firsthand how students became biliterate and academically successful. I also experienced the complexity of this success that involved not only students and teachers, but parents, specialists, consultants, and other district departments. This success was a joined effort of several stakeholders.

I am disclosing these events in an effort to frame my conception of bilingualism. Those experiences allowed me to apply my knowledge and skills as a bilingual teacher and as a communicator rooted in social justice and transformation. In this way, I am uncovering any possible bias in the way I perceive, analyze, and interpret my data.

### **Research Design**

This study explored how children used multimodal writing in computers as well as their full linguistic repertoire to develop biliteracy while they attended the language arts class, specifically the writing block. The nature of this study was exploratory given the limited number

of studies involving Latinos using their two languages and digital tools. According to Leavy (2017), an exploratory study can contribute to describe and explain a problem, fulfill a gap in the literature review or under-researched topic as it generates new and emerging insights.

### **Rationale for Qualitative Approach**

I followed a qualitative approach because of several of its emphases. According to Johnson and Christensen (2014), qualitative research places interest in understanding and appreciating particular groups or individuals. Furthermore, the view of human thought and behavior is perceived as situational, social, contextual, and personal, and therefore unpredictable. Creswell (2013) stated that qualitative approaches fit studies that are conducted in natural settings, rely on more than one source of data, and utilize the researcher as a key instrument. In addition, qualitative inquiry designs are emergent and flexible (Glesne, 2016). With all the previous characteristics of qualitative research, this study was better addressed using a qualitative approach because the research occurred in a natural setting, a second grade dual language classroom, within specific situational, contextual, and social factors. A special interest was in understanding or exploring how Latinos use their full linguistic repertoire when constructing bilingual multimodal texts and how multimodal texts can facilitate biliteracy development. The nature of my research questions could not have been responded through experimental designs where investigators control and manipulate the variables of interests. Instead, the purpose of this study was best met by adopting a case study design which, according to Yin (2009), seeks to find answers to “how” situations.

### **Rationale for a Case Study Approach**

According to Johnson and Christensen (2014), “a case study is defined as research that provides a detailed account and analysis of one or more cases” (p. 434). Yin (2009) defines a

case study as research that has the “ability to examine, in depth, a ‘case’ within its ‘real life’ context” (p. 111). Creswell (2013) explains that a case study demands an extensive data collection in order to provide in-depth descriptions. In the field of language and literacy, Dyson and Genishi (2005) explain that a case study is an appropriate methodology to researchers who are interested in studying literacy events and practices that lead to understand how teaching and learning happen through social participation. Taking into consideration the previous definitions, I can explain the rationale to select a case study approach. The aim of my study was to obtain a more naturalistic understanding of a topic that has been scarcely examined; therefore, I decided to seek an approach that would allow me to provide in-depth descriptions. In order to provide in-depth descriptions and understandings, I selected four focal children from the language arts class. The selection of focal students allowed me to address the biliteracy development of different children using multimodal writing in an in-depth manner. I was able to see how an instructional approach to multimodal writing facilitated the biliteracy of the students in different ways. When selecting these focal students, I took into consideration their number of years in U.S. schools and their biliteracy performance prior and during the study so that I could provide a detailed account of the case.

### **Context of the Study**

**District.** The school district identified with the pseudonym Orchid ISD, was established in an urban area of Texas. The district covered an area of 8,539 square miles and served about 35,000 students. The ethnicity of students was mainly Hispanic with 21,107 students, followed by 9,311 White students, 2,232 Asian students, 1,609 African American students, and 669 students identified with two or more races. In addition, more than 56% of students were economically disadvantaged, as in, eligible for free or reduced-price lunch, as well as other



public assistance, such as dental services. According to the district profile data, about 35% of students were enrolled in bilingual and English language learning programs. Consistent with research the dropout rate of Latino students in grades 9-12 was of concern (Gandara & Contreras, 2009). The majority of a district total of 2.3% of students dropping out of schools were Hispanics and African American, in sharp contrast to only about 0.7 percent of White and Asian students who abandon their studies.

**School.** I will use the pseudonym Miltonia Elementary to refer to the campus where I conducted this study. Miltonia Elementary was located in the north side of Orchid ISD. The north side of this district was ethnic and racially diverse. Miltonia Elementary was classified as a Title I campus. According to the Texas Education Agency, a Title I campus receives supplemental funding in response to the high concentration of students from low-income families.

In this campus, the majority of students, 90%, is eligible for free or reduced-price lunch and public assistance. Also, 87.2% of students were considered at-risk of dropping-out of school based on state-defined criteria. The first language of most of the students was Spanish; however, only 78% of the students were enrolled in a One Way Dual Language Program and were considered students with Limited English Proficiency (LEP). Only 2% of the student corpus was categorized as gifted and talented in comparison to 8.6% in other schools throughout the district and 7.8% statewide. In addition, Miltonia Elementary offered special education to 7.2% of students comparable to the 8.8% of students statewide.

The teachers at Miltonia Elementary are predominantly Latinos with 29 educators, followed by 17 White, three Asian, and two African American teachers. Most educators hold at least a bachelor's degree, followed by 10 educators with a master's degree and one teacher with

a doctoral degree. According to the 2017 accountability manual, the campus has met the state standards of education.

### **Gaining Access to Miltonia Elementary**

From 2006 to 2014, while I was a bilingual teacher, I was first introduced to a leader and a specialist of the bilingual department. We worked collaboratively as they would come and visit my classroom. Later on, I was given the opportunity to participate in the bilingual conferences for the district. In the same timespan, a campus specialist was assigned to my school. The relationship with this specialist was always friendly and respectful. Above all, I admired both specialists' commitment to equity and best practices for emergent bilinguals. Their commitment was showcased through their knowledge and skills that they shared with me in the most kind and effective of ways during professional development or individual teacher conferences.

In 2018, while working on my doctoral course work, I was informed that both specialists were now leaders of Miltonia Elementary; specifically, they became the principal and the assistant principal of the campus. The criteria to select a participating school included having a large population of Latino emergent bilinguals and access to technological tools. Miltonia Elementary had both, a majority of Latina/o students and classrooms that were fully equipped with a set of 12 computers per teacher, per classroom. Therefore, I decided to share with them my research proposal and asked if they would be able to support this study. I was informed that they were looking for innovative forms of applying technology and literacy in their campus and they welcomed the study in their school. I was able to gain access to this campus after submitting proper documentation and clearance to Orchid ISD.

## **Research Participants**

This is a case study of a second grade language arts classroom in a dual language campus. The participants in this study include 19 Latina/o emergent bilingual students attending second grade at the time of the study and the teacher. All participating children attended the 50:50 One Way Dual Language Program at Miltonia Elementary in Orchid ISD. Although all students were Latina/os the class included a rich diversity in terms of age, place of birth, and number of years in schools in the United States. All students were between seven and eight years old, most of them were born in the United States and some of them in Mexico, Guatemala, Honduras, and El Salvador. However, all of them had parents who were born abroad. The majority of the students had been formally schooled in the United States since Pre-K with a few exceptions of students who had been enrolled in US schools for one year and a student who was new to the United States.

### **Teacher Participant**

The participating teacher, Ms. Park (pseudonym), had seven years of teaching experience. She was native of the United States and was fully bilingual in English and Spanish. She was responsible for teaching the Language Arts (reading and writing) and Social Studies blocks in Spanish and English, and English, respectively. Her bilingual teammate, Ms. Taylor (pseudonym), was in charge of instructing Math and Science in English during the rest of the day. Her classroom included 23 students balanced in 12 boys and 11 girls. In addition, her room was equipped with twelve Dell Chromebooks and headphones making a ratio of 1:2.

Institutional Research Board approval (IRB # 2018-121-06) for this study was granted by the University, and consent was obtained from the teacher and from students' parents. Assent was obtained from 19 participating students.

## Student Participants

The second grade language arts classroom consisted of 23 students; however, parental consent was received from only 21 students. In addition, during the implementation of the study, one participant withdrew from the school, and another one was expelled due to misconduct. Consequently, the case study consisted of 19 Latino students in a second grade language arts classroom participating in a dual language program. As mentioned before, four out of the 19 children were chosen as focal participants in this study: two girls, Greta and Zara, and two boys, Alfredo and Elías (pseudonyms). The students selected represented students at different levels of biliteracy as well as schooling experiences. The selection of the four participants for in depth analysis was based on their academic history, reading and writing performance, as well as their attitudes towards writing in both languages. Table 1 summarizes the students' profiles.

Table 1

### *Students' Academic Profiles*

	<b>Academic History</b>	<b>Spanish Reading Level</b>	<b>Feelings Towards English Writing</b>	<b>Feelings Towards Spanish Writing</b>
Alfredo	Previously Retained	4	Incapable	Capable
Elías	On Level Student	18	Nervous	Happy
Greta	New Immigrant	18	Hopeful	Fine
Zara	High Mobility Student	10	Good	Good

## Multimodal Writing Rationale

I decided for this study to focus on writing because this linguistic skill allows for a tangible manipulation of language. For example, writing can effectively become the instrument through which students are able to visualize cross-linguistic connections (Escamilla et al., 2005). Furthermore, digital writing in the 21<sup>st</sup> century is conceptualized as a rich form of

communication that allows for multiple layers of meanings (Elola & Oskoz, 2017). That is, most forms of writing are accompanied by different modes of meaning making, some in the form of visual meanings through pictures, graphics, or images, and audio meanings such as music or voice over a text. Also, visual scaffoldings such as color-coding and sentence stems allow students to manipulate their written language and eventually transfer and impact other linguistic skills such as reading and speaking (Gort & Bauer, 2012).

I selected Google Apps because of security and confidentiality. The district already had a school account that included rigid measures; for instance, when sharing their projects students were only allowed to do it with district personnel. Even if students typed a different email, Google would filter it and not deliver it. It did not allow any individual to access or edit their product without a link that was shared by the author of the project. This allowed the students to work in a secure environment where only the learning community had access. In terms of accessibility and collaboration, Google Apps allowed one or more students to work from any device that had access to Internet from any time and location. Furthermore, Google Apps allowed to track all possible edits and changes, per student over time using the historial tool. Another reason Google Apps was appropriate for this project was because it allowed for a safe search of images, websites, and videos through the App. Finally, in terms of the word processor, Google Apps provided options to format the text by adding different fonts, colors, and other features commonly found on any off-line word processor. These features allowed the students to include different modes of meaning making in a multiliteracies framework (The New London Group, 1996).

Initially, I had suggested to include the activity as a workstation; however, this writing project became part of the students' writing workshop. The students received a mini lesson about

the writing skills or traits, and then they were sent to write and apply those skills in the multimodal writing project. The students would rotate and utilize the computer three times a week. However, Ms. Park left on maternity leave in the last week of October. After this, a long-term substitute took her place, Ms. Salinas (pseudonym). The administration and Ms. Park considered that this project could take the place as part of the writing block. In order to collect the data, I provided a calendar to Ms. Park and the administrators where I pointed out the days that I would be at the school. Once Ms. Park left, she shared this calendar with the substitute, who did not take part in the study, to ensure that the block of time was respected. During my time in the classroom, Ms. Salinas would grade students' work or prepare for the next session. She did not take part in the study or activities.

### **Planning with Ms. Park**

During the course of the fall of 2018, Ms. Park and I planned multimodal writing tasks using a Planning Table for Multimodal Writing (see Table 2) with the goal of creating a writing project that could integrate language arts, social studies, and technology standards. We decided to meet once in her classroom after school. The teacher decided that meeting after the instructional day would allow us to plan without interruptions. To plan the multimodal writing tasks, we utilized the scope and sequence of the school, and the teacher embedded the objective of the writing project within her lesson plans. We utilized a table to identify and see at a glance the different components of our planning process. The table laid out three columns, one per each of the content areas integrated. The first column identified writing, the second social studies, and the last one technology. The tables consisted of three columns and seven rows. Each column contained the information pertinent to writing, social studies, and technology. The first row indicated the content area standards to be integrated. To select the standards, we utilized the

grade level roadmaps for the aforementioned content areas. We also included the technology objectives utilizing the second grade Texas Essential Knowledge and Skills (TEKS). In the second row, we described the academic demands per content area in terms of academic vocabulary. The third row, problem posing or question for the students, included the possible “disorienting dilemma” (Howie & Bagnall, 2013) understood as experiences that are unsuitable to a person’s current views of the world. These dilemmas were created to contextualize the writing experience of the students and to build previous background knowledge. The fourth row presented the writing prompt that students would address. The fifth and sixth row described the linguistic scaffolds that students needed for each dimension of academic language (Gottlieb & Ernst-Slavit, 2014) at the word, sentence, and discourse level. Finally, the seventh row included any digital scaffold needed for the students. We developed two different planning sessions for two separate writing prompts based on the roadmap and writing plan of the school. The first table presents the planning for a personal narrative, and the second table focuses in expository writing.

Table 2

*Multimodal Writing Planning Table*

<b>MULTIMODAL WRITING Planning Table</b>			
<b>Standards for Integrated Unit (TEKS)</b>	Writing  2.18 <b>Writing/Literary Texts.</b> Students write literary texts to express their ideas and feelings about real or imagined people,	Social Studies  2.13 <b>Citizenship.</b> The student understands characteristics of good citizenship as exemplified by historical figures and other individuals.	Technology  Summary:  1. <b>Creativity and Innovation.</b> B) Create original products using a variety of resources.

	<p>events, and ideas. Students are expected to:</p> <p>(A) Write brief stories that include a beginning, middle, and end;</p>	<p>The student is expected to:</p> <p>(A) Identify characteristics of good citizenship, including truthfulness, justice, equality, respect for oneself and others, responsibility in daily life, and participation in government by educating oneself about the issues, respectfully holding public officials to their word, and voting;</p>	<p><b>2. Communication and Collaboration.</b></p> <p>A) To interact, collaborate, or publish with peers locally and globally.</p> <p>B) To develop cultural understanding</p> <p>C) Format digital information</p> <p>D) Select, store, and deliver products using a variety of media formats, devices, and virtual environments.</p> <p><b>4. Critical Thinking.</b></p> <p>D) Represent data using tools such as word processing and graphic organizers.</p> <p><b>5. Digital Citizenship</b></p> <p>C) Responsible use of digital information</p> <p><b>6. Technology operations and concepts.</b></p> <p>E, F) Use proper keyboarding techniques</p>
<b>Academic Vocabulary</b>	<p>Beginning - Inicio</p> <p>Middle - Desarrollo</p> <p>End – Desenlace</p> <p>Sequence - Secuencia</p> <p>Paragraph - Párrafo</p> <p>Indent - Sangría</p> <p>Dialogue – Diálogo</p> <p>Quotation Marks - Comillas</p> <p>Emotions - Emociones</p>	<p>Good citizenship</p> <p>Respect</p> <p>Responsibility</p>	<p>Log –in</p> <p>Username</p> <p>Password</p> <p>Open a document</p> <p>Close and Save</p> <p>Font</p> <p>Insert</p> <p>Paste</p> <p>Comment</p> <p>Space</p> <p>Typing</p> <p>Posture</p>
<b>Problem-Posing Question for Students</b>	<p>RESPECT</p> <p>At the beginning we will brainstorm how does a good yard looks like/ or recreational spaces such as playground? Then, TSW come outside for a</p>		



	<p>walk and we will prompt them, does this yard look like the yard that you discussed? What do you notice? What would you change? How would you change it?</p> <p><b>RESPONSIBILITY</b></p> <p>The teacher will share an experience about her mom’s neighborhood where they found stray kittens. We will connect it to the students’ experiences in their neighborhood.</p>		
<b>Writing Prompts</b>	<ol style="list-style-type: none"> <li>1. Write about a time when you visited a place where areas were not respected.</li> <li>2. Write about a time when you were being responsible by taking care of an animal or a person.</li> </ol>		
<b>Scaffolds in Spanish</b>	<p><b>Word Level</b></p> <ul style="list-style-type: none"> <li>• Pronombres: Yo</li> <li>• Verbos regulares e irregulares en pasado</li> <li>• Sustantivos comunes y propios</li> </ul>	<p><b>Sentence Structure</b></p> <p>Al principio Después Entonces Luego Al final</p> <p>El me dijo - ____.</p>	<p><b>Discourse Level</b></p> <ul style="list-style-type: none"> <li>• The purpose is to tell a personal story.</li> <li>• Written down in the first person and when referring to other people use pronouns.</li> <li>• Written down in the past tense</li> </ul>
<b>Scaffolds in English</b>	<ul style="list-style-type: none"> <li>• Pronouns: I</li> <li>• Regular and Irregular verbs in past</li> <li>• Sight words</li> <li>• Common and proper nouns</li> <li>• First, next, then, last, finally.</li> <li>•</li> </ul>	<p>Hamburger</p> <ul style="list-style-type: none"> <li>• Bread: Beginning with a hook</li> <li>• Meat: Detail</li> <li>• Lettuce: Detail</li> <li>• Tomatoes: Detail</li> <li>• Bread: End</li> </ul>	
<b>Digital Scaffolds</b>	<ul style="list-style-type: none"> <li>- Log-in cards with username and password</li> <li>- List of steps to open Google Docs</li> </ul>		

**MULTIMODAL WRITING  
Planning Table**

<p><b>Standards for Integrated Unit (TEKS)</b></p>	<p>Writing</p> <p>2.19 <b>Writing/Expository Texts.</b> Students write literary expository texts to communicate ideas and information to specific audiences for specific purposes. Students are expected to: (A) write brief compositions about topics of interest to the students.</p>	<p>Social Studies</p> <p>2.19 <b>Social Studies Skills.</b> The student communicates in written, oral, and visual forms. The student is expected to: (A) Express ideas orally based on knowledge and experiences.</p>	<p>Technology</p> <p>Summary:</p> <p><b>1. Creativity and Innovation.</b> B) Create original products using a variety of resources.</p> <p><b>2. Communication and Collaboration.</b> A) To interact, collaborate, or publish with peers locally and globally. B) To develop cultural understanding C) Format digital information D) Select, store, and deliver products using a variety of media formats, devices, and virtual environments.</p> <p><b>4. Critical Thinking.</b> D) Represent data using tools such as word processing and graphic organizers.</p> <p><b>5. Digital Citizenship</b> C) Responsible use of digital information</p> <p><b>6. Technology operations and concepts.</b> E, F) Use proper keyboarding techniques</p>
--	---	---	---

<b>Academic Vocabulary</b>	Introduction – Introducción Facts - Hechos Details - Detalles Conclusion – Conclusión.	Clarity Topic sentences	Log –in Username Password Open a document Close and Save Font Insert Paste Comment Space Typing Posture
<b>Problem-Posing Question for Students</b>	<p>A PERSON The teacher will share how special is her sister even though they fight a lot. She will explain that fighting does not feel well and that they have found a way to communicate better with less fighting. Then she will ask students: What or who is so special to you?</p> <p>A PLACE The teacher will explain about a Korean festival that she recommends or would like people to go. She will explain that getting to know people from other cultures is important and that it can help to understand each other better.</p>		
<b>Writing Prompts Generated in Collaboration with Students</b>	<ol style="list-style-type: none"> <li>1. Write about a special place</li> <li>2. Write about a person you admire</li> <li>3. Write about something or someone you dislike</li> </ol>		
<b>Scaffolds in Spanish</b>	<b>Word Level</b> <ul style="list-style-type: none"> <li>• Pronombres: Yo</li> <li>• Verbos en presente</li> <li>• Sustantivos comunes y propios</li> </ul>	<b>Sentence Structure</b> <ul style="list-style-type: none"> <li>• Introducción: comienza con tu idea central.</li> <li>• Transición</li> <li>• Cuerpo: idea que respalda tu idea central con detalles o ejemplo (x2)</li> <li>• Transición</li> <li>• Conclusión: resumen.</li> </ul>	<b>Discourse Level</b> <ul style="list-style-type: none"> <li>• Written down with the purpose of explaining something</li> <li>• It focuses in a topic and is supported with a few subtopics that directly relate to the main topic</li> <li>• Written down in the first, third, or sixth person and when referring to other people use pronouns.</li> </ul>
<b>Scaffolds in English</b>	<ul style="list-style-type: none"> <li>• Pronouns: I</li> <li>• Regular and Irregular verbs</li> </ul>	<ul style="list-style-type: none"> <li>• Introduction: Topic + stance + reasons.</li> <li>• Body: Topic/</li> </ul>	<ul style="list-style-type: none"> <li>• Written down in the present tense</li> </ul>

	in past <ul style="list-style-type: none"> <li>• Sight words</li> <li>• Common and proper nouns</li> <li>• First, next, then, last, finally.</li> </ul>	transition sentence with details or examples (x2) <ul style="list-style-type: none"> <li>• Conclusion: Transition sentences and sum up of major points.</li> </ul>	
<b>Digital Scaffolds</b>	<ul style="list-style-type: none"> <li>- Log-in cards with username and password</li> <li>- List of steps to open Google Docs</li> </ul>		

### **Multimodal Writing Implementation**

In this section, I will describe the decisions made with the teacher prior the implementation of the multimodal writing task. After planning using the multimodal planning table, the teacher and I discussed the students’ experiences with technology. The teacher explained that the students were familiar with Dell Chromebook but had not utilized Google Apps. For this reason, we decided to create a plan to teach students how to utilize Google Apps. We decided to distribute our roles using a co-teaching approach. Before the implementation of the project, Ms. Park created login cards using the students’ user information and password preset by the district and shared the writing prompt for the students. Together, we designed a writing kernel and placed it in the format of a table for the students to fill in. Since I was not a district employee, I did not have access to communicate or share with the students using Google Apps. Therefore, Ms. Park was in charge of sharing the writing kernel with the students. Then, we formally decided to implement the project.

Ms. Park taught the students how to log in to the Dell Chromebook using the login cards. Then, with the whole group, I showed the students how to find Google Docs in their computer, and we worked on a tutorial already planned by Google where students learned the basics of

creating a new document and sharing. The purpose of this activity was to give students an overview of the Google application. Each one of the students was able to locate Google Docs as well as open the writing prompt that Ms. Park had shared with them. The students were able to create a copy of the document following step by step directions delivered by me.

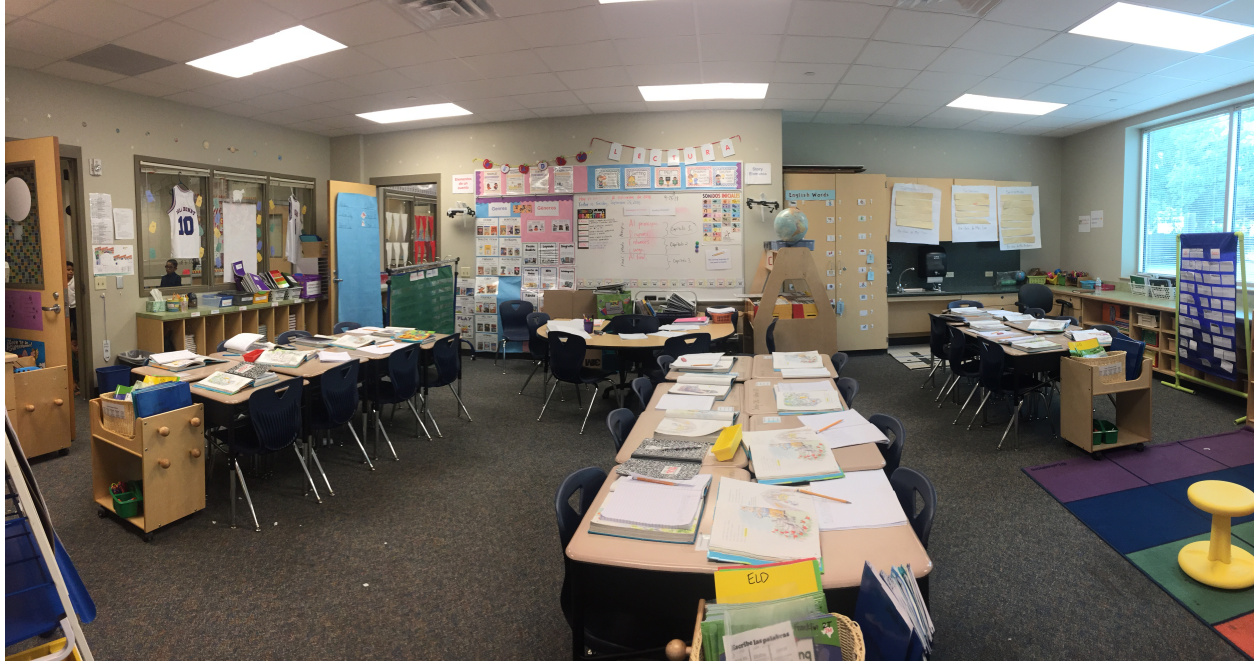
After this, the students selected the writing prompt of their choice and responded in the language of their choice, English or Spanish, during the writing block for periods of 45-60 minutes at least three days per week. Each participant received a Chromebook to complete his or her writing. Ms. Park decided to request nine additional computers from a different classroom to be used during this time; in this way we had enough computers for all students. While the students worked on their sample, I had to make decisions along the way to adjust the implementation to the context while keeping in mind my research goals. For example, at the beginning of the process, I decided to conduct small group instruction to ensure that the students utilized the writing kernel properly.

The first prompt took about six weeks to be completed and followed the writing process posted on Ms. Park class including planning, drafting, revising, editing, and publishing using Google Docs. The second prompt was an expository writing and students worked for about three weeks using Google Slides. Most students were at the drafting and revising components in December 2018.

To respond to the prompts, the students used different modes of representation such as images, illustrations, videos, links, different fonts, colors, and format layouts to convey meaning. While students completed their projects, I walked around the room to assist students in their projects or met with individual groups as needed.

## **Data Collection**

During ten weeks, I sought to observe and interact with the children and teacher. Therefore, I adopted a participant observation methodology. According to Deacon, Pickering, Golding, and Murdock (1999), participant observation can be defined as a method in which “the researcher is taking part, in some degree, in the activities of the people being observed” (p. 251). The data collection for this study began in September 2018 and ended in December 2018. The study took place during 46 sessions with a rotating schedule from 10:30-11:30 a.m. or from 1:00-2:00 pm in Ms. Park’s classroom (see Figure 2). The schedule changed due to a rotation between Ms. Park and Ms. Taylor. That is, during some weeks, the participating students would begin the day at Ms. Park’s classroom; therefore, I would attend the writing session from 10:30-11:30 a.m. The subsequent week, the participating students would begin the day at Ms. Taylor’s class, and so, I would come after they had changed classes to attend the writing session from 1:00-2:00 p.m. Ms. Park facilitated the writing sessions, and once she left on maternity leave, I continued with the implementation of the project.



*Figure 2.* Ms. Park's Classroom

From September to December, as a participant observer, I spent extended periods of time initially observing the language arts block, the writing activities and routines to get background information of the students as well as writing habits. Then, I worked with the teaching in the development of multimodal writing activities. Finally, I also observed and documented how children worked in their computer to compose their multimodal writing, their interactions with one another, challenges and engagement.

I gathered data for my study in multiple ways, including participant observations and field notes, research journal, interviews with teachers and students, audio and video recordings, and artifacts. In what follows, I describe each data source.

### **Observations and Field Notes**

As previously mentioned, during the first week of the study, I observed the participants, teacher and students, during the language arts block. I focused on the writing activities that the students developed in English and Spanish, as well as the students' scaffolds to develop writing.

My goal was to obtain baseline data to compare traditional writing with my future observations in multimodal writing. This initial week also allowed me to develop rapport with all participants of the study. At the end of each day, I would typically type and organize my observations per topic in an office that the school invited me to utilize to work on my study.

In the following weeks, I observed the classroom during the multimodal writing activity for nine weeks. The activities were facilitated by Ms. Park from September to October and by me during November and December. I paid attention to the students' interactions, both online and off-line, as they selected a writing prompt to work on. I was interested in seeing the factors that they considered important to select a language to respond. Also, I observed how students utilized Google Apps. I focused on how students used the multiple Google Apps features to convey meaning in their writing, such as color, visuals, and spacing. This observation took place for about four weeks until the students completed their first draft.

Starting on the fifth week, I concentrated on seeing how students utilized the spelling tool and share features. My goal was to see if the spelling tool would allow students to internalize the standard form of a word after being corrected by Google. In relation to the share feature, I observed how students became editors of each other's work. From the sixth to the ninth week, my observations prioritize the function of Google Translate as students search for terms in a particular language. My aim was to see if these scaffoldings could contribute to a holistic approach of language learning where particular linguistic features were explored in context.

To ensure that I paid attention to all participants, I conducted my observations by walking or sitting close to small groups of students. I scheduled my observations to target at least each one of the three tables of students once a week. My aim was to observe how students used their linguistic repertoires to construct a text while working in multimodal writing.



I organized my observations on a daily basis following the system proposed by Leavy (2017), which suggests to classify the observations into thick descriptions, summary notes, informal conversations, or interview notes.

### **Researcher Journal**

Throughout the implementation of the study, I kept a research diary to include reflective and reflexive notes in addition to field notes and observations. The purpose of this journal was to think about how actions and interactions shape the research process and to conceive the research as co-created between the research participants and me (Glesne, 2016). I included notes about events that were surprising so that I could later track my assumptions, notes about what intrigued me which allowed me to track my personal position and interest in the research, and notes about what disturbed me during the implementation of the project which allowed me to track any possible tension, stereotype, or prejudice. When needed, I relied on audio notes that I later transcribed and reflected on. The notes were taken as the events unfolded; however, I tried to look at my notes at least once a week. I organized this journal by creating two columns: event and reflection. In the event column I wrote the events that I observed and lived throughout the study. In the second column, I reflected on how those elements could translate as implications or next steps.

### **Interviews**

I interviewed participants, teacher, and students in different occasions during the fall of 2018. All interviews followed the protocol described by Edwards and Holland (2013) focusing on listening, probing, and following up. This approach was useful in particular with the students as a way to help them to “open up, provide more information, elaborate, and expand on what they have said” (p. 72). I utilized different probes such as being quiet once the students were to

finished answering a question, echoing or repeating the last point of the teacher or students' responses or asking them directly to tell me more. All interviews were audio recorded to facilitate the future analysis and later transcribed by me.

**Interview with the teacher.** Ms. Park was interviewed once following a semi-structured format to focus on her perspectives about biliteracy and technology before the multimodal writing project. The purpose of this interview was to see what were the factors she considered important for the students to know in terms of biliteracy and technology. The interview lasted approximately 15 minutes and was conducted in September in her classroom (see Appendix B). I followed topical trajectories in the conversations, as needed.

**Interviews with the students.** The students were interviewed before, during, and after the multimodal writing activity. Each interview had a duration of 15-20 minutes. Interviewing the students was grounded in the sociology of childhood that calls for "listening to the voices of children when conducting research about their lives" (Marshall & Rossman, 2011, p. 157). I formally interviewed all students individually with semi-structured questionnaires that covered the topics I wanted to address (see interview protocols in the Appendix B-D); I followed topical trajectories in the conversations, as needed.

The first interview (see Appendix B), conducted before beginning the study, provided me with information about their current experiences in the classroom during writing in English and Spanish. The second interview (see Appendix C), conducted while the students were working on their projects, focused in finding information about the different modes that participants considered important in Google Docs and Slides to convey meaning. During this interview, I appealed to elicitation techniques in the form of photos of their work to "evoke deeper elements of human consciousness than do words and provide interviewers ways of drawing out tacit

knowledge and emotions” (Edwards & Holland, 2013, p. 59). That is, students were able to see a screen shot of their work while they were answering the questions. I used the features in their work to shelter the participation of students in a meaningful way. Finally, the interview conducted after the study (see Appendix D) centered on the participants’ experiences with the use of technology, their perspective on Google Translate and their sentiments towards multimodal writing in English and Spanish.

Informally, I interviewed particular students following an unstructured format when I noticed that the students were utilizing multimodal writing in ways that were related to answer my research questions. According to Edwards and Holland (2013), during the unstructured interviews the “interviewee can talk from their own perspective using their own frame or reference and ideas and meanings that are familiar to them” (p. 30). Often times, I would start with a single question about the students’ use of technology. The students would then explain in their own words their problem, drawing from the multimodal project, and show me how they were solving it.

### **Audio and Video Recordings**

Technological advances expand the possibilities of data sources. Banks (2007) describes that audiovisual data, such as photography and video, can help the researcher to document aspects of social interactions. Furthermore, Glesne (2016) affirms that video use provides density in the data collected because the scope and detail is greater than what a human observation or audio recording can capture. During the length of this project, I conferenced with individual students and small groups while they were working on their multimodal project and video recorded their social interactions using my iPad. In this way, I gained access to everyday writing practices and language use, which would have been difficult for the students to describe or

reproduce in an interview. As I played the videos, I was able to make connections with my research journal, field note, and observations. I was able to add more details of the interactions that took place. Students become accustomed to the video recording. The videos were an unobtrusive way of collecting data (Marshall & Rossman, 2011). Possibly, the students were comfortable since the use of video recording with a portable device (cellphone, tablets) has become very common.

### **Artifacts**

Artifacts can be defined as “any symbolic representation that can be recorded or retrieved for analysis” (Altheide & Schneider, 2013, p. 5). According to Glesne (2016), one of the uses of artifacts as a data source is that they can support interview data and allow for thick descriptions. The artifacts collected for this study were the writing products of the students and the spelling lists. Both artifacts were imperative in this study because they provided data that I could not have obtained from another source. In general, the artifacts allowed me to see how students utilized bilingual strategies and how they utilized their linguistic repertoire to convey meaning throughout the multimodal writing experience. The artifacts were gathered from September to December 2018.

**Writing products.** Every Friday, I took screen-shots or pictures of the students’ projects. The objective of collecting these artifacts was to help me notice what modes of meaning making the students selected and how they progressed in their multimodal writing. I focused on their writing process and biliteracy development as a process. The final product was also captured to analyze how students utilized different modes of meaning making including different colors, fonts, images, photographs, illustrations, videos, backgrounds, and layouts to complement their

writing. Documenting their process weekly also helped me to track how students used their language and what features they used to respond to the writing task from beginning to end.

**Contextualized spelling lists.** After revising their writing, the students created two spelling lists, one in Spanish and one in English. Every list was different because it reflected the terms utilized in the students' work. I considered it important to collect these lists because it would give me insights about how multimodal writing could support the students biliteracy development in terms of spelling.

### **Data Analysis**

The data analysis followed the method proposed by Leavy (2017) including data preparation and organization, initial immersion, coding, categorizing and theming, and interpretation.

#### **Data Preparation**

To prepare the data for analysis, I created folders to organize each type of data. For participating students' data, I created a folder for each student. Each folder included the screenshots, interviews (audio and written transcription), conversations, and observations pertinent to each participant. For data related to the teacher, I also created a folder where I included notes from meetings with her, planning tables, as well as the interview conducted. To transcribe the interviews, I organized the information in a two-column table. The first column included the transcription of the interview, and the second column was included to add codes. The interviews were transcribed the same day that they occurred so that I could add any important information observed while interviewing the participants. I transcribed the interviews in Microsoft Word after completion to ensure the accuracy of my transcription. Additionally, I played the audio of the interview and read along with my transcription. Once I ensured that the

interview had been transcribed completely, I stored the audio and transcription in the participant's folder.

Furthermore, I created a file to organize, and transcribe if needed, my observations and field notes. In my field notes and researcher journal, I noted events, incidents, questions, and comments that I considered important to answer my questions.

### **Initial Immersion**

During and after finishing data collection, I immersed myself in the data by reading, looking, and thinking about the data in each folder in order to have a sense of the data and to develop initial ideas that could facilitate data reduction (Hesse-Biber & Leavy, 2005). To do so, I resorted to jottings (Miles, Huberman, & Saldaña, 2014) in the form of comments in Microsoft Word in my observations and interview transcripts. At this stage, I took notes and highlighted data involving language use at the discourse, sentence, or lexicon level in English and Spanish as well as type of mode of meaning making utilized (visual, audio, linguistic, gestural, spatial) in the screen shots of the students.

### **Coding**

I open coded each set of data: teacher and students' interview transcriptions, field notes from my observations, and student work. I followed two cycles of coding (Saldaña, 2013). During the first cycle, I utilized *in vivo* coding. According to Manning (2017), *in-vivo* coding is preferred by several researchers for two main reasons, first because it emphasizes the voice of participants and second because it allows researchers to rely on the participants to give meaning to the data. *In-vivo* coding was appropriate for these data because it maintained and preserved the students' written language, which is a central component in this study, as the biliteracy development is measured through the language use of the participants. *In-vivo* coding helped me

to use the participants' language to generate codes.

During the first coding cycle, I utilized a chart with three columns in Microsoft Word. In the first column, I included the data (field note, observation, interview, or artifact), the second column header included the first research question, and the third column included the second research question. Then, I read and highlighted the data using in-vivo coding, and copied the text to the column that answered my questions. While doing this process, I continue jotting (Miles et al., 2014) in the form of a bubble comment on the right margin to elaborate on the data based on what I observed in the classroom (see Figure 3).

In the second coding cycle, I utilized my initial in-vivo coding to find descriptive codes in the form of short phrases or words aligned to the theoretical framework of this study. I started by generating two lists, one per research question, of all the in vivo codes. I read them and thought about them in terms of the theoretical framework of this study. For instance, in relation to my first question: how emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing? I identified the following codes in the students responses “cambiar de inglés a español” [to change from English to Spanish] “escribes en español y te sale en inglés” [To write in Spanish and getting it in English], those in-vivo coding were translated into the descriptive code: Translanguaging. Figure 4 presents an excerpt of this process.

### **Categories and Themes**

After coding, I utilized both matrix and network displays (Miles et al., 2014) to map the codes into matrix cells. A matrix display is a table or chart that organizes data for “reflection, verification, conclusion drawing and other analytic acts” (p. 91). On the other hand, a network display describes the process across time, dynamics, or patterns (Miles et al., 2014). These displays helped me to analyze the connections and flows between the codes represented and

allowed me to map the multimodal writing process juxtaposed to my theoretical framework.

Figure 5 presents the network display that I used to analyze the data of my study.

INTERVIEWS	How emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing?	How multimodal writing facilitates the development of biliteracy?
<p>Ahora que ya terminamos de utilizar Google Apps ¿qué es lo que más te gusta de Google Docs?  <sup>1</sup>Poner fotos</p> <p>¿Y de Google Slides?                      Lo mismo.</p> <p>¿Por qué te gusta poner las fotos?                      Porque nos enseñan imágenes.</p> <p>¿Y para qué nos sirven esas imágenes?                      Para que podamos ver cuales lugares no están respetados.</p> <p>¿Cómo te ayudó la imagen con la escritura?  <sup>2</sup>Para que escriba, nos da más ideas.</p> <p>¿Hay algo que no te gustó en Google?                      No, todo me gusta.</p>	<p>"Poner fotos"</p>	<p>"Para que escriba, nos da más ideas".</p>

Laura Ramos-.... 1/19/19 5:01 PM

**Comment [1]:** Students would use the pictures as an aid to write more details. They would describe what they would see in the pictures when writing details was challenging.

Laura Ramos-.... 1/19/19 5:06 PM

**Comment [2]:** This is also a visual mode.

Figure 3. Generation of In-Vivo Codes

**Interview Q. 1**

**How emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing?**

**Dynamic Bilingualism Through**

**Metalinguistic Awareness**  
 Algunas veces se equivoca  
 "No siempre nos decía la palabra correcta"  
 "que no usas como dice especial, solo pusiste sp"  
 "poco mal porque no hay ñ y quise escribir traje de baño y tenía que poner bano"

**Translanguaging**

- "yo pongo algunas cosas en ingles y me sale en español"
- Poner algo en ingles que quieras saber en español"
- Escribe con un texto una palabra en español en la computadora me siento bien"
- "Para usar el español y buscar palabras que son en ingles"
- "si no sabes una cosa de ingles la puedes cambiar de ingles a español que te lo diga en ingles y eso lo vas a tener que escribir en español y luego te sale en ingles".
- Cuando no sabia palabras de translate lo podía poner en español y en ingles ya sabia porque ahí nos decía"
- "escribes en español y te sale en ingles"
- "si yo escribo en español because ahí me sale como se dice"
- "cuando no sabe una palabra en inglés lo puede no solo ocupar la rayita para poderlo resolver sino que lo escribes en una hoja y lo pasas a translate y eso

Laura Ramos-.... 1/30/19 9:40 PM

**Comment [1]:** Students used their knowledge of English in words that they knew what they meant but didn't know how to spell. They were able to critically decide whether a given word fit the meaning of their text or not. Metalinguistic awareness: paletas is not the same as pallets.

Laura Ramos-.... 1/31/19 1:28 PM

**Comment [2]:** Influence of English over Spanish

Figure 4. Generation of Descriptive Codes



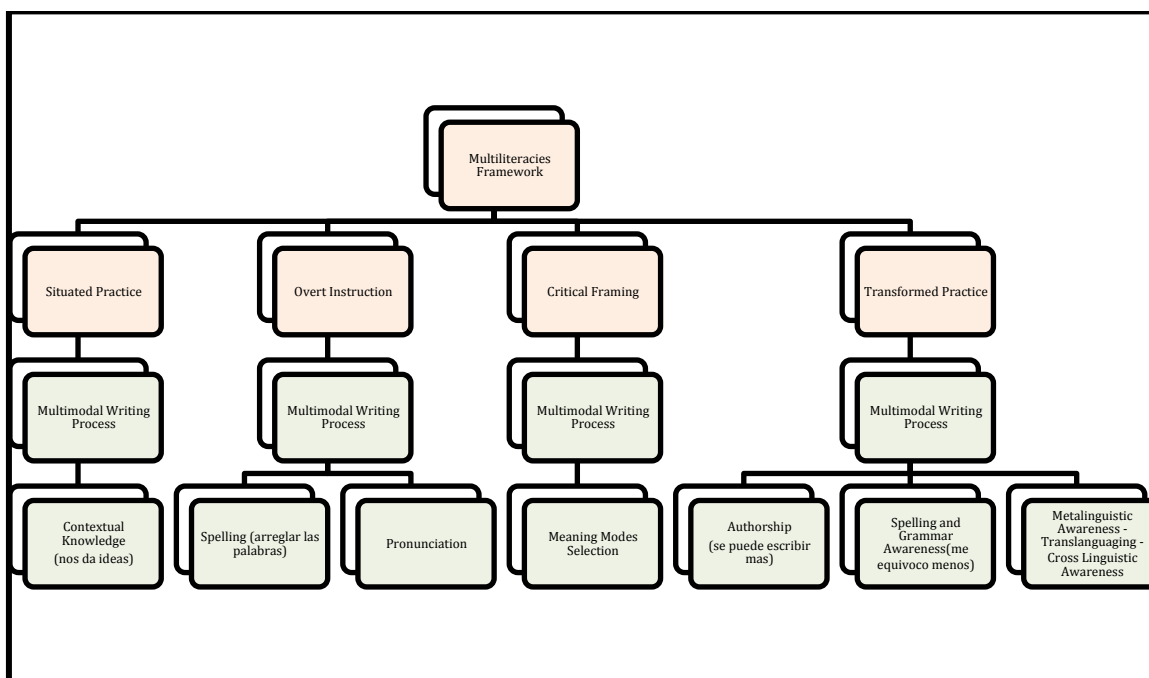


Figure 5. Network Display

Matrix Display of Themes				
<i>Multiliteracies Framework Practices</i>	<i>Situated Practice</i>	<i>Overt Instruction</i>	<i>Critical Framing</i>	<i>Transformed Practice</i>
Q.2 How multimodal writing (MW) facilitates the development of biliteracy?	MW to Develop Ideas and Vocabulary	MW to Translate and Pronounce Words		MW to Empower a Writer and Text
		MW for Spelling		

Figure 6. Matrix Display of Themes

In the network display (see Figure 5) I utilized color-coding to differentiate my theoretical framework from the data obtained in the multimodal writing project. I displayed in orange the components of the multiliteracies framework and in green the multimodal writing data. I decided to include the four multiliteracies practices of my theoretical framework into the network display (Figure 5) and matrix display (Figure 6) to screen and consolidate the

description and in-vivo coding into themes and categories.

Throughout the process, I categorized and compared the data from different sources using analytic memos about the research questions (Miles et al., 2014). According to Leavy (2017), memos allow researchers to “look for patterns across data, make note of anomalous data, and help to identify links between different categories, concepts, and/or themes” (p. 152). In this study, memos supported my linking of the different data sources into a narrative.

### **Analysis of Students’ Writing**

The student writings samples collected required a different analytic approach, as I needed to identify a holistic perspective of the students’ biliteracy. My main focus was to understand how the students utilized their full linguistic repertoire to construct texts in both languages while at the same time exploring how multimodal writing could facilitate the development of biliteracy. I needed an assessment tool that would provide me a holistic understanding of the students writing in terms of bilingual practices, writing, and multimodality.

Therefore, to analyze the writing samples of the students, I utilized the literacy squared writing rubric (Escamilla et al., 2014) to interpret each final writing sample/artifact in terms of linguistic repertoires. I decided to utilize this rubric because it is a tool already developed and researched for construct validity (Butvilofsky et al., 2017). The rubric consists of two parts. The first part analyzes the content, structure, and spelling of the Spanish and English sample. The second part focuses on the bilingual strategies that the students employed in both of their samples. I utilized both parts of the rubric to analyze the linguistic repertoire of the participating students. In addition, to analyze the modes of meaning making of the students, I adapted the format of the rubric to create a rubric to analyze the students writing. Specifically, I included the

feature of having English and Spanish side by side, as well as a developmental score rubric like in Escamilla’s rubric (see Tables 3, Table 4, and Table 5).

Table 3

*Rubric to Analyze Multimodal Writing*

<b>RUBRIC TO ANALYZE BILINGUAL MULTIMODAL WRITING</b>		
<b>Student:</b>		
<b>Spanish Score</b>	<b>VISUAL MEANINGS</b>	<b>English Score</b>
6	Utilizes two or more visuals meaning to enhance text effectively	6
5	Writing includes images, photos, illustrations, or videos that support the content of the text per page	5
4	Includes different fonts and colors to emphasize meaning	4
3	Attempts to include visuals in some pages	3
2	Writing includes one font/color throughout the text	2
1	Writing includes random images, photos, illustrations, or videos that do not relate to the text	1
0	The student did not include visuals	0
<b>AUDIO MEANINGS</b>		
4	Utilizes two or more audio meaning to enhance text effectively	4
3	Writing includes voice recording, videos, music, or sounds that support the content of the text per page	3
2	Attempts to include audio meanings in some pages	2
1	Writing includes random audio meanings that do not relate to the text	1
0	The student did not include audio	0
<b>LINGUISTIC MEANINGS</b>		
7	The organization of words into sentences and paragraphs is coherent.	7
6	Writing includes paragraphs.	6
5	Student includes a few sentences.	5
4	Multimodal piece reflects effective use of words choice to convey meaning	4
3	More than one linguistic meaning is included	3
2	Written Language is included	2
1	Spoken Language is included	1
0	The student did not include written or spoken language	0
<b>SPATIAL MEANINGS</b>		
3	Arrangement of the text allows reader to interpret meaning effectively	3
2	Student attempts to convey meaning by creatively organizing the look of the text (alignment of text, color, font, position of image, text spacing, white space, size of images)	2
1	Student designs document mirroring paper-based writing (image on top,	1

	text at the bottom)	
0	Student did not include spatial meanings	0
	<b>GESTURAL MEANINGS</b>	
3	Student included images or visuals with facial expressions, hand gestures, body language or interactions between people aligned with the text	3
2	Student attempted to use gestural meanings to convey the meaning of the text	2
1	Student attempted to use gestural meanings that did not convey the meaning of the text	1
0	Student did not use gestural meanings	0
	<b>OVERALL</b>	

Table 4

*Literacy Squared Writing Rubric (Escamilla et al., 2014)*

<b>LITERACY SQUARED WRITING RUBRIC (Escamilla et al., 2014)</b>		
<b>Spanish Score</b>	<b>CONTENT</b>	<b>English Score</b>
10	Focused composition, conveys emotion or uses figurative language, is engaging to the reader, clearly addresses the prompt; book language	10
9	Organization of composition includes effective transitions and vivid examples	9
8	Writing includes complex sentence structures and has a discernable, consistent structure	8
7	Sense of completeness – Clear introduction and clear conclusion	7
6	Includes descriptive language (use of adjectives, adverbs at the word level) or varied sentence structures	6
5	Main idea discernable with supporting details, or main idea can be inferred or states explicitly; or repetitive vocabulary: may include unrelated ideas.	5
4	Two ideas – I like my bike and/because it is blue	4
3	One idea expressed through a subject and predicate, subject may be implied (I like my bike)	3
2	Label(s), lists of words; may communicate an idea without subject and predicate	2
1	Prewriting: Picture only, not readable, or written in a language other than the prompt	1
0	The student did not prepare a sample	0
	<b>STRUCTURAL ELEMENTS</b>	
5	Multiparagraph composition with accurate punctuation and capitalization	5
4	Controls most structural elements and includes paragraphing	4
3	Controls beginning and ending punctuation in ways that make sense and is attempting additional structural elements (commas, question marks,	3

	guiones, apostrophes, ellipses, parenthesis, hyphens, indentation)	
2	Uses one or more of the structural elements correctly	2
1	Uses one or more of the structural elements incorrectly	1
0	Structural elements are not evident	0
	<b>SPELLING</b>	
6	Accurate spelling	6
5	Most words are spelled conventionally	5
4	Majority of high-frequency words are correct and child is approximating standardization in errors	4
3	Most words are not spelled conventionally but demonstrates an emerging knowledge of common spelling patterns	3
2	Represents most sounds in words and most high frequency words are spelled incorrectly	2
1	Represents some sounds in words	1
0	Message is not discernable	0

Table 5

*Bilingual Strategies (Escamilla et al., 2014)*

<b>BILINGUAL STRATEGIES</b> <b>(Escamilla et al., 2014)</b>		
<b>DISCOURSE LEVEL</b> <ul style="list-style-type: none"> <li>• Rhetorical structures (first, next, last)</li> <li>• Punctuation (signal awareness of code-switches)</li> </ul>		
Spanish to English	English to Spanish	Spanish↔English
<b>SENTENCE LEVEL</b> <ul style="list-style-type: none"> <li>• Syntax (subject omission, word order)                             <ul style="list-style-type: none"> <li>• Literal translation</li> <li>• Code switching</li> </ul> </li> </ul>		
Spanish to English	English to Spanish	Spanish↔English
<b>WORD LEVEL</b> <ul style="list-style-type: none"> <li>• Code switching</li> <li>• Loan words (soccer/mall)</li> <li>• Nativized words (splachate/splashed)                             <ul style="list-style-type: none"> <li>• Phonics</li> </ul> </li> </ul>		
Spanish to English	English to Spanish	Spanish↔English

## **Trustworthiness**

According to Glesne (2016), there are several strategies to achieve trustworthiness. The most frequently used strategy included the triangulation of data gathering by including observations, interviews and document collection as well as in-depth descriptions. To assure the study trustworthiness and in line with Glesne (2016) the following procedures were applied:

- a) I compiled different data sets in addition to my observations, such as interviews, and artifacts.
- b) I triangulated data sources by including the teacher and the students as respondents. This contributed to elicit more perspectives on biliteracy and technology in addition to my observations.
- c) I provided in-depth descriptions of the data that supports my findings to facilitate the transferability to similar contexts of study.
- d) I used a variation of member checking sharing preliminary findings with the participating teacher to get her input on my interpretations of students' writing.

## **Triangulation**

According to Creswell and Miller (2000), one technique to strengthen a qualitative study is triangulation. According to Miles, Huberman, and Saldaña (2014) triangulation aims to “get to the findings by seeing or hearing multiple instances of it from different sources by using different methods and by squaring the finding with others it needs to be squared with” (p. 300). For this study, as a method of triangulation, I utilized multiple data sources (Patten, 2009). I included the collection of artifacts in the form of student work, interviews with teacher and students, classroom observations and the researcher journal to establish reliability and trustworthiness of the data in this study. Furthermore, to ensure the accuracy of transcriptions, as

a method of triangulation, each interview was transcribed verbatim and checked against the audio recording for accuracy.

### **Ethical Considerations**

This study posed no serious ethical problems. Prior to conducting the study, I submitted a request for institutional review board approval, as well as authorization from Orchid ISD, both institutions granted permission to conduct the study.

At the beginning of the project, each student and their parents or legal guardians received information about the study. Parents received a bilingual (Spanish/English) consent form, which described the purpose of the study, the methods of data collection, and the measures for confidentiality and voluntary withdrawal. I informed them that their participation was voluntary and that their signature was required if they granted permission to their child to participate in the study. Following, I gathered students' assent to participate in the study. I addressed the whole class to explain that their parents had granted permission for them to participate in the study, I described the purpose of the study, methods of data collection, as well as confidentiality. I explained to students that their participation was voluntary and that even though their parents had granted permission they could decide whether they wanted to participate in the study or not. I left the classroom and students signed the form if they wished to participate. All students signed the form.

While collecting the data, I tried to disrupt the school and classroom routines as little as possible. I rescheduled my study visits when needed due to school or classroom events. At the end of the study, I wanted to acknowledge students' contribution to the study and recognize their participation. To do this, I organized a showcase of students' projects and provided them with a certificate of participation.



During the data collection and analysis, in order to grant confidentiality I used pseudonyms. I did not include any identifiable data in any form. I made every effort to disclose multiple perspectives and report contradictory findings when applicable.

Lastly, at the end of the study, a copy of this project will be provided to the school district and participants when requested.

### **Limitations**

Several limitations applied to this study. These limitations are described below:

**Changing the number of writing samples.** Initially, I had conceived this study as a workstation where students could change prompts every three weeks. After conferencing with the teacher and completing the planning, I modified this to one writing prompt for personal narrative and one writing prompt for expository writing, for a total of two writing samples per student. In qualitative studies, researchers need to adapt to the conditions they encounter in the field. For Emerson, Fretz, and Shaw (1995), a researcher must become “sensitive to the concerns and perspectives of those in the setting” (p. 30). Therefore, I modified the study to one sample per genre to respect Ms. Park’s insights of her own students. That is, she considered that in order to follow the scope and sequence of the school, students would need to utilize the writing process of planning, drafting, editing, revising, and publishing a writing prompt. Developing six writing samples would not be feasible since students would require more than nine weeks to go over all those components with each sample. Therefore, to simplify it, she suggested to ask students to utilize all steps of the writing process and develop one writing sample per language.

**Students’ completion of writing samples.** The data collection process took place during ten weeks. A longer period of time would have afforded the possibility of collecting more writing samples in each language, but more importantly, for students to complete an English

writing sample as originally planned. This would have allowed me to see two complete final products, one in English and one in Spanish. However, I had to adjust the study to the time requested and authorized by the school district.

**Partial teacher involvement.** During more than half of the project, Ms. Park was out of the classroom, and a substitute instructed the students instead. Therefore, interventions and contributions from the classroom teacher were limited to the first three weeks of the project. In my original proposal, I had planned to work alongside Ms. Park. However, when I started the study, I found out that Ms. Park would leave in October. Therefore, I had to adjust the study and facilitate the writing process myself. The substitute, Ms. Salinas (pseudonym), was not required to participate in this study. The partial teacher involvement was a limitation because it prevented me from obtaining data from her during and after the implementation of the study. This data would have allowed me to obtain her insights about the language use and biliteracy development of her students.

**Generalization of findings.** Finally, due to the small study sample, there is a limited potential to generalize its findings beyond the population that I studied. According to Johnson and Christensen (2014), a weakness of a single case study is that generalizations are difficult to make. The data collected in this study was limited to 19 Latino second grade students in the language arts classroom. The generalizations of this study would be naturalistic (Dyson & Genishi, 2005). A naturalistic generalization “emphasizes practical, functional application of research findings that intuitively fall naturally in line with readers’ ordinary experiences” (Melrose, 2009, p. 2). Therefore, this interpretive process makes it different from traditional scientific generalizations.

## Chapter Summary

This chapter outlined the methodology and research design of the present study to answer two questions: (1) How emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing? (2) How multimodal writing facilitates the development of biliteracy? Exploring emergent bilinguals multimodal writing is of value because schools serving Latinos, a consistently growing population, can tailor bilingual practices that benefit this population. Furthermore, gaining knowledge in this area can contribute to the limited literature regarding Latinos and digital literacies.

The present study focused on exploring multimodal writing practices in the language arts block of second grade Latina/o students in a dual language campus. I gathered data from all 19 participants and chose four focal students for an in depth analysis of their writing. Specifically, the study explored the Multimodal Writing Project in English and Spanish, created by students in the school semester of fall 2018. The data was substantiated through interviews, observations, field notes, and artifacts. Multimodal writing is relevant for Latino students in the 21<sup>st</sup> century because writing is no longer limited to paper-base formats, but demands the critical use and reading of different modes of meaning making. Also, for Latino students with limited access to technology, this project is of importance because it provides an equitable practice. That is, Latino students received the access to experiences that students from ethnic majorities and higher socioeconomic backgrounds already have, as evidenced in the literature of this population. Therefore, artifacts such as Multimodal Writing products are a path to explore the possible benefits of this approach.

## CHAPTER IV

### FINDINGS

It is multimodal writing time and students are eager to work. This is the third week of implementation, and the second grade classroom looks quiet. The students are sitting down displaying their best behavior so that Ms. Park can choose them as a group to get computers. Ms. Park selects six students from table three. After they receive permission to get their computer from Ms. Park, they do so in the most efficient way. They unplug the charger from the computer and grab the Dell Chromebook carefully with both hands, and then, they press it against their chest, as if it is something precious. The students quickly return to their desk, log into their computers, and open Google Docs. They no longer need login cards to enter their information; the students have memorized it. Their excitement is reflected in their behavior and engagement, all students are on-task smiling, giggling, and typing the response to their first writing prompt. I can see students elbowing the classmates next to them so that they can see their project on the screen, while others, in an effort to share their work digitally, ask their peers for their full name so that they can find them in the district email list. Another group of students is collaborating as they brainstorm how to help a friend who has a question about the meaning of a word. The learning atmosphere is evident; there is engagement, motivation, and also a sense of pride and happiness. During this multimodal writing time, students make sure that they use every minute wisely.

This vignette illustrates a regular day during the implementation of the multimodal writing project and has been included to provide a description of the classroom environment which is important for students to learn. This chapter addresses the findings to the two questions of the study. The first research question explored how emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing. Findings related to this question include two overarching themes. First, emergent bilinguals utilize bilingual practices, such as metalinguistic awareness and translanguaging to construct texts. Second, emergent bilinguals use online collaboration and modes of meaning to develop their voice and writing while engaging in multimodal writing.

The second research question explored how multimodal writing facilitates the development of biliteracy. Two overarching themes were identified in relation to this question. First, multimodal writing supports the development of vocabulary and spelling. Second, multimodal writing empowers bilingual students.

This chapter is organized in four sections. In the first section, I provide a detailed description of Ms. Park's classroom, language arts block, and students to contextualize students' use of linguistic repertoire, biliteracy development, and multiliteracy exemplified through multimodal writing. In this section, I draw mainly from classroom observations, research journal, interviews, and field notes.

In the second section, I focus on describing the process in which the multimodal writing project was conducted. This section is important to understand the chronology through which the students worked to develop their writing project, as well as the features that were explored at different times of the implementation. In this section, I draw from my analysis of field notes and observations.

In the third section, I describe the themes responding to each research question. To describe each theme, I draw from data from 19 participants. Then, in the fourth section, I use the four focal participants as a way to provide a more dense and detailed analysis of different students' work. The data collected was the same for all 19 participants including the four focal students. It is important to reiterate that although I decided to exemplify the results in four students, the findings were obtained after analyzing the data of all 19 participants, as well as my observations and field notes. Finally, the chapter concludes with a chapter summary.

## **Section I: The Classroom**

### **Ms. Park's Classroom**

Ms. Park's classroom welcomes students with a basketball jersey hanging from the window by the main door. The topic of the school this year is "all-stars" and every classroom showcases items of their favorite sport or player. After stepping into the room, one can see materials pertinent to language arts and social studies. The walls are covered with reference materials for the students, including bulletin boards showcasing different types of writing genres, a large hook where clothes hangers store old language arts' anchor charts, printed resources with the writing process in English and Spanish above the smart board, as well as two closets that serve as word-walls. The classroom also includes two bookshelves with books in English and Spanish at different levels. The books are stored in plastic boxes and do not follow any particular order. Students are invited to "use them freely and take them home." There are fiction and non-fiction books together and at different levels. Chapter books are stored behind the bookshelves on the counter space, but they are off-limits for the students. There is also an empty big-book shelf that serves as the Dell Chromebooks and headphones storage.

The students have different spaces for instruction; there is a corner of the classroom for whole group instruction where students regularly receive their mini-lessons, a kidney-shaped table for small group instruction where boxes of leveled books rest, as well as individual desks organized into three groups of eight desks where students work independently, in pairs, or small groups.

### **Ms. Park's Language Arts Block**

The schedule of Ms. Park allocates time for homework, social studies, reading, and writing (see Figure 7). During my observations, I took note of the activities developed in English, Spanish, or both.

The activities that were delivered in English and Spanish included the moments when I observed an assignment developed in both languages. During my initial observation conducted everyday for one week, I observed one activity, grammar and spelling homework in English and Spanish. The grammar and spelling homework consisted of a list of fifteen words, ten in Spanish and five in English. The words in Spanish included words aligned with grade level phonics and spelling standards such as words beginning with /bl/ or /br/. The words in English were organized by random topics and did not follow any spelling pattern. The English words given for the week were about food and included words such as: apple, milk, bread, meat, and chicken. Everyday as part of the classroom routine, students conducted a choral reading as Ms. Park pointed at each one of the spelling words in a poster. They looked at a spelling menu that included different activities for the students to choose and perform, such as writing each word with pencil, and then they traced it three times with a different color or separate the words into syllables. In addition to this morning practice, students had to complete an activity for the second

time from that spelling menu during centers. Content-based words were not part of the grammar and spelling homework.

Homework was important for Ms. Park. She explained during an informal conversation that spelling and grammar were important aspects for the students reading and writing development. She mentioned that not all students bring their homework completed, and therefore it was important to have a review every morning. Ms. Park was hopeful that this kind of practice would allow students to do better in their weekly spelling test.

During the observations, I identified that activities developed in Spanish, as in, academic instruction was delivered in Spanish, and students’ tasks were delivered in Spanish. Ms. Park included assignments in Spanish for reading comprehension, writing composition, phonics/spelling, and grammar. The majority of the lessons observed were focused on reading comprehension. Ms. Park conducted new reading mini lessons twice a week, on Monday and Thursday about character traits, and the rest of the days were scheduled to the practice of skills.

Times	Min.	Description of Activity
7:45 – 8:10	25 min	Homeroom Time: Turn in papers/Check homework/Community Circle
8:10		Instruction with First Group Begins Instructional Time: 140 minutes
8:10-8:30	20 min	Reading Mini Lesson
8:30- 9:45	65 min	Guided Reading/ Workstations
9:45 – 10:00	15 min	Phonics/ Spelling
10:00 – 10:15	15 min	Grammar (Thurs and Fri- Grammar and Writing will be integrated with Social Studies)
10:15 – 10:40	25 min	Writing Composition
10:40 – 11:00	20 min	Recess/Water Break
11:00		Switch to Second Group Instructional Time: 140 minutes
11:00-11:20	20 min	Reading Mini Lesson
11:20- 11:45	25 min	Guided Reading/ Workstations
11:45 – 12:15	30 min	Lunch
12:15 – 12:25	10 min	Restroom Break
12:25 – 1:05	40 min	Continue Guided Reading/Workstations
1:05 – 1:20	15 min	Phonics/Spelling
1:20 – 1:35	15 min	Grammar (Thurs and Fri- Grammar and Writing will be integrated with Social Studies)
1:35 – 2:00	25 min	Writing Composition
2:00 – 2:45	45 min	Enrichment
2:45		Dismissal

Figure 7. Ms. Park’s Schedule



Grammar occurred twice every day at different times. First, students received daily instruction about parts of speech, such as pronouns, and words that shared the same initial sound, such as b/v or c/q/k. Then, students received a worksheet with a list of words for students to classify and highlight different words based on the spelling pattern of the day. After this practice, students worked on the same patterns during centers. Centers were activities for students to do independently while the teacher worked in small groups or one-one. The center activities in Spanish included grammar and spelling as an extension of the lesson that the students received. Another center was the software I-Station where students received reading instruction, reading passages, and reading comprehension questions.

Writing composition activities occurred once during my language arts observations and without mini lessons. After looking at the students writing entries, I noticed that there were between one and two entries for the month of August, and two entries during September. Ms. Park prompted the students to write by bringing everyday objects that could remind students about a past experience, for example, one of the prompts included a band-aid. Students then wrote about a time when they utilized a band-aid.

Although guided reading was scheduled, Ms. Park shared with me during an informal conversation that she faced challenges completing the required documentation for each child, such as phonemic awareness examinations. Therefore, at the time of the observations, I was not able to see small group instruction for reading, but through conversations, Ms. Parks mentioned that she planned to conduct it in Spanish.

During the language arts block, I did not observed reading or writing activities in English. At the time of the study, and prior to the implementation of the project, Ms. Park shared in an informal conversation that the students were not ready for reading or writing in English as part of

the language arts block because they were not proficient in Spanish yet. Therefore, the English activities for the students were limited to the handwriting and spelling centers. During handwriting, students utilized a Handwriting Workbook that included sentences for the students to trace, such as “some strokes are vertical lines.” During the spelling center, students practiced five spelling words in English that were identical to those received for homework: apple, milk, bread, meat, and chicken.

### **Technology and Ms. Park’s Classroom**

During our interview, Ms. Park shared that she utilizes technology in a variety of ways such as projections of digital texts in the smart board. A smart board is a digital whiteboard that mirrors the purpose of a touch-screen in a computer; however, the smart board allows the user to free write, highlight information, or conduct surveys, among other tools. With the smart board, Ms. Park told me that she projected websites for education such as Brain Pop and Pebble Go for social studies in English, and Treasures (language arts textbook) and Brain Pop in Spanish. During my observations, Ms. Park did not utilize technology during her language arts instruction.

Another component of Ms. Park’s technology was the Dell Chromebooks that were utilized during centers to complete a reading activity using the I-Station software in Spanish. Ms. Park described this software as “a personalized program that pre-assesses students to see what level they are in reading. From there it gives them activities that are personalized and it is supposed to help them to increase several areas such as vocabulary and reading comprehension” (M. Park, interview, October 4, 2018). Ms. Park said that she liked I-Station because it provided useful data that is easy to track throughout the year. I saw during my observations that students utilized I-Station twice a week.

In Ms. Park's opinion, "technology motivates kids, it makes lessons more interactive, more engaging, and for the learning programs they provide real time feedback and information as far of how students are progressing" (M. Park, interview, October 4, 2018). However, she also considered that technology in education had some flaws; for example, she mentioned that in order to use technology efficiently, students needed to have their own device, and that was a limitation in her school. Also, she considered that technology had a negative effect on the social skills of children because "they are so glued to technology, to the screen, and they are used to be stimulated through it that if they don't have technology, I think they get bored and this represents a challenge for teachers" (M. Park, interview, October 4, 2018). During the interview, Ms. Park acknowledged that she had used technology with caution and had not decided to explore other digital literacies. She believed that using other digital literacies in her room "would be chaotic because it would be too difficult for students" (M. Park, interview, October 4, 2018). Her main reason was that she did not feel confident including digital literacies, such as blogging, because she considered that students were too young to utilize digital literacies productively.

Furthermore, Ms. Park "confessed" she perceives herself as not "tech-savy." During the interview, she shared that she was a more "old-fashion, paper based person" (M. Park, interview, October 4, 2018) who prefers to work with pen and paper. Therefore, she considered that her own self-perceptions and her lack of technological knowledge are impediments for her to explore new digital literacies with her classes. However, she mentioned her interest in learning new technologies: "I definitely want to learn more about it and I know that is one of my weaknesses and I need to work on that because now you know we are in the digital age where everything is done online and on computers" (M. Park, interview, October 4, 2018). This statement demonstrates Ms. Park's openness and excitement to explore new ways to use technology in her

classroom. This is important for the study as it involves working together in the development of the students' biliteracy while using digital literacies. Furthermore, this study positions the teacher, students, and researcher as learners-teachers since all participants will be learning a new digital literacy, multimodal writing.

### Students

Ms. Park's classroom included 23 second graders, 12 of them female and 11 male students, between seven and eight years old. The classroom was multiculturally diverse. According to the students' interview responses, 13 out of 19 participating students were born in the United States, but their parents were natives of Mexico, Honduras, El Salvador, or Guatemala (see Figure 8). Therefore, 13 students can be considered simultaneous bilinguals (Escamilla et al., 2014; Reyes, 2012), as they have been exposed to Spanish and English since birth.

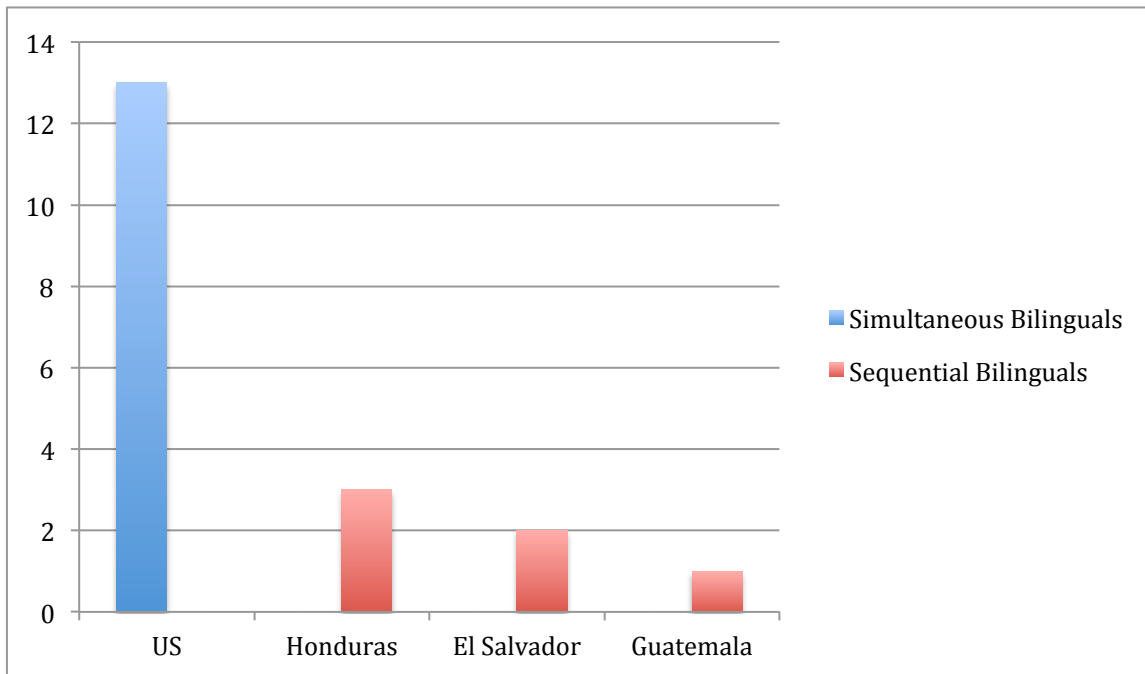


Figure 8. Place of Birth of Students: Simultaneous and Sequential Bilinguals

The schooling experiences of the students varied. Although most of the students were enrolled in school since kindergarten, either in the United States or their native countries, two of them did not attend school until they were six or seven years old. They started their academic trajectory in first grade. For others, their parents decided to place them in a school year below their corresponding grade level, particularly to those who had received formal schooling outside the United States. At the time of the study, there were only two new immigrants, that is they had been in the U.S. with formal schooling for less than a year. The data was obtained through interviews with the students and verified with informal conversations with Ms. Park.

Ms. Park's second grade class was organized into two groups of students: her homeroom group and Ms. Taylor's group. She was responsible for teaching language arts (reading and writing) and social studies blocks, in English/Spanish and English respectively. Her bilingual teammate, Ms. Taylor, was in charge of delivering math and science in English during the rest of the day. Ms. Park's referred to her homeroom, which consisted of the participants of this study, as the lowest academic performers. She explained consistently during informal conversations that her second class, Ms. Taylor's homeroom, performed better than her homeroom. Ms. Park considered that in her homeroom "either you are low or you are on-level," for those who are low they "basically need one on one" instruction because "if I give them a reading assignment I have to either call them to my table or sit next to them and monitor because they just can't. They need a lot of support" (M. Park, informal conversation, October 23, 2018). She explained that for students performing at grade level, sometimes when they ask for help or ask for her attention, she has to respond "sorry, you all are doing good" (M. Park, informal conversation, October 23, 2018) to justify her attention and focus towards the low-performing students. During the school's academic awards, I noticed that her class received the least number of certificates for academic

achievement in comparison to the other second grade classes. The distribution of awards among students in Ms. Park's homeroom was different from the other classrooms. For instance, in other classrooms, different students received different academic awards; whereas, in Ms. Park's class, the same student, Estrella, received five out of eight awards. Most of the students in Ms. Park's class went back to their classrooms empty-handed. The reason why I present these events is to provide an accurate and holistic description of the participants. This is important because as discussed in chapter two, the academic success of bilingual students is multifactorial, and school is an important element for the students' academic trajectories. To understand how students utilize their full linguistic repertoire as well as biliteracy development, it is necessary to understand the context and academic environments in which the students were immersed.

### **Students' Experiences in Writing and Technology**

In order to ground my analysis of students' experiences during the multimodal writing activity, I interviewed all students' in Ms. Park's class to gather some insights on their experiences in writing and technology. When asked about their favorite subject during Ms. Park's language arts block, about one third (nine out of 21) of participants expressed that writing was their favorite subject. The majority of the students, 14 out of 21, mentioned other subjects and activities as their favorites, such as reading, social studies, or centers. Most students described positive feelings towards writing in Spanish with responses including: "me siento bien" (Brian, 8 years old), "me siento feliz" (Camila, 7 years old) when working in their native language. In contrast, their feelings were mixed when asked how they would feel if they were to write in English. The emotions ranged from positive "me siento bien" (Daniela, 7 years old) to negative "me siento nervioso" (Omar, 7 years old), "pienso que no se tanto y que voy a reprobar" (Estrella, 8 years old). Figure 9 shows at a glance the students feelings towards writing in

English and Spanish. This information is important because this study involves writing in both languages. This data provided me with important information that translated into sheltered practices in the classroom to lower the affective filter when students worked in a language that did not provide a positive feeling. The affective filter (Krashen, 1981) is a theoretical construct that can explain the emotional variables that can inhibit or lead to language production in a second language.

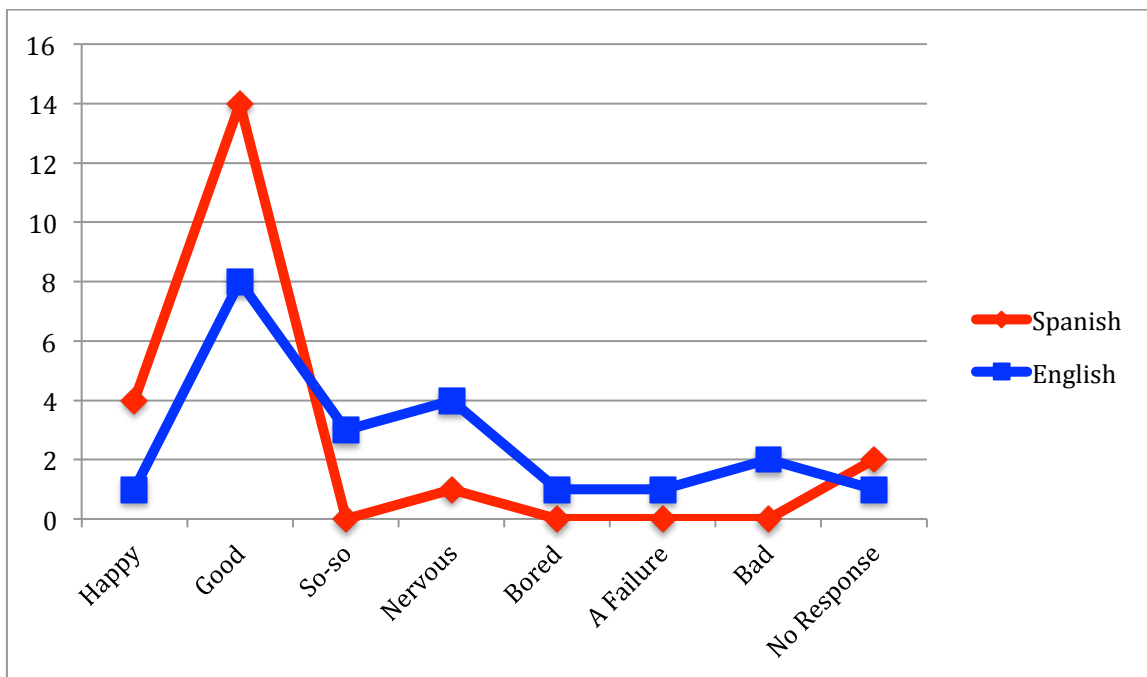


Figure 9. Students Attitudes towards Writing in English and Spanish

The strategies or resources that the students used when they struggled in writing varied. I asked during the interviews: ¿Qué haces cuando no sabes como escribir algo? [What do you do when you don't know how to write something?] All of the students said that they rarely need help in Spanish but that if they were to work in English then they would need support. Figure 10 presents a table with a summary of the students' responses.

<b>What do you do when you don't know how to write something?</b>	<b>Number of Students</b>
Ask the Teacher	8
Ask another Student	3
Rely on Phonology	2
Attempt to Write It	2
Nothing	4

*Figure 10.* Summary of Students' Responses

According to Figure 10, the majority of the students mentioned that they would ask the teacher when they encounter an issue when writing, followed by relying on their peers and self-attempt writing in English with strategies including sounding out a word. However, some students do not know what to do when facing a challenge in English Writing. It is important to mention that although writing instruction in English was not observed in Ms. Park's room, the students shared that they occasionally had to write in English during Ms. Taylor's math and science block.

In regards to technology, I asked students during the first interview if they had laptops, tablets, or internet at home. I was interested to know this information because, as per Anderson and Perrin (2018), Latinos are one of the groups that suffer a digital divide which sets them at a disadvantage to Anglo-Saxon students. Furthermore, for this study, knowing their experiences and access to technology was important because the students would need to use a computer to construct their texts. The students' responses in the interview indicated that the technology available at home varied. Out of 19 students, only five had computers at home. However, nine participants had tablets and 11 had access to the Internet. The Internet was used by all 19 students regardless their access to computers or tablets. Some of them mentioned that the cable service included Internet and their parents were able to connect to it with their televisions or cellphones. The main use of these devices was to play games, watch videos in YouTube, or learn math, science, and English.



This information was important for my study because multimodal writing is a genre that is embedded in several digital literacies. I was interested in knowing the type of resources available and the use for those devices to get baseline data about the students' experiences with digital literacies.

## **Section II: The Multimodal Writing Project**

I relied on my field notes to describe the implementation of the Multimodal Writing Project. My aim was to observe how students utilized their full linguistic repertoire to construct their texts, and how the multimodal writing activity facilitated their biliteracy development. The approach that Ms. Park and I took was of co-teaching. That is, Ms. Park took the lead to teach the writing knowledge and skills, and I facilitated instruction in the multimodal component, in particular in the use of Google Docs and Slides. Once Ms. Park left the classroom, I facilitated the unit that Ms. Park and I created for expository writing, social studies, and technology knowledge and skills. Ms. Park introduced the activity with a writing workshop approach. She conducted a writing mini lesson with the whole class using chart paper and markers while I delivered a mini lesson on a technology component. Then students utilized their computers, and Ms. Park and I walk around the room to help students as needed.

**Week one.** The first writing prompt asked students to describe an event of their lives about respect. Ms. Park and I decided to focus on that trait because the students had received formal instruction during social studies about the characteristics of good citizens, and respect was one of them. During an informal conversation, Ms. Park shared with me that she introduced the topic during social studies by brainstorming with students how a good yard or recreational space looks like. Then she took the students to the school playground that has a view to the surrounding streets and apartment complexes. She asked students what they noticed and what

they could change. Then, as part of language arts, we utilized the kernels of a narrative text of Bernabei and Reimer (2013). A kernel is defined as a text structure that serves as a scaffold for students to organize their writing (Bernabei & Reimer, 2013). The kernel integrated the knowledge gained during social studies about respect and a personal narrative. Students were asked to write about a time when they visited areas that were not respected. During the first week, students worked on their writing using a text structure in the language of their choice. With the exception of two participants, the students decided to respond to this prompt in Spanish. Figure 11 and 12 show the writing kernels for this activity, in Spanish and English respectively.

<b>Escribe sobre alguna vez cuando visitaste algún lugar en donde las áreas no estaban siendo respetadas</b>		
<b>Título:</b>		
<b>Inicio</b>	¿Dónde estabas?	Yo recuerdo que estaba Yo estaba Un día yo estaba
<b>Desarrollo</b>	¿Qué pasó primero?	Al principio Primero
	¿Qué paso después?	Después Entonces Luego
	¿Qué paso al final?	Después Entonces Luego Al final Finalmente
<b>Final</b>	¿Cómo te hizo sentir?	Para cerrar yo sentí Lo que aprendí Lo que sentí

Figure 11. Writing Kernel in Spanish

Write about a time when you visited a place where areas were not respected.		
<b>Title:</b>		
<b>Beginning</b>	Where were you?	I remember when I was I was One day I was
<b>Middle</b>	What happened first?	At first, First,
	What happened after?	Next, After that, Then,
	What happened at the end?	Next, After that, Then, At the end, Finally,
<b>End</b>	How did you feel?	I felt I learned

Figure 12. Writing Kernel in English

I noticed that during the first week the engagement of the students was evident, as reflected in their behavior. They were slowly typing and working on their writing sample. However, it was of concern that several students did not seem to understand the purpose of the table. Initially, participants wrote in the first section of the table, their full story in a summarized way. To exemplify it, Figure 13 shows the text of one of the participants. This indicates that the students did not understand how to answer each question and box as a place to answer each question. Instead the student consolidated the text within the first box.

Title:		
Beginning	Where were you?	i was going to the parc i sa leavs i gravd a tool that can pic up leavs mi and jeny mi sisthar Helpt mea the end
Middle	What happened first?	at first,i wanted to schliterbalm but it was dloct with 1/milion First,
	What happened after?	Next, After that, Then,
	What happened	Next, After that, Then

Figure 13. Kernel Format Misconceptions

Therefore, I decided to share this concern with Ms. Park and asked her opinion about briefly interrupting the writing session to teach as a class how to use the writing kernel. Ms. Park agreed to stop the session, and I delivered a mini lesson with the students to clarify the purpose of the table. To do so, I projected and reviewed samples of three students who volunteered to show their writing with the class. First, we read the text that the students had included, then we read the guiding questions in each one of the boxes, and as a class, brainstormed how and where to place the sentences of the text. After this, we read the story again, but this time we read the guiding question followed by the appropriate written response. The class mentioned that it was like responding to an interview. This mini lesson took about 15 minutes, and after this, the students went back to their desks and continued working on their writing in the Chromebooks.

This experience allowed Ms. Park and I to reflect on the importance of providing scaffoldings and materials that the students are familiar with or that at least have been exposed to. Although Ms. Park considered that the kernel would help the students, none of them had seen

a structure like that before; therefore, it was important to stop and introduce students to the format.

**Week two.** During the second week, Ms. Park provided a mini lesson where she told the students how she would place her own story in the writing kernel. To do so, she referred to a chart paper and markers. I noticed that the students were able to include at least one sentence in some of the boxes of the kernel format; however, their writing seemed to be very brief. Because of this, I decided to focus on teaching students how to make a more coherent and interesting story by adding details. I worked with small groups to accomplish this task. I opted to work with groups of four to six students because although I was an observer participant, Ms. Park was taking the lead in relation to conducting mini lessons. In order to disrupt the students writing time to a minimum, I focused on specific participants based on their needs. For instance, I focused on working with students from table one, including Greta, Lily, Jocelyn, Camilo, Eder, and Megan, because I had noticed that they were writing about the same topic, a park that was dirty. I wondered if the students understood the writing prompt. We brainstormed the meaning of respect, then we named different places and discussed how they look when they are not respected. Figure 14 presents the quick charts that we developed during this small group instruction. I repeated this activity with another group of six students the same day.

Working in small groups was fruitful as students started to share authentic experiences about places that were not respected and decided to change the focus of their writing. For example, Eder changed the topic of a park and wrote about a trip to Galveston beach while Megan decided to discuss an experience in the movie theater.

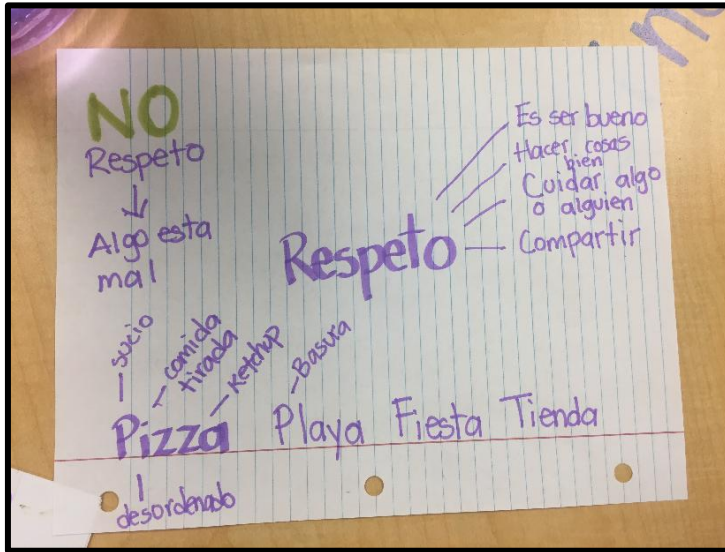
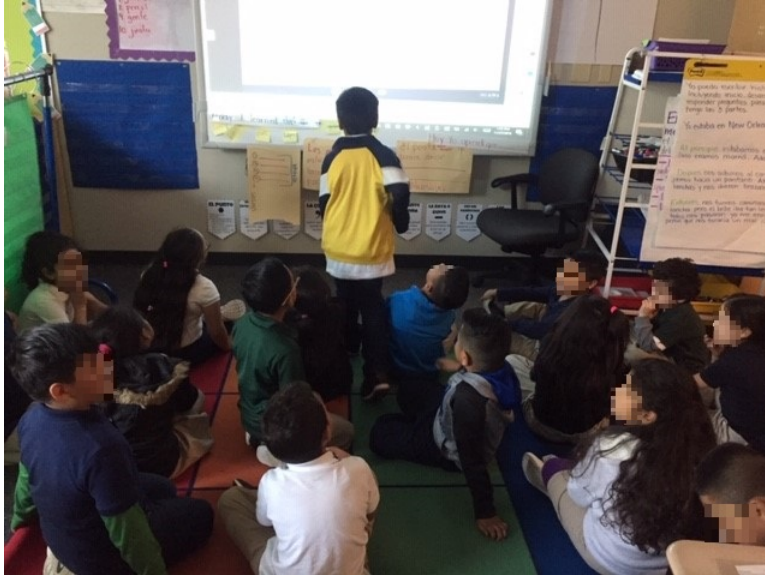


Figure 14. Brainstorming Writing Topics about Disrespected Spaces

Center to the Right: To Respect is to be good, to do things correctly, to care for someone or something, to share. On the Left: Disrespect means that something is wrong. At the bottom: Pizza Restaurant—dirty, food on the floor, ketchup, disorganized; Beach—there is trash; Party; Store.

At the end of the week, I requested permission to Ms. Park to project two writing samples of two students who had been able to use the kernel format effectively. My objective was to make sure that the students had consistent models of what they were expected to accomplish. Furthermore, having students present their actual samples as model examples creates an opportunity for sharing with their peers their accomplishment, the knowledge gained about writing and using the kernel, and promotes dialogues. In addition, I noticed that students who shared their text, were proud of their work and were able to position themselves as capable in relation to their peers. This was evident in the role that both students decided to take after presenting their text by asking questions to their peers and offering their help. This is an important component of students' forging a better identity as writers. Figure 15 presents an image of a student sharing his writing project.



*Figure 15. Student Sharing his Writing Project*

**Week three.** In the third week of implementation, the focus was allowing students to become editors (Lenters & Grant, 2016) by utilizing the “share” option of Google Docs and by leaving comments on each other’s work. This was an important part of the task because it allowed students to critically consider matters of structure and coherence in the writing of their peers. As Wilde (2007) states, “it is easier to recognize what works in the writing of others, since there is less ego involved” (p.1). While working on the work of other classmates students were able to contextualize their grammar and spellings knowledge.

In order to ensure that all students had an editor, I requested students share their work with the classmate sitting in front of them and with any other partner of their choice. Then, I asked students to look for areas of improvement. During this week, we asked students to focus on one component per day such as capitalization, spelling, punctuation, as well as positive observations about their classmates’ work. Figure 16 shows the feedback to a Spanish writing sample while Figure 17 presents feedback to an English text.

<b>Inicio</b>	¿Dónde estabas?	"Uf que feo uele la basura" - mi mama dijo. yo reguerdo que estabamos en el parque.
<b>Desarrollo</b>	¿Qué pasó primero?	primero me En contre basura en el suelo. avia latasy panalesY avia basura de comida. la basura
	¿Qué pasó después?	lo que paso es que me dijo mi mama que recojiera la basura y yo recoji la basura Despues avia un poquito de basura y la recoji y el parque estaba limpio
	¿Qué paso al final?	Después le dije a mi mama que el parque estaba limpio ymi mami dijo ha que rico uele eso dijo mi mama EAl final Finalmente
<b>Final</b>	¿Cómo te hizo sentir?	lo que sen ti

1:45 PM Oct 23 Resolve

Te falta la L mayuscula.

Figure 16. Spanish Writing with Student's Feedback

<b>Titles</b>		
<b>Beginning</b>	Where were ...you?	There where peces of burgers. I remember I was in the park of my apartments.
	What happened first?	At first I see water baros papers and I said Eyue' because it smells bad . and I see food.
	What happened after?	Next,I pick the trash that was in the floor.
	What happened at the end?	Finally it not was any of trash and now is any of trash.
<b>End</b>	How did you feel?	I feel happy? because now is any of trash and it was all clean and the park it looks all clean.

9:47 AM Nov 1 Resolve

gran trabajo por limpiar el parque por recojer la basura

---

9:51 AM Nov 1 Resolve

sabes que hiciste un buen trabajo porque escribiste muy bien el ingles

Figure 17. English Writing with Student's Feedback

Towards the fourth week, students continued editing their writing and also developed their own spelling list of words. To do so, first students learned how to activate the spelling tool from



Google Docs. This feature underlined in red the words that were not spelled correctly.

Individually or in pairs, students wrote down the words that were not spelled correctly and then using the spelling feature of Google Docs, they recorded the standard way of writing down the term. The spelling feature opened a small window on the top right corner of the screen and prompted the students with the correct spelling of the term. After this, each student developed a personalized list of words and used it as a reference. Figure 18 presents an example of a spelling list.

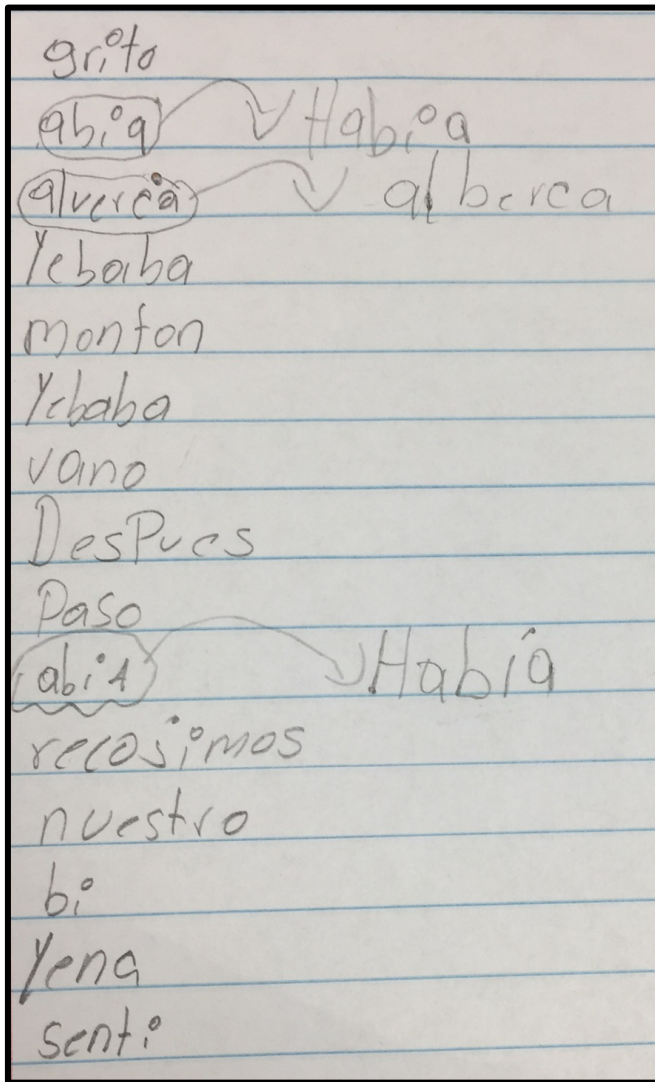


Figure 18. Contextualized Spelling List

I noticed that the majority of the students were able to identify common errors and reflect on it. I video recorded students explaining to me the mistake that they have found and also their rationale to correct it. Table 6 is a video transcription of a conversation between Jocelyn and Megan, editing the writing project of Megan:

Table 6

*Jocelyn & Megan Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Megan</b>	¿Escribo las que escribí mal?	Do I write the ones I spelled wrong?
<b>Jocelyn</b>	¿Estas escribiendo en inglés o en español?	Are you writing in English or Spanish?
<b>Megan</b>	En español.	In Spanish
<b>Jocelyn</b>	Estas palabras están en inglés. Ahí dice sine.	These words are in English. It says sine.
<b>Megan</b>	Cine, es cine.	Cinema, it's cinema.
<b>Jocelyn</b>	So ¿A esa que le pongo?	So to that one what should I put?
<i>Megan opens the spelling tool that prompts to change sine to cine.</i>		
<b>Jocelyn</b>	Entonces así se escribe aún cuando dice sine va con esa mira.	So that's how it is written even when it says sine goes with that letter, look.
<i>Jocelyn points at the letter c</i>		
<b>Jocelyn</b>	Ahora escribe lo que esta ahí.	Now write what is there.
<b>Megan</b>	Oh.	Oh.
<i>Megan writes next to sine the word cine</i>		
<b>Researcher</b>	¿Cuál es la letra entonces que tienen que cambiar?	What is the letter that you have to change?
<b>Jocelyn and Megan</b>	La S.	The S.
<b>Researcher</b>	¿Y por qué la tienen que cambiar?	And why do you have to change it?
<b>Megan</b>	Porque tenía que ir con éste.	Because it is spelled with this one. (points at the letter c)

*Note.* November 1, 2018, 10:11 am

In addition, some students thought aloud about the editing process. Table 7 presents Lizette analyzing Oswaldo's writing.

Table 7

*Oswaldo & Lizette Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Oswaldo</b>	¿Qué notaste Lizette?	What did you notice Lizette?
<b>Lizette</b>	Es que esto la v, le faltó el acento, la mayúscula.	It's all these, the letter v, a missing accent, upper case...
<b>Researcher</b>	¿Y le vas a poner comentario?	Are you adding a comment about it?
<b>Lizette</b>	Si.	Yes

*Note.* October 31, 2018, 1:54 p.m.

The previous two dialogues show that students are able to provide feedback to their peers by applying their knowledge and skills of spelling. Having students working as editors and developing their own spelling lists creates an opportunity for collaboration and contextualized learning. I noticed that even students considered low-achievers were content of their contributions and were able to place themselves as equal in relation to their peers. Collaboration is an important factor in a learning process and a unique characteristic of digital literacies (Gee, 2012). Furthermore, students demonstrated self-reflection and critical thinking when they created their personalized spelling lists. Instead of working on rote memorization, students were able to analyze and identify their own mistakes in words that were frequently used by them and for meaningful purposes. Both practices, students as editors and spelling lists, showed how to contextualized and personalized writing activities in real life contexts using technology and peers as supports.

**Week five.** During the fifth week, students started the publishing process that included adding an illustration, according to the writing process posted on Ms. Park's classroom, and formatting the text in a new document. At this point, students learned how to use visual modes of

meaning making (The New London Group, 1996), including different fonts, change colors, and images. The image in Figure 19 shows the writing sample of Lily without the writing kernel table.

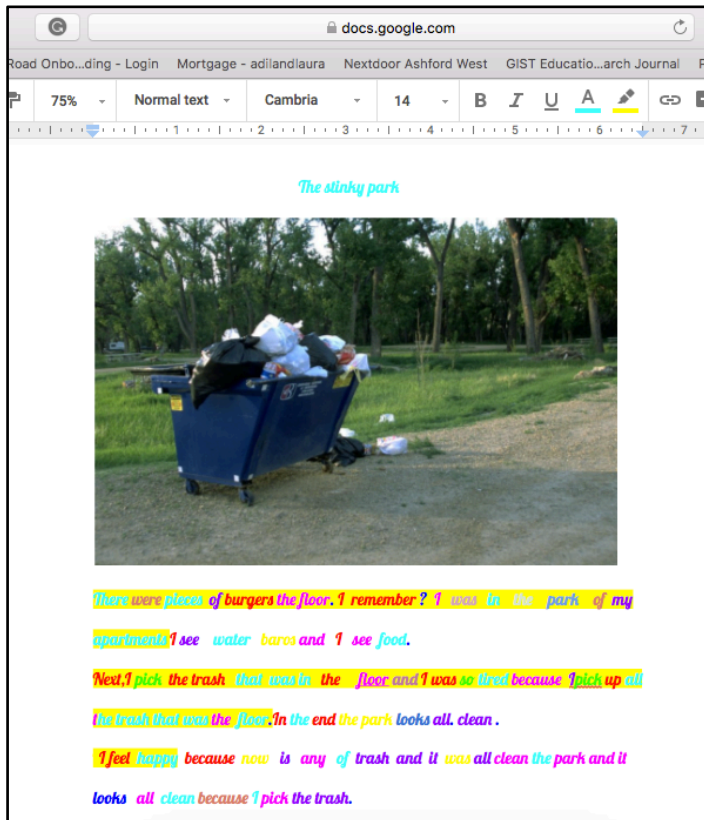


Figure 19. Multimodal Writing Sample

The process of creating and publishing was challenging for students, as it required them to use digital skills such as selecting texts and using commands that they were still developing. We accomplished this task by modeling in the Smart Board the different features of Google Docs. Students learned the commands to copy (Ctrl + C) and paste (Ctrl + V) as well as selecting their text using the arrows and shift keys. I modeled for the students how to copy and paste using the sample writing from a student who volunteered. I started doing a Total Physical Response (TPR) activity with their fingers where they will say “Control (press your forehead with your

finger), copy (quick tap) remove your finger.” Figure 20 shows the students conducting this activity.



*Figure 20.* TPR Procedure to Copy and Paste a Text Selection

We performed a similar TPR procedure prior to using their fingers on the computers for keyboard techniques. We implemented TPR because we noticed that students struggled with two skills: copying their text into a new document without the keyboard writing table and keeping the text selected without deleting it. To problem solve the first issue, we decided to ask students to tap several times the arrow key while pressing shift prior to using the copy command (Ctrl +C). In this way students were able to stop at the end of the sentence. The second issue was problem solved by writing the commands copy (Ctrl+C) and paste (Ctrl+V) on a separate poster so that students would not forget the sequence.

Using digital literacies requires typing skills that the second graders were still developing. Although the various Google Apps are considered educational tools, they represent a

challenge in terms of instructional purposes; however, the added value as a digital skill while constructing a multimodal writing piece is of importance.

**Week six.** This segment of the Multimodal Writing Project focused on expository writing. The goal for the students was to respond to the following prompt: Write about a person, place, or item that you like or dislike. Explain why you like/dislike it. Prior to this session, the students had received instruction from the language arts specialist about expository writing. To model for students, I wrote an expository text about Santa's Wonderland, a popular attraction at the time when I conducted the study. Then, I introduced how to utilize Google Slides, a software to create multimodal presentations. This tool allows users to include visual, spatial, audio, and linguistic modes of meaning making in the form of backgrounds, videos, sounds, images, and colors. I modeled for the students how my expository text would look in Google Slides.

Then, I presented the writing prompt to students, which was to explain why they liked or disliked a place, toy, person, or thing. I asked them to write the sample in a language different from their first writing sample. With the exception of two students, all of them wrote in English. A difference with the first round of Multimodal Writing Project was that students were given the option of using or not a kernel for expository writing. None of the students decided to use the text structure. I noticed that students' writing in terms of content was more rich in terms of topics in comparison to the first writing prompt. Furthermore, the typing skills of students seemed to improve as the writing quantity seemed to be greater than the one produced during the first week using Google Docs.

**Week seven and eight.** As mentioned in section one of this chapter, the affective filter of the students was high when they were asked to write in English. I was aware of their feelings towards producing text in English and therefore, during the seventh and eighth week, I showed the

students how to utilize the feature Google Translate. I explained to them that sometimes there are words in English or Spanish that we do not know how to say or write and that people sometimes use a bilingual dictionary or a digital translator. Students utilized the tool to find terms that they were not familiar with in their second language. For example, Karina used Google Translate to find out how to say tortilla de maiz [corn tortilla] in English (see Figure 21).

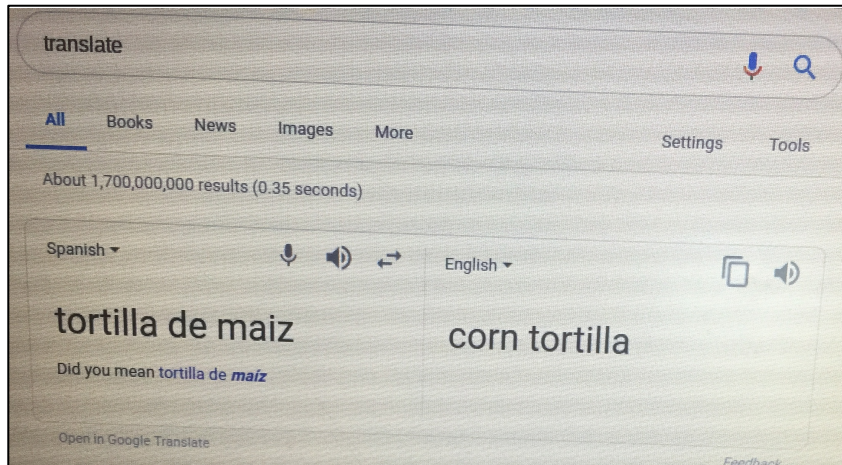


Figure 21. Google Translate Screen

Figure 21 shows how Google Translate presented the Spanish and English version side by side. To capitalize on this feature, I prompted students to share with their peers and with me what was different or similar in both languages. This activity allowed them to develop cross-linguistic connections that in turn taught them metalinguistic awareness in a personalized way.

During weeks seven and eight, students also shared their writing with a person in front of them, as well as a peer of their choice with the purpose of working on the editing and spelling. I noticed that they were able to transfer to Google Slides the skills learned in Google Docs such as using different fonts and colors as well as inserting images and videos.

In summary, towards the final weeks of the project the students became more avid using digital skills and writing. At this point, the project had become part of their routine, as expressed

by Omar during an interview “antes no escribíamos tanto y ahora ya escribimos mucho, sabemos que a la 1 de la tarde tú vas a estar aquí y que vamos a escribir” [before we did not write that much but now we write a lot, we know that at 1:00 p.m. you will be here and that we will write] (Omar, interview, December 20, 2018). Furthermore, writing in English was a task that seemed to be enjoyed by the students as they relied on different support systems including their peers, Google translate, and myself.

**Week nine.** In the last week of this project, students were working on the revision of their document. For this week, the plan was to revise and publish their projects. To accomplish these two tasks, students would have to develop spelling lists, collaborate in the edition of their project, as well as adding modes of meaning-making. However, during this week students accomplished writing the spelling list in English and sending feedback to their peers about their projects. Figure 22 presents a sample of Greta’s work the last day that I visited the school for this project, including her peer feedback.

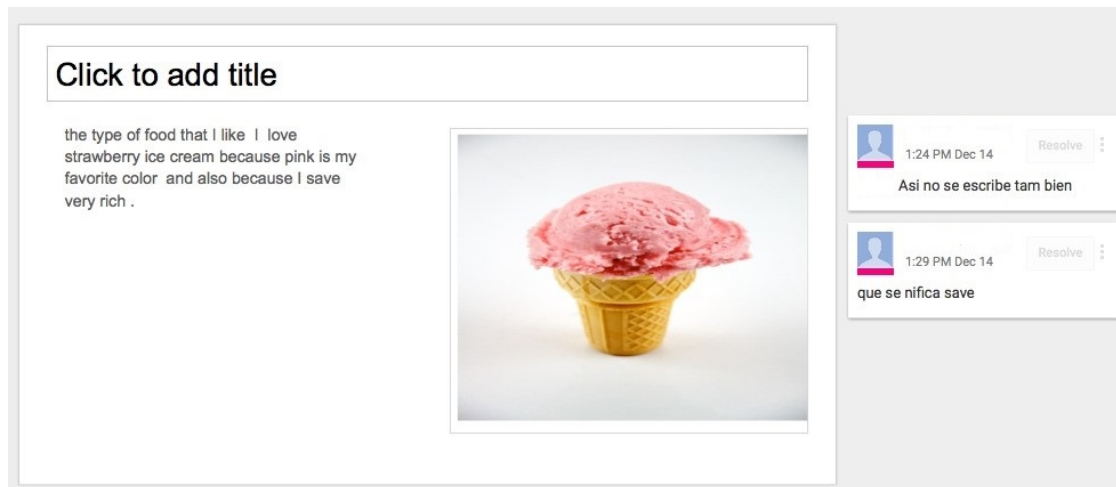


Figure 22. Greta’s Multimodal Writing with Feedback

Students could not work on the feedback received by their peers, the addition of modes of meaning making, nor publishing. Since this was the last week before going on Winter Break, I



was asked to limit my classroom visits to two for that week because the students had grade level Christmas projects to complete as well as holiday events. Nonetheless, the progress made during the last three weeks was notable because although the students were writing in their second language, their writing production was consistent and meaningful. In three weeks, most students had a complete draft to edit and revise in English, a language that was perceived with mixed emotions.

### **Section III: Themes**

In this section, I present the different themes that I identified through the analysis. I organize the findings and themes according to the research questions integrating evidence from the different data sources.

#### **How do emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing?**

In conducting this research, I set out to explore how emergent bilinguals used their languages to construct texts while working in Google Docs and Slides. In this section, I explain two themes that respond to my first question. The data that helped me to answer this question included my field notes, video recordings, students' interviews as well as my observations.

#### **Research Question 1: Theme 1**

**Emergent bilinguals use bilingual practices to support multimodal writing.** A dynamic approach to teaching for biliteracy is the acknowledgement and integration of bilingual practices such as metalinguistic awareness (Beeman & Urow, 2012) and translanguaging (Flores & Schissel, 2014; García, 2009a). Metalinguistic awareness is defined as the ability to understand how language works and changes to adapt to specific circumstances (Beeman & Urow, 2012). Translanguaging from a pedagogical stance illustrates the way in which students

and teachers can utilize all their linguistic resources to convey meaning (García & Kleifgen, 2010). Both bilingual practices, metalinguistic awareness and translanguaging, promote a holistic and dynamic approach to teach two or more languages, and challenge the use of monolingual semiotic toolkits and instructional approaches (García, 2009a).

Furthermore, acknowledging translanguaging and developing metalinguistic awareness in the bilingual classroom positions the learning of language as a human right (Skutnabb-Kangas, 2000) and as a resource for learning (Ruiz, 1984). For instance, students might find similitudes and differences in their languages to promote linguistic development (Martin-Beltrán, 2014), and thus they might use their languages to clarify misunderstandings and support each other through small groups (Lucas & Katz, 1994). Students might also translate written and spoken materials to promote conceptual understandings (Jiménez et al., 2015). According to Cen Williams translanguaging provides a profound understanding of subject matter and language competence—in particular in the weaker language, as stated in Baker and Wright (2017). Bilingual practices allow students to “appropriate the use of language, and although teachers may carefully plan when and how languages are to be used, children themselves use their entire linguistic repertoires flexibly” (García, 2009a, p. 304). In other words, bilingual practices, such as metalinguistic awareness and translanguaging, are some of the dynamic abilities that emergent bilinguals apply and learn to make sense of their multilingual worlds.

In this study, the bilingual practices theme emerged as I analyzed students’ responses during the interviews and my observations. I noticed that students described their overall bilingual practices while using Google Translate and they provided their rationale for the purpose of using English and Spanish at the same time. An important bilingual practice I identified was the way students used Google Translate. Google Translate was a tool that students

utilized often while constructing their English texts. Google Translate allowed students to put English and Spanish side by side when conducting a translation. For Beeman and Urow (2012), having languages side by side encourages students to explore similitudes and differences in several linguistic domains such as phonology, grammar, syntax or pragmatics.

When students utilized Google Translate, they enriched their linguistic repertoire using their languages as resources to construct a meaningful text. The words that they sought were not random terms but needed words that they required to express their desire message in their writing. In other words, students were using both of their languages authentically and in a contextualized way. This was an example of what the The New London Group (1996) defines as transformed practice where students use and re-create discourses using real life purposes. Several students explained that they felt they were able to apply and use the skills gained through translation in their writing. For example, one student said,

Me siento que puedo porque aprendo unas nuevas palabras. Sólo cuando en translate no sabemos sólo lo usamos y ya sabemos esa palabra ya no tenemos que usar translate. Cuando no sabía palabras de translate lo podía poner en español y en inglés ya sabía porque ahí nos decía. Ya me siento muy bien. [I feel that I can learn new words. When we do not know a word we just use translate to learn that word and after that we don't need to use it anymore. When I did not know words I could use Spanish or English and translate would give the words. Now I feel very good]. (Omar, interview, December 20, 2018)

Students seemed to see this resource as a tool to be used only for particular instances. With the only exception of Greta, a new immigrant, none of the students translated complete sentences but looked for particular words.

During my observations, I noticed that students, when working in pairs, would have conversations about language when they encountered words that were unfamiliar or that they knew were not a good fit to their text. During the interviews, some students shared with me that Google Translate “a veces se equivoca” [sometimes make mistakes] or “no siempre nos dice la palabra correcta” [it doesn’t provide the correct word all the time]. In the following interview transcription (see Table 8), Lily describes a scenario featuring metalinguistic awareness.

Table 8

*Lily Interview*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	Pláticame de Google Translate.	Tell me about Google Translate.
<b>Lily</b>	Es un poco más o menos. Si me gusta porque ya te dice cómo escribir las palabras, aunque algunas veces se equivoca por ejemplo, una vez yo le ayude a Jocelyn porque ella puso paletas y ahí le decía pallets pero se tiene que decir lollipops. Entonces no siempre nos decía la palabra correcta.	It is a little so-so. I like it because it tells you how to write the words, although sometimes it makes mistakes. For example, one day I was helping Jocelyn because she typed paletas and there (Google Translate) said pallets but it had to say lollipops. So, it would not always tell us the right term.
<b>Researcher</b>	¿Y cómo sabían o le hacían para decidir?	And how did you know or how did you decide?
<b>Lily</b>	Pues yo sabía pero Jocelyn decía que de cualquier manera lo pusiera ahí. Así que yo le dije que yo se lo iba a hacer entonces yo le escribí lollipops ahí.	Well, I knew it but Jocelyn said that she was going to type it anyways. Therefore, I told her that I would do it for her and I typed lollipops there.

*Note.* December 20, 2018.

Furthermore, I noticed that once Google Translate provided students with the required term, students would listen to it in English but would rely on their Spanish linguistic skills to transfer the word into their document. The following field note is about Elías trying to type the word delicious (see Table 9).

Table 9

*Elias Field Note*

<b>Observation</b>	<b>Action</b>
<p>I noticed that Elias typed the word <i>delicioso</i> in Google Translate. When he noticed that the word was similar in spelling he first click on the speaker option to hear the word read aloud by Google. Then, he started pronouncing and reading the word using phonics in Spanish and by syllables de/li/ci/ous. When I approached him, I asked him what he noticed about that word. He told me that they were spelled almost the same but that in English you add /us/ at the end.</p>	<p>I taught Elias cognates and we focused on the Spanish suffix –oso and the equivalent in English –ous.</p>

In addition, after analyzing the students’ writing with the literacy squared writing rubric (Escamilla et al., 2014), I noticed that at the word level, students loaned words from English to Spanish, and the students used phonetic principles cross-linguistically mainly from Spanish to English. To illustrate some of those words included the spelling of the words, jav (have), mony (money), or bai (buy). In the word jav, the letter “j” encodes the /h/ sound in English, the letter “y” encodes the /ey/ sound, and “ai” encodes the /y/ sound. According to Escamilla et al. (2014), students may demonstrate metalinguistic awareness about “how letters and sounds are paired by applying phonetic principles specific to one or both languages when encoding words” (p. 110). It is important to mention that the behaviors observed in relation to phonetic principles were only recorded if they could be attributed to the biliteracy development of students, for example, students who use the letter “j” to encode the /h/ sound in English. Table 10 displays the bilingual strategies utilized at the word level by the students. The table includes only the students whose multimodal writing featured the bilingual strategy; therefore, not all students are represented in the chart, as their writing did not portray this feature.

Table 10

*Bilingual Strategies Utilized at the Word Level (WL)*

<b>Student</b>	<b>Spanish to English</b>	<b>English to Spanish</b>	<b>Spanish - English</b>
<b>Alfredo</b>	WL - Phonics		
<b>Bella</b>	WL - Phonics		WL - Phonics
<b>Brady</b>	WL - Phonics		
<b>Camilo</b>	WL - Phonics		
<b>Cynthia</b>	WL - Phonics		
<b>Jaime</b>	WL - Phonics		
<b>Karina</b>	WL - Phonics		
<b>Lily</b>	WL - Phonics		
<b>Lizette</b>	WL - Phonics	WL– Code Switching	
<b>Jocelyn</b>	WL - Phonics		
<b>Elias</b>		WL – Loan Words	
<b>Ramos</b>		WL - Phonics	

At the sentence level, I found that students utilized bilingual strategies from Spanish to English and from English to Spanish including literal translations, syntax approximations, and code-switching. For this analysis, I used the literacy squared writing rubric (Escamilla et al., 2014) and focused on finding the sentences or phrases that the students wrote. Then using the rubric as a guide, I looked for the developmental language-specific approximations. For example, when reading Eder’s writing, I found the sentence: Because want to go? which is the direct translation of the Spanish question: ¿Por qué quiero ir? [Why do I want to go?]. In this sentence, Eder takes the meaning of the word “por qué” [why] and provides an approximation with the word “because” which in Spanish holds the same meaning as why. Also, the student’s syntax to construct a question reflects his knowledge in Spanish. Table 11 shows the bilingual strategies employed at the sentence level by the students.

Table 11

*Bilingual Strategies Utilized at the Sentence Level (SL)*

<b>Student</b>	<b>Spanish to English</b>	<b>English to Spanish</b>	<b>Spanish - English</b>
<b>Eder</b>	SL – Literal Translation – Omission - Syntax	SL – Literal Translation	
<b>Elias</b>	SL – Literal Translation		
<b>Estrella</b>	SL – Literal Translation and Syntax		
<b>Greta</b>	SL – Literal Translation		
<b>Jocelyn</b>	SL – Omissions		
<b>Zara</b>	SL - Omissions		
<b>Brady</b>		SL– Syntax and Code Switching	
<b>Cynthia</b>		SL– Code Switching	
<b>Lizette</b>		SL -Syntax	
<b>Orlando</b>		SL - Syntax	

**Research Question 1: Theme 2**

**Emergent bilinguals use of online interactivity and modes of meaning as an input to construct bilingual texts.** Although there is no certainty yet about how technology might transform the practices of education, it is evident that interactive technologies can offer wider and more significant opportunities for learning (Timmis, Broadfoot, Sutherland, & Oldfield, 2015). According to Gee and Hayes (2011), one of the advantages of the digital age is that it provides opportunities for language learning through online interactivity via digital technology. This interactivity is defined as the digital spaces that require participants to utilize sustained conversations (Steinkuehler & Williams, 2006). Two characteristics of online interactivity are the use of written literacy and the blur of superior versus subordinate dyads (Gee & Hayes, 2011). In the classroom, this translates into all students having the opportunity of writing and

collaborating like learner-teachers and teachers become collaborative teacher-learners (Gee & Hayes, 2010).

Furthermore, different modes of meaning making, available in digital media, can enhance the language learning experience through meaningful interactions (Marchetti & Cullen, 2016). According to Jewitt (2006), it is not digital media alone but the interrelationship and interaction with different modes of meaning that make the difference in language learning by providing effective input to stimulate communication.

In this study, I found that students turn to both online collaboration and modes of meaning making (The New London Group, 1996) to elicit, elaborate, and discuss their writing. This theme emerged in the students' responses as they often mentioned that they liked Google Apps because "escribes con imagenes" (Brady, 8 years old) [you can write with images], "se entendió más mi escritura" (Estrella, 8 years old) [my writing makes more sense], and "para enseñar cómo es el lugar del que estoy escribiendo" (Lily, 7 years old) [I can show how it looks like the place that I am writing about]. Furthermore, students utilized their full linguistic repertoire to communicate, reflect, and provide feedback in writing. That is, the actual multimodal writing of their peers created a network of multimodal compositions that served as input to prompt more communication and writing between participants. Comments such as "quería que me mandaran lo que está bien o mal" (Zara, 7 years old) [I wanted them to send me what I had right or wrong], "cuando estábamos escribiendo los comentarios me gustó leer los cuentos de otros compañeros" (Estrella, 8 years old) [when we were writing comments I liked to read the stories of other classmates]. Students were eager and interested in collaborating with their peers by providing and giving feedback. In the following section, I describe how students utilized modes of meaning making to construct their text.



**Modes of meaning making through digital media.** According to The New London Group (1996), a visual mode of meaning making includes visual representations such as images, pictures, illustrations, or colors. Visual representations provide a broader view of literacy (Moore-Russo & Shanahan, 2014) by allowing students to express and develop actions, ideas, events, or circumstances. In the construction of these texts, visuals reinforced the meaning of the written texts of students. During the interviews, I asked students what was different between writing in paper and writing using Google Docs or Slides. I classified the students' responses into the different modes of meaning making as applicable. Table 12 shows the students' responses that aligned with modes of meaning making. In general, students agreed that they enjoyed creating a digital multimodal writing project, which consists of the use of different forms of meaning making, to construct a more meaningful writing.

Table 12

*Students' Responses*

<b>Students' Responses</b>	<b>Modes of Meaning</b>
"Escribes con imágenes" [Write with images]	Visual
"Poner fotos" [Insert pictures]	
"Las fotos con detalles" [The pictures with details]	
"Letras con diferentes colores" [Fonts with different colors]	
"Buscar fotos" [To look for pictures]	
"Poner las imágenes y colorear las palabras" [To look for pictures and put words in color]	Visual and Spatial
" Para que la gente lo mire y sepa de que estoy hablando" [For people to know what I am talking about]	
" Para enseñar cómo es ese lugar del que estoy escribiendo" [To show how is the place that I am writing about]	Spatial
"Se entendió mas mi escritura" [My writing made more sense]	Linguistic
"Me lo pronuncie bien" [It pronounced words well]	Audio
"Puedes ver videos y en el papel no" [I could watch videos and in paper I can't]	Audio and Visual

In particular, students utilized visual modes to get inspired and to develop the details to construct their writing. In one of my field notes (see Table 13), I described when I noticed that Greta utilized a picture, visual mode of meaning making, to add more details in her text.

Table 13

*Integration of Visuals to Develop Details*

<b>Observation</b>	<b>Action</b>
I noticed that Greta's writing was brief and needed to develop more her ideas. She was looking for images that fit her writing. When I asked her why she selected a picture of water polluted with plastic bottles, trash, and leaves, she responded that it resembled the pool that she went to. Therefore, I asked her to describe orally for me what she saw in the image. Then, she told me very excited, "entonces esto es lo que tengo que agregar en mi escritura" [so this is what I need to add to my writing].	I know that students are learning adjectives [with Ms Park], I prompted students to use their knowledge in adjectives to describe the images that they had if they felt that they were struggling with the development of ideas or details.

The majority of the students, to enrich their writing with more details, conducted this practice. The students used English or Spanish orally to describe the visuals, and then they typed the details that they considered fitting in their story.

The analysis of students' writing using the rubric I developed to analyze bilingual multimodal writing, described in chapter three, demonstrated that although students included visual, linguistic, spatial, and gestural modes, they favored the visual mode of meaning making in both English and Spanish writing samples. Also, within a visual mode, some students embedded spatial and gestural modes. For example, students included images of people interacting or responding emotionally to specific circumstances along with the topic of their writing. That is, visual modes seem to be the favorite of students possibly because, as Marchetti and Cullen (2016) assert, an image is no longer a supplement of a text but the actual carrier of meaning.

**Online interactivity, voice, and writing.** Students became learner-teachers as they reflected and included feedback from their peers in their writing. For instance, an unexpected outcome of the learning affordances of online interactivity relates to students identified as struggling learners. According to Shin and Cimasko (2008), “multimodal approaches to composition provide writers who are having difficulty in using language with powerful tools for sharing knowledge and for self expression” (p. 377). In my observations, I recorded the example of a student who rarely spoke in the classroom (see Table 14). She would nod or respond in very brief and concrete sentences. Nonetheless, during this study, she took an active role and let others hear her voice, including her teacher. She voiced her rationale behind the selection of an image for her writing when she was asked to consider including a different visual.

Table 14

*Online Interactivity Gives Voice to Struggling Learners*

<b>Observation</b>	<b>Action</b>
<p>Bella is engaged in a conversation about her picture selection. She is upset because her elbow partner posted a comment asking her to put an image of Fiesta with things that are disorganized. However, she confronted her telling her that she wanted an image of Fiesta from the outside because there were kids misbehaving and throwing trash outside the shopping center and not inside.</p>	<p>I suggested to Bella to include those details in her writing.</p>

Bella’s reaction demonstrated her engagement in the multimodal writing project as a capable writer that understood that linguistic and visual modes of meaning making convey a stronger message when their intention and purpose are aligned. Furthermore, Bella voiced her decisions as an author to explain the rationale behind her choices. Online interactivity provided Bella with a setting where she felt secure and comfortable to participate.

Similarly, Megan who had a self-image of a low achiever, as she expressed her disappointment and sadness after not receiving any award during the academic ceremony, expressed during the interviews that her favorite part of Google Apps was being able to help other students. Table 15 presents an excerpt of our interview.

Table 15

*Megan Expresses Pride About her Role as Online Collaborator*

<b>SPEAKER</b>	<b>ENGLISH</b>	<b>SPANISH</b>
<b>Researcher</b>	¿Qué es lo que más te ha gustado de Google Docs?	What have you enjoyed the most in Google Docs?
<b>Megan</b>	Bien, los dos bien. Me gustó escribir.	All good, both are good. I liked writing
<b>Researcher</b>	¿En Slides?	And in Slides?
<b>Megan</b>	También lo mismo.	Also, the same
<b>Researcher</b>	¿Hay algo que no te haya gustado?	Is there anything that you disliked?
<b>Megan</b>	Si, pero de qué... todo me gustó.	Yes, but of what... I liked everything
<b>Researcher</b>	¿Por qué te gustó?	Why did you like everything?
<b>Megan</b>	Porque lo escribimos mal y teníamos que cambiarlo, poner el palito ahí, borrarla y pedirle a los amigos que nos ayudaran. Yo ayude muchas veces a Bella y otros.	Because when we wrote something bad we had to change it, placing the stick there, delete it and ask friends for help. I helped Bella and other students many times

The exchange shows how Megan has a sense of pride because she was able to help other students many times. That is, it seemed that she was able to inverse her role of feeling helplessness and incapable with a sense of being an active member of the writing process of her peers. Online interactivity allowed struggling learners to feel confidence and equalize their status with the rest of the class. Furthermore, this collaboration allowed these students to to communicate using their voice through writing.

### **How does multimodal writing facilitate the development of biliteracy?**

In this section, I report the findings for the second research question. In order to answer this research question, I looked at the aspects of Google Slides and Googles Docs that could serve as a tool to develop the biliteracy of the students. I operationalize biliteracy using my theoretical framework to look for elements in the data. The findings are framed under the construct of biliteracy defined by Gort and Bauer (2012) as “a complex phenomenon with

cognitive, sociocultural and sociological dimensions” that allows bilinguals to “experience a range and variety of literacy practices and transact with two literate worlds to create knowledge and transform it for meaningful purposes” (p. 2). Furthermore, biliteracy development is understood as part of a continuum (Hornberger, 2004) that is flexible, dynamic (García, 2009a), and allows students to navigate bidirectionally from the reception to the production of language, in this case, in the form of writing.

### **Research Question 2: Theme 1**

**Multimodal writing to meaningfully develop vocabulary and spelling.** The first theme relates to the way in which multimodal writing allowed students to develop vocabulary and spelling. This theme emerged as students considered that digital multimodal writing allowed them to identify and remember new words, as well as correct the spelling of words in English and Spanish. During the interviews, students responded that “Lo podemos arreglar todo” (Estrella, 8 years old) [we can fix everything] because “cuando estoy en la computadora sale la rayita roja y en el papel no sale” (Roman, 7 years old) [when I am in the computer it comes out a red line and in the paper it doesn’t come out]; or “te dice que hiciste mal y en el papel nadie te dice” (Lizette, 7 years old) [it tells you what you did wrong and in the paper nobody tells you] therefore “la computadora quiere ayudarte cuando escribes” (Omar, 7 years old) [the computer wants to help you when you write]. To develop their vocabulary and spelling, students relied on two features: Spelling Check and Google Translate.

The spelling check tool is a feature that underlines in red the words that are not spelled in a standard way. This feature was activated only when the students were working on the editing step. During the first steps of the multimodal writing project, the focus was on making meaning through writing without emphasizing standard or correct spelling but instead students using their

own language approximations and the linguistic knowledge that they possessed in any of their languages. Once the students were ready to edit their work, they activated the spelling check by clicking the tools menu and selecting a language in which the text was written. Then, they were able to use contrastive analysis between their language approximation and the standard spelling of a word. This allowed students to practice spelling in a meaningful, more autonomous, and contextualized way. Students describe this process as we summarize during a whole group conversation the learning events of a week with a focus on editing (See Table 16).

Table 16

*Editing Conversation Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	Muy bien chicos a ver, esta semana estuvimos trabajando en la edición de su documento. La edición era revisar y corregir tus errores. ¿Cómo nos ayudó la computadora?	Very well, kids let's see, this week we were working on editing your document. Editing meant to revise and correct your mistakes. How did the computer help us?
<b>Jocelyn</b>	Porque las líneas rojas te ayudan a...	Because the red lines help you to...
<b>Jaime</b>	Trabajar muy bien	Work really well
<b>Estrella</b>	A marcar las palabras para que las escribiéramos bien.	To highlight the words so that we can write them down correctly
<b>Researcher</b>	Las líneas rojas te ayudan a corregir las palabras, entonces si algo estaba rojo ¿qué quería decir eso?	The red lines helped you to correct your words, then if something was red what did that mean?
<b>Eder</b>	Que lo hiciste mal	That you did it wrong
<b>Class</b>	Y ahora tenías que corregirlas.	That now you had to correct them
<b>Researcher</b>	¿Cómo?	How?
<b>Elias</b>	Con <i>tools</i> meterte a <i>tools</i> , luego a <i>spelling</i> .	With tools, you have to use tools and then spelling.
<b>Camilo</b>	Y después a <i>spell check</i>	And then spell check
<b>Researcher</b>	Y qué pensabas cada vez que te marcaba esa palabra.	And what did you think when you had the word highlighted?
<b>Orlando</b>	Lo tenías que hacer en tu papel.	You had to write it on a paper
<b>Researcher</b>	Y qué pensabas tú mientras lo tenías que hacer en tu papel.	And what did you think while you were doing that in your paper
<b>Greta</b>	No, hay que subrayar lo malo.	No, we had to underline what was wrong
<b>Researcher</b>	Y cómo le hacías para encontrar lo malo.	And how did you find that?
<b>Eder</b>	Escribiendo a la par la palabra buena y la palabra mala. Entonces ya podíamos ver exactamente que estaba mal	We had to write side by side the correct word and the wrong word. And then we could see exactly what was wrong

*Note.* November 1, 2018.

This exchange shows that students define spelling as “la palabra buena y la palabra mala” [the right or wrong word]. Also, this is an example of how the students rely on translanguaging



as they integrate the Google Apps terms that they know in English (tools, spelling, spell check) to make sense of their learning about how revising their spelling,

Through multimodal writing in Google, the students identified the words that they needed to work on, but the process was not simplified just to change automatically the word; instead, they had to go through a thoughtful reflection about their spelling. I found that this practice was engaging, and the students seemed to enjoy it. Evidence of this was their enthusiasm when sharing with their peers their own spelling lists between giggles and comments about their mistakes. Also, once the students identified their mistakes, I noticed they felt more confident about their linguistic skills with comments such as “tengo menos errores ahora porque me voy a *tools* y le pongo *spelling check* y me ayuda a escribirlas” (Jocelyn, 7 years old) [I have less mistakes because now I go to Tools and I put Spelling Check and it helps me to write them down.] Others indicated that the spelling check allowed them to reflect on their own bilingualism, expressing that “siento que se más inglés porque en español me salen muchas rayas rojas y en inglés poquitas” (Lily, 7 years old) [I feel that I know more English because in Spanish I have many red lines but in English I just have a few].

It is important to mention that students used bilingual practices to write, such as Spanish phonology to type and reflect on the standard English spelling. This is an important translanguaging practice that shows how students use their linguistic repertoire in an integrated manner, a central feature of biliteracy development. Through these practices, students developed and demonstrated metalinguistic awareness using the spelling tool and reflecting on their language. In other words, the spelling check tool was utilized as a scaffold for grammar and spelling. For example, the dialogue in Table 17 shows how Megan utilizes metalinguistic awareness to edit her work.

Table 17

*Metalinguistic Awareness Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<i>Word spelled as “se” and highlighted in red</i>		
<b>Researcher</b>	Seeeee	[/s/e/e/]
<b>Megan</b>	Oh dos ‘e’ suenan como ‘i’	Oh, two letters e sound like i
<b>Megan</b>		Look at this!
<b>Researcher</b>		What do you see?
<i>Word spelled as “sai”</i>		
<b>Megan</b>	Ah, iba a decir como que “yo dije, yo dije”.	Oh, I was going to say that I said, I said”
<b>Researcher</b>	¿Cómo se dice en inglés dije?	How do you say “dije” in English?
<b>Megan</b>	Said, falta la d, esa	Said, I am missing the letter d, yes that one
<i>Next highlighted word is spelled as “seed”</i>		
<b>Megan</b>	Ahí dice seed.	That one says seed (Student changes “ee” to “ai” and types said.)
<i>Next underlined word is “iors”. Student changes Y for I.</i>		
<b>Megan</b>	I like iors. Oh no, asi mira como “you”	
<i>Student types YOU.</i>		
<b>Researcher</b>	/RS/	RS
<i>Student reads aloud the sentence.</i>		
<b>Megan</b>		I like yours.

*Note.* December 18, 2018.

Megan uses metalinguistic awareness to show how sounds are similar and different in English and Spanish as she edits her writing. Originally Megan had spelled the word ‘said’ as ‘see’. First, Megan realizes that the word ‘see’ does not convey the desired meaning in her text. She translanguages to explain in Spanish that she meant to write the word ‘dije’[said] and asserts that the /i/ sound in Spanish can be represented with “two e’s” in English. Therefore, she realizes that ‘see’ does not hold the meaning that she wanted to convey. She begins modifying her spelling by accurately adding a letter ‘d’. Now her word reads ‘seed.’ After reading the word, she

changes the 'ee' for 'ai' and moves on to the next word. She reads the first sentence aloud 'I like iors' and makes a connection that it must look like the word 'you'. She removes the 'i' and types the word 'you' while I help her with the final sounds 'rs' by saying it aloud. Through this process, Megan demonstrates metalinguistic awareness of sounds in English and Spanish and while using translanguaging to accomplish her editing task. Megan shows the biliteracy development process is holistic and complex as she illustrates how an ungrammatical expression (i.e., iors [yours]) can hold accurate content that can only be analyzed and understood taking into consideration the full linguistic repertoire of the students. Although her writing product is developed in English, her editing process is bilingual as she utilizes her languages strategically at the same time.

Another tool that allowed students to develop their vocabulary and spelling was Google Translate. Google Translate allowed students to focus on several biliteracy practices, such as pronunciation of the vocabulary, listening comprehension, and spelling which in turn translated into bilingual writing. According to Dzekoe (2017), integrating listening activities into the revision process of bilingual students has the potential to allow students to notice errors in any of their languages and increase their motivation to write. Hearing the words allowed students to focus on the pronunciation and phonics of English while seeing the words allowed them to focus on word recognition and spelling in both languages. Most importantly, the vocabulary that the students learned was personalized according to their needs. The exchange in Table 18 shows how Karina translanguages while using Google Translate to find the word 'river'.

Table 18

*Translanguages Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	¿Qué estas buscando?	What are you looking for?
<b>Karina</b>	Como se dice rio	How do you say river
<b>Researcher</b>	¿Y de qué idioma a que idioma lo tienes que poner?	From what language to what language?
<b>Karina</b>	De español a inglés	From Spanish to English
<b>Researcher</b>	Vamos a buscarla. ¿Cómo se dice?	Let's look for it, how do you say it?
<i>(Student clicks on the speaker to have the word read aloud, she hears the word and then she repeats it)</i>		
<b>Karina</b>		River
<i>(Student sounds out the word river as she types it in her screen)</i>		
<b>Karina</b>	Ms. Ramos, la e no suena.	Ms. Ramos, the letter e is mute

Karina shows that her knowledge in Spanish of the word rio [river] is a resource that she can use to find how to say the word in English. Once she sees the word ‘river’ on the screen, she decides to listen to it and discovers that the letter ‘e’ in that word is mute. This process of discovery shows how biliteracy development requires the strategic use of both languages and Google Translate provide situated learning for students with contextualized practice that translates in the development of English and Spanish vocabulary and spelling in a safe and supported environment.

Similarly, the transcription in Table 19 shows how Alfredo worked on the spelling of the word “change” in his English Multimodal Writing sample.

Table 19

*Multimodal Writing Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Alfredo</b>	Cambiar	To change
<b>Alfredo</b>	Ch-a	Ch-a
<i>Alfredo reads slowly the word change and goes back and forth from Google Translate to Google Slides to type “cha.; then, he returns to Google Translate and points at the letter “n”.</i>		
<b>Alfredo</b>	n-g-e	
<i>Alfredo reads /nge/ and goes back to Google Slides to type “nge”</i>		
<b>Researcher</b>	¿Qué escribiste?	What did you type
<b>Alfredo</b>		They change.

Here Alfredo is listening, reading, speaking, and writing using different language domains and full linguistic repertoire to spell the word ‘change’. First, he listened how to pronounce the word using Translate, and then he reads the word from the screen as he pronounces aloud the sounds –n-g-e, and finally, he types the word change, which he reads back again. For Alfredo, he understands that the sound of /ch/ in Spanish is represented with the digraph /ch/ in English. The difference between Karina, a simultaneous bilingual, and Alfredo, a sequential bilingual, was that Karina was able to identify how sounds were similar or different while Alfredo utilizes Translate to learn how each one of the letters in the word ‘change’ sound. That is, students utilized Google Translate according to their own needs and capabilities.

As evidenced in the previous dialogue, this contextualized practice facilitated the process of paying attention to the minimal parts of speech as the students were sounding out phonemes while typing. This is important in emergent bilinguals biliteracy development because, as mentioned in Beeman and Urow (2012), language development directly impacts literacy development. Also, although students were aware that they could just copy and paste the word, I found that their practice was intentional, as they decided to do it in a more thoughtful way.

This process of discovery shows how Google Translate provide situated learning for students with contextualized practice that translates in the development of English and Spanish vocabulary and spelling.

**Visual modes to develop vocabulary.** Students asserted that multimodal writing allowed them to create a meaningful narrative where visual modes of meaning making (The New London Group, 1996) complemented their text and provided them with more ideas as well as vocabulary. As previously mentioned, at times students relied on the description of images to develop their writing. The transcription in Table 20 shows a segment of video recording of students selecting their images to construct their multimodal writing, which serves as an example of the role of images in the students’ writing.

Table 20

*Multimodal Writing Construct Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	A ver Zara, tú me dijiste que escoger la foto fue un poco difícil.	Let’s see Zara, you told me that selecting an image was a little bit difficult.
<b>Zara</b>	Porque tenía que buscarla en <i>Google Slides</i> y la busqué para que diera con mi texto.	Because I had to look for it in Google Slides and I looked for one that could match my text.
<b>Researcher</b>	¿Qué decía tu texto?	What did your text say?
<b>Zara</b>	Que mi casa estaba linda y que a mi mami le gustaban las flores y tenía dos cuartos.	That my house was pretty and that my mother loved flowers and that it had two bedrooms.
<b>Researcher</b>	Entonces ¿qué hiciste?	So what did you do?
<b>Zara</b>	Pues tuve que inventar poquito en mi texto para decir lo que había en la imagen, como flores o rosas y tulipanes del color del arcoíris y así.	Well, I had to made up a little bit my text to describe what was on the image, like flowers or roses and tulips that were colored like the rainbow and so on.

Zara’s description of the image provided a space to create and extend their vocabulary across both languages. In the video transcription, it is noticeable that Zara is not only adding an

image to her writing. She explains how finding an image served two purposes. First, the image serves as a carrier of meaning that represents Zara's interests in her writing. She says, "la busqué para que diera con mi texto" [I looked for one word that could match my text]. Second, the image serves as an opportunity to develop her vocabulary moving from the word "flores" [flowers] to more specific types of flowers and a color description in both languages. The transcription also shows an example of translanguaging because Zara communicated her ideas and writing knowledge with me in Spanish and typed her writing project in English. In terms of biliteracy development, translanguaging is a natural and important skill that bilinguals employ to have positive biliteracy outcomes (Bauer et al., 2017). Zara utilized her full linguistic repertoire and linguistic domains to explain her knowledge about one topic, and was able to effectively utilize a bilingual process to develop the vocabulary needed to construct her text.

I also used the literacy squared writing rubric (Escamilla et al., 2014) to observe the content descriptor, defined as the ability to communicate a message effectively or how focused and organized is a composition in terms of meaning. In my findings, I noticed that students who were able to include at least a clear introduction and conclusion were able to include a visual that fit the meaning of the text. Students, who included a couple of ideas, also included a visual that captured those ideas. Outstanding writing projects included a combination of text and two or more images. This finding indicates that multimodal writing possibly can facilitate the biliteracy development of students as it seems to provide a visual scaffold for the development of ideas and details in both languages.

## **Research Question 2: Theme 2**

**Multimodal writing to empower bilingual students.** Another salient theme that responds to the research question on how does multimodal writing facilitates biliteracy

development shows that bilingual students felt empowered as writers throughout the completing of the project. According to García (2009a), it is imperative to allow children to build multiple positive identities towards bilingualism, as they use multiple languages in the “flexible ways of the future” (p. 387). During conversations and interviews, students shared that while working in multimodal writing, they experienced that they were competent bilingual and biliterate students, and more importantly they acknowledge that they enjoyed the process. Comments such as “me sentí como algo así que yo podía escribir más bien y aprendo unas palabras nuevas” (Omar, 7 years old) [I felt something like I was able to write better and learn new words], “antes como que me equivocaba mucho en ingles y ahora ya no y también puedo mejorar español en la computadora” (Lily, 7 years old) [before I used to make many mistakes in English but now I don’t and I can improve in Spanish using the computer], “siento que ya no es tan difícil” (Greta, 8 years old) [I feel that now it is not as complicated], “antes no sabía escribir y ahora sí” (Alfredo, 8 years old) [before I did not know how to write, and now I know] and “me siento mejor y menos nervioso” (Elias, 8 years old) [I feel better and less nervous], demonstrate that using digital multimodal writing in Google, empowered students as emergent Spanish/English bilinguals.

Although all participating students expressed positive feelings towards their identity as bilingual writers, it was particularly motivating for new immigrants. For instance, I found that digital multimodal writing allowed recently arrived students to fully participate in the bilingual writing event. Students who, according to Ms. Park, would shutdown and express “no puedo, no puedo, está en inglés” (M. Park, informal conversation, October 23, 2018) were able to change their attitude towards English and towards their emergent bilingualism. The conversation in Table 21 is with Greta, a new immigrant, shows her feelings towards biliteracy.



Table 21

*Emergent Bilingualism Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	¿Cómo te sientes al escribir en español en la computadora?	How do you feel when writing in Spanish on the computer?
<b>Greta</b>	Me siento como experta digamos porque en español ya he aprendido muchas palabras y en inglés más o menos.	I feel like an expert, because in Spanish I've already learned many words and in English more or less.
<b>Researcher</b>	¿Cómo te sientes ahora al escribir en inglés en la computadora?	How do you feel now when writing in English on the computer?
<b>Greta</b>	Me siento mejor porque yo soy nueva en la computadora también y en el inglés pero sé que voy a aprender así que solo me dejo llevar por translate y que me lo pronuncie bien así me lo grabo en mi mente para escribirlo en una hoja y ya yo lo puedo hacer en la computadora.	I feel better because I'm new at the computer too and in English but I know I'm going to learn so I just let myself be carried away by translate and pronounce it well so I record it in my mind to write it on a sheet and I can already do it on the computer.
<b>Researcher</b>	¿Ahora dime tú recomendarías a los demás niños que utilizaran Google para escribir?	Now tell me you would recommend the other children to use Google to write?
<b>Greta</b>	Si para que aprendan inglés y español pero si yo sigo trabajando así unos días más entonces yo casi puedo ser bilingüe si Dios lo permite.	Yes so that they learn English and Spanish but if I keep working like this for a few more days then I can almost be bilingual if God allows it.

Greta uses Google Translate as a tool that allows her to demonstrate her knowledge and ideas without having the constraint of not knowing how to express those in English. This tool has allowed Greta to position herself as a capable bilingual writer because she is able to participate in the same activities as the rest of the students and deliver a message in the language that she is being asked to. Furthermore, Greta trusts that translanguaging will allow her to become bilingual. Her new self-perception is more positive and hopeful.

In the same way, students who were classified as struggling readers or writers, were able to present a solid product that showcased their writing abilities in both languages. Children in

this group expressed comments, such as “yo quiero trabajar bien” [I want to work well] (Brady, Interview, 12/20/18), and were able to type their thoughts in a way that was not possible through handwriting. Figure 23 presents the handwriting and the multimodal writing piece of a student.

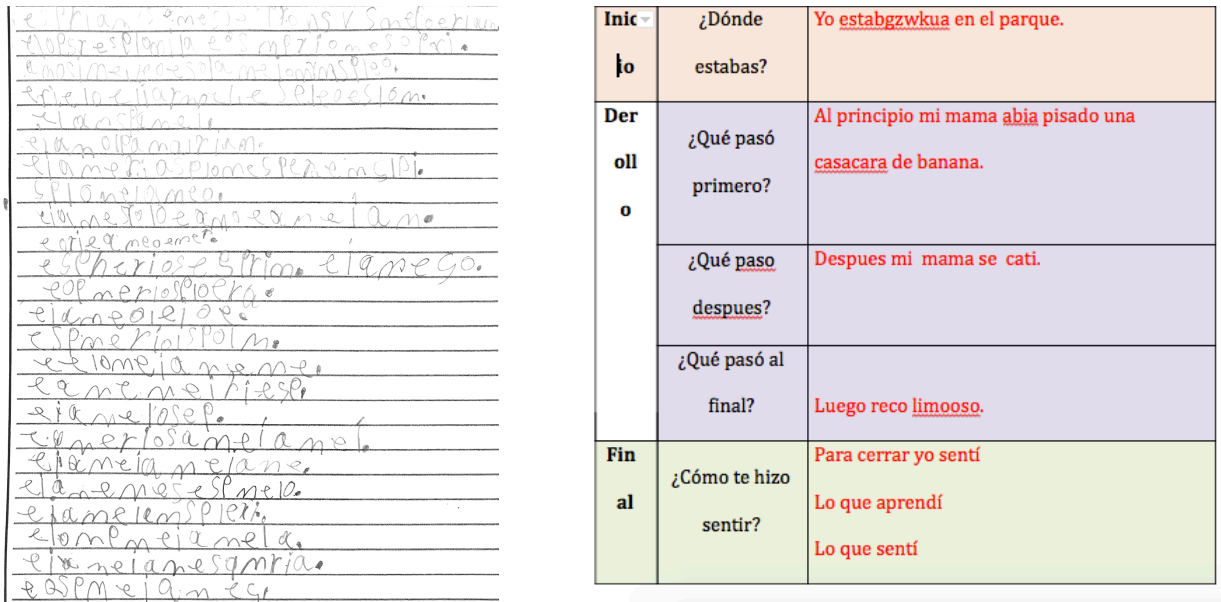


Figure 23. Handwriting and Multimodal Writing of Student

In this handwritten sample, the content, structure, and spelling of the sample is not clear. Whereas, in the digital writing piece, although brief, it is easy to identify the content in four sentences; the correct use of one or more structural elements, such as capitalization and punctuation, as well as most words spelled conventionally with some examples of approximations, such as “reco limooso (recojimos)” [we pick it up]. That is, multimodal writing facilitated the development of biliteracy in unique ways that would have not been observed traditionally.

## Section IV

As mentioned in chapter three, four children were chosen as focal participants. As the goal of this study was to explore how multimodal writing in computers, facilitated the development of biliteracy in second-grade Latino emergent bilinguals during a language arts class. I decided to identify focal students to produce a more in depth description of their multimodal writing projects. The criteria to select these students were their number of years in U.S. schools and their biliteracy performance prior and during the study so that I could provide a detailed account of the case.

In this section, the four participating children are described including background information and excerpts from their individual interviews. Their multimodal writing is described and analyzed in depth to exemplify the findings previously described.

### **Focal Students**

I chose two girls, Greta and Zara, and two boys, Alfredo and Elias, as my focal students.

**Alfredo: No puedo escribir en inglés porque siempre no se escribir inglés. [I cannot write in English because I never know how to write in English]**

Alfredo was a second grade student and was eight years old at the time of the study. He was of Honduran descent and is the eldest of two brothers. Alfredo used to go to school in Honduras and left when he finished first grade. According to him, “me vine antes de pasar en segundo así que aquí me pusieron en primero. Me iban a pasar en segundo pero mi mama decidió que repitiera” [I came before going to second grade so here they put me in first grade. They were going to pass me to second grade but my mom decided that I repeated first grade].

When I interviewed Alfredo, I asked him how he felt about writing in Spanish and English. He told me that he did not feel anything when writing in Spanish because

“ese ya se escribir mucho” [in that one I know how to write a lot] but felt incapable of writing in English and when asked to do so, he would ask the teacher if he could complete the assignment in Spanish. Alfredo told me that he did not have a computer at home but that he had a tablet to play games and watch YouTube videos.

According to Ms. Park, Alfredo was part of a group of students who needed extra support because she had to “either call them to my table or sit next to them and monitor them because they just can’t, they need a lot of support” (M. Park, interview, October 23, 2018).

In his multimodal writing pieces, Alfredo wrote in English a piece titled “English is not my favorite thing (sic)” (see Figure 24) and in the story he explained why he disliked English. In Spanish, he wrote a story entitled “La tienda” [The Store] (see Figure 25). He describes his experience in a store where a child was not showing respect because he was throwing clothes to the floor (see Figure 25).

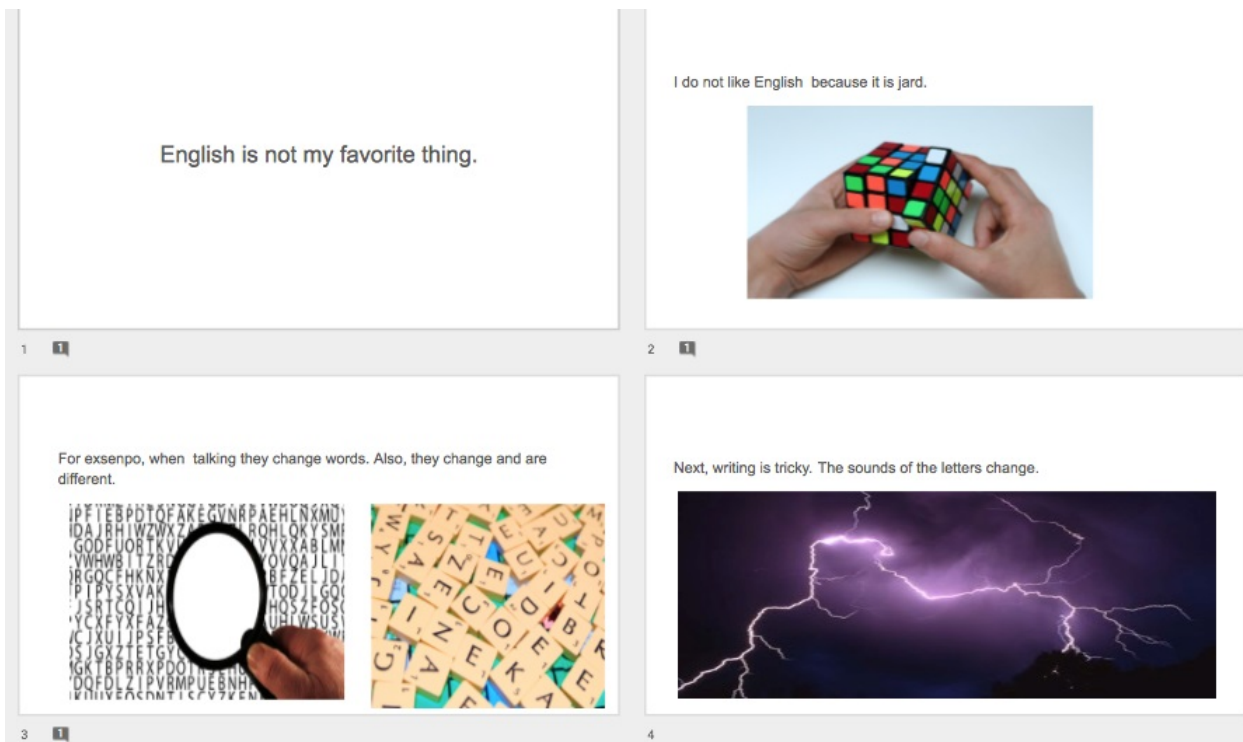


Figure 24. Alfredo's English Multimodal Writing

I don't like English because it is hard. For example when talking they change words. Also they change and are different. Next writing is tricky. The sounds of the letters change.

### La tienda

Los niños lloran mucho. Un día estaba en la tienda.

Primero vi a un niño que estaba haciendo un berrinche por qué la mamá no le quería comprar un juguete. Para el

luego el niño botó la ropa. Lo que sentí yo sentí mal porque andaba tirando la

ropa y yo pensé que la policía se lo iba a

llevar para la cárcel por 8 meses. Después la dueña lo sacó de la tienda y el niño se puso a llorar más y la mamá se puso a llorar también. Yo pensé que el policía lo dejó ir a su casa pero le dio una multa y la mamá se enojó mucho con el niño.



Entonces el niño se puso a llorar más. Luego se salió la mamá y lo regañó y lo puso a recoger la ropa y a limpiar el piso para que ordenara. Al final se fueron a casa. Para cerrar yo sentí yo sentí que le iban a llamar a la policía. Lo que aprendí yo aprendí que yo me debo portar bien.

Figure 25. Alfredo's Spanish Multimodal Writing

The children cry a lot. One day I was at the store. First, I saw a child that was making a fuss because his mother did not want to buy him a toy. Then, the kid threw clothes. What I felt, I felt bad because he was throwing clothes to the floor and I thought that the police would take him and jail him for eight months. After this, the owner took him out of the store and the child cried even louder, and the mother started to cry too. I thought that the policeman let him go to his house but he gave him a ticket and his mother was very upset with the child. Then, the child cried even more. After this, the mother came out and scolded him, and made him pick up the clothes and clean the floors so that the store would be organized. At the end, they went home. To close, I felt that they were going to call the police. What I learned, I learned that I must behave.

In Alfredo's multimodal writing (see Figure 25), it is evident that he utilized visual modes to convey meaning. In his English sample, he decided to use abstract images such as the lightning to emphasize how "The sounds of the letters change" and kept a black color for his font. In contrast, in the Spanish sample, his image selections were a literal representation of his text but utilizes different fonts and colors to construct his writing. Alfredo proves that he utilizes a critical framing (The New London Group, 1996), meaning he is able to analyze critically the purpose of his visuals as designer of a text. For instance, in his English sample, he selects a puzzle cube as an analogy to his sentence "English is hard." In his Spanish sample, he brings an image of a store where shoes and items are not organized, which mirrors the story line of his writing, and a second picture of a mother that is organizing the clothes that the child threw. The meaning that the images hold by themselves is not the same when juxtaposed to Alfredo's writing; therefore, his sample exemplifies how multimodal writing adds a layer of meaning to the students' writing.

His use of visuals is of importance because of the difference in text production. That is, in Spanish, there is a sense of completeness with at least a clear introduction and conclusion, but in English Alfredo types four sentences following a structure of a main idea and a supportive detail. Notwithstanding, he compensates for his brief writing with images that are compelling to his feelings. For instance, he selects a dramatic image of a lightning to explain that in English "the sounds of the letters change." This lightning also conveys the feelings of fear and discomfort. He utilizes spatial modes strategically, in a way that visuals in Spanish take only a small area of his work. However, in English he decides to include large visuals to go along with his brief writing.

The Literacy Squared Writing Rubric (Escamilla et al., 2014) applied to Alfredo's writing samples shows a discrepancy in terms of content. In Spanish, he scores at level seven that

indicates there is a sense of completeness—a clear introduction and clear conclusion—in the writing, but in English he scores a level five that indicates there is a main idea discernable with supporting details. In terms of structural elements, Alfredo shows that in Spanish, he is able to control most structural elements (i.e. he uses end and beginning punctuation in most paragraphs, capitalization and punctuation) and includes paragraphing. In English, he is still able to control structural elements but his paragraphing is very limited. In relation to spelling, his English and Spanish samples include most words spelled conventionally. His main bilingual strategies are at the word level with the influence of Spanish phonics to English (jard for hard, exsempo for example).

It is important to notice that the results of Alfredo’s writing were two monolingual writing samples; however, his process of writing each sample was bilingual. He used his full linguistic repertoire when writing in English or in Spanish supporting the process with different features of Google Apps. For example, when he searched for images to illustrate his Spanish writing, he utilized English key words to find images as well as peer collaboration. The excerpt in Table 22 shows how Alfredo worked together with Omar to spell the word “store” in the image search feature of Google.



Table 22

*Google Aps Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Omar</b>	Es S-T-O-R-E	It is S-T-O-R-E
<i>Alfredo types the letters</i>		
<b>Researcher</b>	Y necesita cualquier tipo de tienda.	Does he need any type of store.
<b>Omar</b>	Clothes, pon C-L-H-O	Clothes, type C-L-H-O
<i>Omar looks at the screen</i>		
<b>Omar</b>	Espérate no, a ver bórrale, C-L-O-H-S-E	wait no, wait delete it, C-L-O-H-S-E
<b>Alfredo</b>	Está mala, se pone roja.	That's wrong, it is getting red.
<b>Omar</b>	A ver es CLO	Let's see it is C-L-O.
<b>Alfredo</b>		Clothes!
<b>Researcher</b>	¿Cómo se escribe?	How do you write it?
<b>Omar</b>	¡Así!	Like this!
<i>Omar points at the word clothes provided by Google search</i>		
<b>Alfredo</b>	Pero la ropa necesita estar desordenada.	But the clothes need to be disorganized
<b>Researcher</b>	Entonces cómo le ponemos.	So what should we type.
<b>Omar</b>		Store clothes
<b>Alfredo</b>		Messy
<i>Alfredo types store clothes messy and looks at the structure provided by Google: Messy Clothes Store</i>		
<b>Alfredo</b>		Messy clothes store, no store clothes messy.

In the shared dialogue, Alfredo uses his knowledge of letter names in Spanish as Omar dictates him the letters that he must include. Also, they have a linguistic approximation in the word clothes as they decide to type 'clohse' which includes the correct letters but in an incorrect order and with the omission of the letter t, to represent the /th/ morpheme. Furthermore, Alfredo utilizes direct translation from Spanish to English as he initially suggests to type "Store Clothes Messy" which is a direct translation of tienda de ropa desordenada. In Spanish, his sentence is correct; however, in English, he realizes that adjectives precede the nouns.

In summary, in Alfredo's writing, there are shared skills and abilities across languages. He seems to control the use of beginning and ending punctuation, as well as supporting details directly related to the writing prompt. Furthermore, he is able to use visual modes of meaning to enhance his texts effectively, and he identified the differences in terms of sentence structure in Spanish (noun-adjective) and English (adjective-noun). In order to teach to Alfredo's biliterate writing potential, it is necessary to create different instructional goals for each language using his skills and acknowledging his approximations and bilingual strategies.

**Elías: No se escribir en inglés. [I do not know how to write in English]**

Elías is a kind child who likes to help other students. During my classroom observations, I noticed that he always volunteered to help students who were struggling. When helping, he seemed to be very relaxed and patient, his tone of voice was always kind. He was very invested in this project and liked to be the first one to discover new features and teach other students how to use them. Elías had a computer and a tablet at home and used them mainly to watch movies or play games.

Elías was eight years old and had three siblings, two older brothers and a younger sister. He defined himself as a Mexican-American because although he was born in the U.S., he holds his family in Mexico dear, though he has never met them in person. In fact, one of his writing samples was about his wish to travel to Guerrero, Mexico to meet his grandparents.

Elias told me that he was a good Spanish writer but that he struggled writing in English. Our conversation is reproduced in Table 23.

Table 23

*Elías' Struggle Transcription*


<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	Ahora pláticame, vamos a pensar en escritura. Se que han estado escribiendo con Ms. Park en español ¿cómo te sientes cuando escribes en español?	Now tell me, let's think about writing. I know you have been writing with Ms. Park in Spanish. How do you feel when you write in Spanish?
<b>Elías</b>	Me siento bien, siento que voy a escribir muchos detalles.	I feel good, I feel like I am going to write a lot of details.
<b>Researcher</b>	Y en inglés, ¿Qué pasaría si Ms. Park te dijera: Hoy van a escribir en inglés?	And in English, what would happen if Ms. Park were to tell you: Today you will write in English.
<b>Elías</b>	Me pondría nervioso porque no se escribir casi ingles.	It would make me nervous because I do not know how write much in English.
<b>Researcher</b>	¿Cómo sabes que no sabes escribir mucho ingles?	How do you know that you do not know how to write much in English?
<b>Elías</b>	Porque cuando vamos con Ms. Taylor, tenemos que escribir cosas en inglés y le pido a un compañero ayuda para saber cómo se escribe. O sea que si me topó con algo que no sé cómo se escribe pido ayuda a un compañero.	Because when we go to Ms. Taylor, we have to write things in English and I have to ask a partner to help me so that I know how to write it. So if I run into something that I do not know how to write, I have to ask for help from a classmate.

Elías knows about his struggles to write in English, but he is clearly resourceful about the importance of collaboration and using the shared knowledge of his peers to problem solve his obstacles in English.


In his multimodal writing pieces, he wrote the first one in Spanish about a park that was not being respected (see Figure 26) and in the second one, he explained in English why he would like to visit Guerrero, Mexico, the native land of his parents and where several family members reside (see Figure 27).

**Mexico**


**My favorite place is Mexico**  
 My favorite place is Mexico because my grandma is in Mexico and my Grandpa too. I wanna visit Mexico I wanna watch the people play what they have. For example I wanna watch the boys play in the beach.




**My favorite place is Mexico**  
 I wanna look at my Grama and Grampa because I don't know how they look. Because I was not born in Mexico. For example I wanna hear how they talk.



**My favorite place is Mexico**  
 I want to eat what they have. For example I want to eat pozole because it is so delicious.




**My favorite place is Mexico**  
 I want to work with my dad, mom, Grandma and my Grampa and the others people. For example I wanna clean the house.



**Guerrero: Video**  
<https://vimeo.com/9716222>

**My favorite place is Mexico**  
 For this reason I want to go to Mexico



**My favorite place is Mexico**  
 THE End

Figure 26. Elías' English Multimodal Writing

## El parque sucio

voy al parque que hay columpio o al parque que juegan futbol?me

pregunte. decidí ir a los dos." Primero fui al parque de fútbol. Y había basura.



Había pampers , muchos papeles  
tirados y muchas personas  
pisando la basura. Me senté en  
un árbol y estuve pensando si  
era mejor irme al otro parque.

Después fui al parque que había

columpios. Y cuando miré había mucha basura había botellas de plastico



tambien habia mansanas pudridas  
grite AY. no me gusto lo que vi y

luego entre y recoji la basura.

Al Final cuando recogí toda la

basura lo puse en una bolsa de

plástico que me encontré. La bolsa

estaba muy sucia de lodo. Cuando lo recoji mi mano se llenó de lodo.

Lo que sentí cuando mire la basura en los dos lados me sentí muy

enojado. Porque no quería que las moscas vinieran porque luego nos piquen.

Figure 27. Elías' Spanish Multimodal Writing

The Dirty Park. Should I go to the park with the swings or to the park where they play football? I wondered. I decided to go to both of them. First I went to the park where they play football. And there was trash. There were pampers, many pieces of paper, and a lot of people stepping on the trash. I sat down on a tree and wondered if it was better to go to the other park. Then, I went to the park where there are swings. And when I looked there was a lot of trash there were plastic bottles and also rotten apples I screamed AY. I did not like what I saw and so I went and pick up the trash. At the end when I pick up the trash I put it in a plastic bag that I found. The bag was very dirty with mud. When I held it my hand got dirty with mud. What I learned when I saw trash in both places I felt very upset. Because I did not want flies to come because then they sting.

In his writing samples, Elias utilizes different visual modes to enhance the meaning of his text effectively. In Spanish, he relies on the use of pictures that depict the parks that he is describing. Also, he utilizes a pattern of colors that include red, orange, green, and brown but uses purple to accentuate his writing hook which is presented in the form of a question. In English, he utilizes a colorful template that he chose because it follows “los colores del mar” [the colors of the beach] (Elías, informal conversation, December 20, 2018) to match the description of Guerrero, Mexico, a state that is by the Pacific Ocean and showcases famous beaches like Acapulco. His image is carefully selected to match the content of his text.

Elías uses images and a video link to illustrate his text, as visual modes of meaning making. In addition, he includes audio meanings in English in the form of a video, spatial meanings to arrange the text in a way that the reader can interpret the meaning of the text effectively, and gestural meanings as he decides to include the images with human interactions and facial expressions.

The Literacy Squared Writing Rubric (Escamilla et al., 2014) shows that in terms of content, Elias is able to provide an organized composition that includes complex sentence structures and has a discernable, consistent structure. This skill is observed equally in both languages. For instance, in Spanish he writes, “me sente en un arbol y estuve pensando si era mejor irme al otro parque” [I sat down by a tree and thought if it would be better for me to go to the other park]; in the same way, in English he states, “My favorite place is Mexico because my granma is there and my grandpa too.” In his first sample, he utilizes the subordinating conjunction *if*, whereas in English he uses *because*.

In terms of structural elements, Elias seems to control most structural elements and includes paragraphing in English. In Spanish, he also uses paragraphing but does not use capitalization and punctuation consistently.

In relation to spelling, his sample is accurately spelled in English and includes most words spelled conventionally in Spanish. Furthermore, Elias is able to utilize bilingual strategies at the sentence level having a Spanish influence over English in phrases such as “I want to eat what they have” which is a literal translation of the Spanish expression “Quiero comer lo que tienen” as opposed to the English version “I want to try the food over there.” At the word level he loans vocabulary from English to Spanish for instance when he includes the word “pampers” to describe the type of trash that he found, instead of using the Spanish term “pañales.”

Elias demonstrated that he was able to transfer his skills from one language to the other in a bidirectional way. According to Dworin (2003), the relationships between a student’s languages is fluid and reciprocal as they are able to transfer what they learn in either language to the other language. For example, when sharing his writing with the class we focused in teaching how to include details. He effectively analyzed his sample in Spanish with his peers as described in the video transcription in Table 24.

Table 24

*Spanish Sample Analysis Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<i>Students read aloud Elías work</i>		
<b>Class</b>	Voy al parque de los columpios o al parque dónde juegan futbol, me pregunté. Decidí ir a los dos. Primero fui al parque de juegos y había basura, había <i>pamper</i> , muchos papeles tirados y muchas personas pisando la basura. Me senté bajo un árbol y estuve pensando si era mejor irme al otro parque. Después fui al parque que habían columpios y cuando entré había mucha basura. ¡Ay! No me gustó lo que vi y luego entre y recogí basura.	Should I go to the park with swings or to the park where they play soccer, I asked myself. I decide to go to both. First I went to the playground and there was trash, there were pampers, many papers thrown away and many people walking on the trash. I sat under a tree and I was thinking if it was better to go to the other park. Then I went to the park that has swings and there was a lot of trash. Oh, I did not like what I saw and then I went and picked up trash.
<b>Researcher</b>	¿Elías dónde esta el gancho cautivante que escribiste? ¿Cuál es?	Edgar where is the captivating hook that you wrote? Which one is it?
<b>Elías</b>	¿Voy al parque que hay columpio o al parque dónde juegan futbol?	Should I go to the park with swings or to the park where they play football?
<b>Researcher</b>	¿Qué tipo de introducción es esa?	What kind of introduction is that?
<b>Class</b>	Es una pregunta.	That's a question.
<b>Researcher</b>	¿Qué dice después?	What does he say after?
<b>Class</b>	Que decidió ir a los dos.	That he decided to go to both.
<b>Researcher</b>	Ahora vamos a analizar el primer párrafo. Dice: Primero fui al parque de futbol y había basura. ¿De qué esta hablando?	Now let's analyze the first paragraph. It says, first I went to the park of football and there was trash. So what is he talking about?
<b>Class</b>	Del parque de fútbol y de que había basura.	About the park of football and that there was trash.
<b>Researcher</b>	¿Qué detalles puso? ¿Cuál es el primer detalle?	What details did he include? Which one is the first detail.
<b>Elías</b>	Había mucho pamper y papeles tirados.	There were many pampers and pieces of papers on the floor.
<b>Researcher</b>	¿Cuál es el detalle dos?	Which one is the second detail?
<b>Elías</b>	La gente pisando basura.	The people stepping on the trash.



In his English sample (see Table 25), Elias was able to incorporate details to his writing, and his paragraph structure was predictable. He decided to have a topic sentence, an explanation, and/or an example. In addition, he utilized bilingual practices as well as online collaboration in Spanish to construct his text in English. For instance, in one of his slides he included the sentence “I don’t was born in Mexico” and decided to rely on his peer Camilo to ask for feedback.

Table 25

*English Sample Analysis Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<i>Eliás reads aloud his sentence</i>		
<b>Eliás</b>		I don’t was born in Mexico.
<b>Researcher</b>	¿Qué piensas al respecto?	What do you think about it?
<b>Eliás</b>	Es que no suena bien.	It is just that it doesn’t sound right.
<i>Eliás types on the screen and inserts a comment for Camilo</i>		
<b>Eliás</b>	¿Qué puede cambiar?	What could I change.
<b>Camilo</b>		<b>I was , I was not born in Mexico.</b>
<b>Researcher</b>	¿Qué tienes que quitar?	<b>What do you have to delete?</b>
<b>Eliás</b>	Donde dice don’t.	Where it says don’t.
<b>Camilo</b>		<b>I was not born in Mexico.</b>
<i>Camilo reads aloud for Eliás to hear him</i>		

In this way, Elias’ and Camilo’s interactions exemplify how they develop biliteracy in collaboration and by using both languages as resources. In Elias’ examples, he relied on conversations with Camilo and other peers to construct a text that sounded close to standard English. Furthermore, when Elias needed a word in English, he relied on Google Translate to hear, read, and make cross-linguistic connections. The video transcription in Table 26 shows how Elias utilizes his full linguistic repertoire to spell the word delicious.

Table 26

*Full Linguistic Repertoire Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	A ver, ¿qué dice ahí?	What does it say there.
<b>Elías</b>	Delicioso.	Delicious.
<b>Researcher</b>	De-li-cio-cio. ¿Suena bien?	De-li-ci-ous-ous. Does it sound right?
<b>Elías</b>	Mmmm nop.	No.
<b>Researcher</b>	De-li-ci y luego OSO. ¿Cómo se dice en inglés?	De-li-ci-and then -oso. How do you say that in English?
<b>Elías</b>		Delicious
<b>Researcher</b>	Que es lo que hace el sonido ous. A ver, la D como la D, la E como la E.	What is what makes the ous sound. Let's see, the D like the D, the E like the E
<b>Elías</b>	La L como la L, la I como la I, la C como la C, la I como la I la O como la O pero que cambia la S y la U.	The L like the L, the I like the I, the C like the C, the I like the I, the O like the O but changes the S and the U.
<b>Researcher</b>	¿Esta terminación OSO es la misma que cual?	This ending OSO is similar to what.
<b>Elías</b>		OUS.
<b>Researcher</b>	Sólo que en ves de decir OSO decimos OUS. A ver vamos a cambiarla en tu escrito	Just like instead of saying OSO we read it as OUS. Lets go change it in your text.
<i>Elías goes to his screen where and starts typing 'dili'</i>		
<b>Researcher</b>	¿Te acuerdas cómo dijimos que se escribía?	Do you remember how to spell it?
<i>Elías types 'Delicishus'</i>		
<b>Researcher</b>	¿Qué dice ahí?	What does it say?
<b>Elías</b>		Delicious
<b>Researcher</b>	Se parece a la palabra en español, a ver léela.	Is it similar to the word in Spanish, why don't you read it?
<b>Elías</b>	Nop, no se parece. Mmm si es un cognado se tiene que parecer.	No, it doesn't look like. If it is a cognate it has to look alike.
<i>Elías attempts to write it again.</i>		
<b>Elías</b>		De-li-ci
<b>Researcher</b>	Puedes ver en tu pantalla anterior	You can go back and see the word.
<i>He goes back to Google Translate</i>		
<b>Elías</b>		Ous
<b>Researcher</b>	¿Ahora si qué dice ahí?	Now, what does it say?
<b>Elías</b>		Delicious.

This example shows that Elias was able to make the cross-linguistic connection with my support, but he struggled when writing it. He used Spanish phonics to bring the /i/ sound in place of the /e/. Also he included the /sh/ to construct the sound of the letter /c/ in “cious.” He relied on Google Translate to read the word aloud a couple of times while he was looking at the spelling of the word.

Even though Elias demonstrated his writing capabilities in English and Spanish, as well as his digital skills, as he successfully wrote two solid and meaningful writing pieces in both languages, the reality is that prior to this project, Spanish writing seemed to dominate the writing block and opportunities to write in English were not observed. This lack of practice appears that, for Elias, as for the majority of the students in his class, affected adversely their confidence in English writing as reflected in most of the responses about their feelings when writing in English prior the implementation of this project.

**Greta: “Yo pienso que voy a hacerlo bien, que voy a aprender inglés para mejorar.” [I think I’m going to do it well, that I am going to learn English to improve.]**

Greta was newly enrolled at Miltonia Elementary. She had only been in school for two months when I started the project and was labeled new immigrant. She was eight years old and had two younger siblings, a one year old little brother and a five month-old sister. She received formal schooling in her native country, Honduras, and according to her, “en Honduras estaba en tercero, me iba muy bien en la escuela y sacaba buenas calificaciones. Mi materia favorita era matemáticas” [In Honduras, I was in third grade. I was doing very well in school and had good grades. My favorite subject was math] (Greta, interview, October 4, 2018). Greta did not have a computer or tablet at home, and she had never used any of those electronics before coming to the United States.

Greta, like many other immigrants, came to the United States seeking a better life. In her own words, “nos encomendamos a Dios para llegar aquí, pues sabíamos que si era nuestro destino la virgen nos ayudaría a llegar a salvo” [We entrusted ourselves to God to get here, because we knew that if it was our destiny the virgin would help us to arrive safely] (Greta, informal conversation, October 4, 2018). Her attitude towards school was always positive; she always expressed a positive image of herself and those who supported her, such as her teachers and mother. On several occasions, she mention that she was proud of her hard work, that she knew that she would be able to succeed and learn English, and that one day she would live in a castle and leave the horrible apartments where she currently resided.

According to Ms. Park, Greta was very capable in her first language, but she was hesitant to work in English and relied on her peers. Ms. Park explained that Greta “no requiere de mi ayuda solamente en inglés. Ella se cierra y dice no puedo, no puedo, está en inglés, but everything in Spanish she is on top of it, she is good. [Greta does not require my help only in English. She is stubborn and says I can’t, I can’t, it’s in English] (M. Park, informal conversation, October 23, 2018).

When I interviewed Greta, I learned about her life and personality. She felt comfortable with me to share aspects of her difficult journey to the United States. Despite her hardships, she has a positive and bright vision about her future and is convinced that once she masters English, she will be able to succeed just like in her native land. This is important given the fact that she is new to the United States.

In her English multimodal writing products, she explains why she likes to visit the Aquarium (see Figure 28). In Spanish, she describes an experience of going to a dirty pool (see Figure 29).

# The Aquarium

## The Aquarium


My favorite place is the aquarium, because there are many marine animals and what I like most is the food.

1


2

in the aquarium they sell some delicious fish shaped cookies


the fish crackers I love because they are salty and also because they are from my favorite fish .




the type of food that I like I love strawberry ice cream because pink is my favorite color and also because I save very rich .



The first corridor was of the turtles and the turtles are my favorite aquatic animal. And I also like it because it's stuck in a very beautiful sheff full of corais.



Then, We looked at a sheff with dolphins. They had baby dolphins they were very cute I love it because they are very soft



5

6




Figure 28. Greta's English Multimodal Writing



*"¡Ay no!" gritó mi mamá la alberca tiene mucha basura.*

*Al principio yo llevaba una bolsa con un montón de comida y mi mamá grilo los trajes de baño.*

*Después cuando entramos había un montón de basura bolsa de churros y cajas de jugos.*



*la alberca tenía botellas de agua y hojas de color anaranjadas y botellas de vidrio*

*Al final yo y mi mamá recogemos la basura y los fuimos a nuestro apartamento.*

*Lo que sentí cuando vi la alberca llena de basura me sentí muy mal.*

Figure 29. Greta's Spanish Multimodal Writing

In English and Spanish multimodal writing, Greta utilized visuals in the form of pictures, font colors and types, as well as a video. She includes two or more visual modes of meaning making to enhance the meaning of her text effectively in both languages. In English, she decided to insert a video of an aquarium to finalize her writing. Greta describes that images and colors were her favorite part of writing because “poner las imagenes expresan como que está mostrando lo que estan diciendo las letras y me gusta poner las letras con colores porque me siento que soy una cientifica y no sólo es de blanco y negro” [including images to express what I am describing and what the letters are saying and I like to put color in the letters because with colors I feel like if I were a scientist and not only in white and black] (Greta, interview, December 21, 2018). Also, she explained the importance of including different modes of meaning not only for the reader or the audience but for the writer. Greta took an active role as she considers herself a “scientist” of writing who is able to enjoy the multimodal writing process because “sólo palabras como que aburren al escritor. Entonces ya un video muestra todo el acuario completo y para que no digan que estoy mintiendo” [including only words is kind of boring for the writer. So with a video I can show all the acquarium and people won’t think that I am lying] (Greta, interview, December 21, 2018). According to Soltero-Gonzalez (2009), literacy not only involves written forms of language but also other symbol systems. Those symbol systems are the equivalent to different modes of meaning making (The New London Group, 1996). Greta is aware of the different pluriliteracies that she has at reach and capitalizes on them to create a meaningful text that is enjoyable not only for the reader but for her as a designer (The New London Group, 1996) of texts.

Besides visual modes, Greta utilizes linguistic modes effectively in both languages, as the organization of words into sentences and paragraphs is coherent. In relation to spatial modes she

also organizes the text and modes of meaning in a way that allows the reader to interpret meaning effectively. In Spanish, she includes a gestural mode with a picture that includes a facial expression denoting a woman that is shocked. Greta demonstrates that she is able to utilize different modes of meaning effectively in both languages.

After analyzing the content of her writing using the Literacy Squared Writing Rubric (Escamilla et al., 2014), I found that her capabilities in both languages were identical. Greta was able to write in complex sentence structures in both languages. Although she had never received formal instruction in English, she was able to construct a text by using Google Translate. Greta was the only student who typed whole sentences in Spanish to see the translation in English. She liked to listen to the pronunciation of the sentence and would read the sentence aloud a couple of times before inserting the text in her writing. Although Greta could have copied and pasted the translation directly, she decided to type it instead and sound out the words while she was writing. She describes how this process allowed her to develop her emergent biliteracy in Table 27.

Table 27

*Greta's Emergent Biliteracy Transcription*

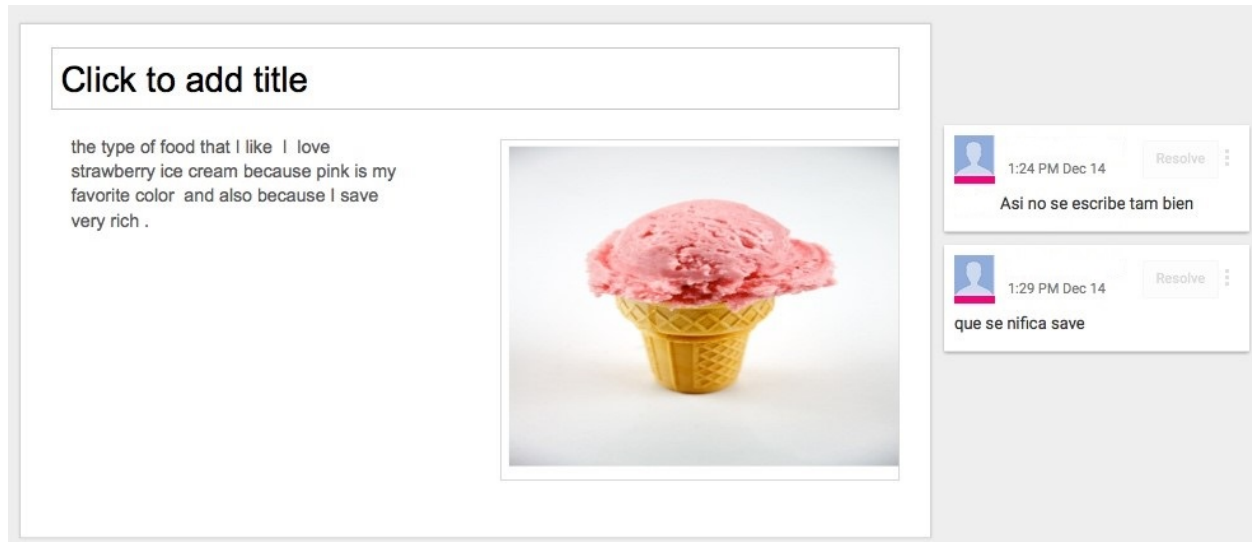
<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	¿Qué opinas de Google Translate?	What do you think about Google Translate?
<b>Greta</b>	Translate me gusta porque uno cuando no sabe una palabra en inglés lo puede no solo ocupar la rayita para poderlo resolver sino que lo escribes en una hoja y lo pasas a Translate y eso te lo va a arreglar. Google Translate también te enseña a pronunciar. Yo soy nueva en la computadora también y en el inglés pero se que voy a aprender así que solo me dejo llevar por translate y que me lo pronuncie bien así me lo grabo en mi mente para escribirlo en una hoja y ya yo lo puedo hacer en la computadora.	I like Translate because when one doesn't know a word in English one can use more than the red line to solve that problem because you can write in on a page and pass it on translate and it can give you the right spelling. Also Google Translate teaches you how to pronounce. I am new using computers and also in the English language but I know that I will learn so I entrust myself to Translate, I let it pronounce it well and I memorize it in my mind to write it down in a paper and then I can do it in the computer.



That is, the process that she describes is bidirectional (Dworin, 2003). For Greta, Google Translate is a tool that allows her to utilize her knowledge in Spanish, and in turn receives new words and their meanings as well as the forms in which her ideas can be expressed in English. Greta did not copy and paste text but critically analyzed the sentences construction, spelling, and pronunciation. This allowed her to be able to collaborate in the editing of her peers' writing in English and successfully corrected the word "picas" for "because" in the work of Lizette. Greta was able to demonstrate her sophisticated science vocabulary by using words that are academic such as marine animals, aquatic animals, or shell full of corals, that otherwise during traditional writing and without personalized scaffolding, she would not have been able to.

Greta is able to effectively use structural elements in both languages. In Spanish, Greta is able to control most structural elements such as quotation marks, exclamation marks, accents, capitalization, and beginning and end punctuation in addition to paragraphing. It is important to mention that in academic formal Spanish a dialogue would be signaled with a hyphen. In her text, Greta utilizes quotations to show a brief dialogue. I did not consider it a mistake because I was aware that Ms. Park taught students that dialogues, in English and Spanish, were signaled with quotation marks. In English, Greta decides to use a predictable multimodal writing structure by including an image per slide and a main idea with at least one detail. The spelling in both languages is accurate.

In addition to translations, Greta appealed to online collaboration to develop her English skills. I noticed that at times her English writing would include sentences that would not make sense because she used literal translations from Google Translate. I found that this issue was resolved often times with online collaboration as more English proficient students were able to support her, as shown in Figure 30.



*Figure 30.* Online Collaboration to Convey Meaning

In the previous figure, Greta wrote the phrase “save very rich” which is the direct translation of “sabe muy rico” [it tastes well]. Jocelyn, her peer detected the mistake and asked her for the meaning of the word save. During an oral exchange, Greta explained that she wanted to express “sabe muy rico” [it tastes well] but she came to the conclusion that she had not spelled the word correctly in Spanish. For this reason, she received a term that did not convey the desired meaning. I found that this online collaboration was important to develop the biliteracy of the students, in particular with new immigrants.

When writing her Spanish text, Greta also relied on her peers’ digital comments to add more details to her writing. In her draft, Greta initially included only a main idea to mention that the pool in her apartments had a lot of trash. She struggled elaborating her paragraph and adding details. She relied on her peer Jocelyn and asked for help. The transcription in Table 28 shows the conversation.

Table 28

*Greta Struggles Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	Ves ahí donde dice Jocelyn.	Can you see where it says Jocelyn.
<b>Greta</b>	Es la rosada.	Her name is in pink.
<b>Researcher</b>	A ver Greta, Jocelyn te va a poder ayudar.	Let's see Greta, I think that Jocelyn can help you.
<b>Greta</b>	<i>(She types in a comment)</i> Estoy batallando con esta parte, aquí <i>(points at screen)</i> En donde dice qué pasó después...	I am struggling with this part, here. Where it says what happened after.
<b>Jocelyn</b>	<i>(Jocelyn reads aloud Greta's text)</i> Después cuando entramos había un montón de basura.	After it, when we came in there was a lot of trash.
<i>Jocelyn elbow's partner Lily, suggests a response</i>		
<b>Lily</b>	Tendría que decir como cuál basura.	It would have to say what type of trash.
<b>Jocelyn</b>	<i>(Types on screen)</i> Puedes poner de cuál basura. <i>(Jocelyn and Lily type together)</i>	You can type what trash you saw.
<b>Greta</b>	Ya lo veo	I see it.
<i>Lily stands up and goes to the table of Greta to see how it looks the comment that they just posted. Lily wants to corroborate that Greta can actually see what Jocelyn and her typed.</i>		
<b>Researcher</b>	¿Qué te dijeron?	What did they tell you.
<b>Greta</b>	Puedes poner de cual basura.	I can write what type of trash.
<b>Researcher</b>	¿Te ayudo, te sientes mejor, sabes qué tienes que hacer?	Does it help? Do you feel better? Do you know what you need to do now?
<b>Greta</b>	Si.	Yes.

In addition, Jocelyn and Greta were able to share their knowledge of grammar, punctuation, and spelling to edit their multimodal writing, as seen in Table 29.

Table 29

*Jocelyn Helps Greta Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<i>Jocelyn notices the name of Greta in her text.</i>		
<b>Jocelyn</b>	¿Lo están viendo?!	Can she see it?
<b>Researcher</b>	Si ella esta leyendo lo que le estas poniendo.	Yes, she is reading what you typed.
<b>Jocelyn</b>	Le falta la “l” en bolsa de churro.	She is missing the “l” in bag of chips.
<b>Researcher</b>	Oh pues muy bien le puedes ayudar con la edición de ese texto.	Very well, you can help her with the edition of her text.
<b>Jocelyn</b>	También le falto el espacio.	She also needs to add a space.

In the case of Greta, I found that digital multimodal writing allowed her to feel capable of reading and writing in both languages. As mentioned before, according to Ms. Park, Greta did not feel comfortable when working in English; however, in this bilingual project, she found enjoyment and motivation. In our last interview, she shared she would recommend Google Apps:

“Si para que aprendan inglés y español pero si yo sigo trabajando así unos días más entonces yo casi puedo ser bilingüe si Dios lo permite. Me siento como experta digamos porque en español ya he aprendido muchas palabras y en inglés más o menos” [Yes, so that they learn English and Spanish, but if I keep working like this just a few more days I will almost become bilingual. I feel like, lets say, like an expert because in Spanish I have learned many words and English more or less]. (Greta, interview, December 21, 2018)

I was able to confirm her perception when I asked Greta to read her English text, as described in the video transcript in Table 30.

Table 30

*Greta Reads English Text Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>		<b>Ok Greta please read your text to me in English.</b>
<b>Greta</b>		<b>My favorite place is the aquarium because there are many marine animals and what I like the most is the food.</b>
<b>Researcher</b>		<b>Let's try the next slide</b>
<b>Greta</b>		<b>The fish crackers I love because they are salty and because they are from my favorite fish. The tipi (type) of the food that I like I love strawberry ice cream because pink is my favorite color and els (also) because save very rich.</b>
<b>Researcher</b>	<b>Greta ¿cuánto tiempo llevas aquí?</b>	Greta for how long have you been here?
<b>Greta</b>	<b>Yo digo que poquito</b>	I would say that just for a little.
<b>Researcher</b>	<b>En tu escuela de antes ¿te habían enseñado inglés?</b>	In your previous school, did you receive English instruction?
<b>Greta</b>	<b>No.</b>	No.
<b>Researcher</b>	<b>¿Cómo sientes que esto te esta ayudando a aprender inglés? ¿Sientes que te ha ayudado?</b>	[How do you feel that this is helping you to learn English? Do you feel that it has helped?
<b>Greta</b>	<b>Me esta ayudando en algo, como que yo también me siento orgullosa por leer todo esto yo solita porque yo se que voy a llegar a tercer grado y ahí voy a aprender ingles.</b>	It is helping me somehow, I feel very proud because I could read everything by myself because I know that I will be in third grade and I will learn English.
<b>Researcher</b>	<b>¿Tú piensas que ya sabes algo de inglés?</b>	Do you think that you know some English.
<b>Greta</b>	<b>Si. Unas como esta y esta yo la sabía (pink, is, my, the, fish, because, favorite, they, are) entonces está y está también esas son como fáciles para mi porque ya las puedo leer bien.</b>	Yes, like this and this I knew, then this and this, and also these are easy to me because I can read them well.

For Greta, a new immigrant, using bilingual strategies, multiple modes of meaning, as well as online interactivity enhanced the construction of knowledge and development of biliteracy. As described, Greta feels confident and is developing reading and writing skills in a contextualized way in both languages.

**Zara: “Es bueno practicar el inglés y el español.” [It is good to practice English and Spanish].**

Zara is the middle child of a Salvadorian family. She has a younger sister who is a toddler and an older brother. With the exception of her little sister, all her family was born in El Salvador. She came to the United States when she was five years old. She used to go to pre-kindergarten in her native country and she was placed in kindergarten when she arrived.

According to Zara, she has been in different schools ever since she came to the United States. Just this year, she was enrolled in Ms. Park’s class after attending a different school for about a month. Zara explains that her mother’s job is always changing and that they have to move to different apartments based on the location of her mother’s job.

In several occasions, Zara made conversations with me about how difficult it was for her mother to provide for her family. She shared how much she would like to have new shoes or a second uniform set, because according to her, “yo siempre uso los mismos pantalones, pero mi mamá me los lava diario porque no tenemos mucho dinero” [I always use the same uniform pants, but my mother washes them daily because we don’t have much money] (Zara, informal conversation, October 11, 2018). Nonetheless, her looks were highly admired by her female friends. In several occasions, I saw her classmates complementing her sweaters, shoes, or accessories. Zara had a girly and sweet style and was very kind in her ways. She always came to

school well groomed, wearing a fragrance, and displaying a red beautiful bow in a high pony tail or braid.

Academically, Zara shared that using both languages is very important and considers imperative to use her specific knowledge in one language to support the development of the other. For example, she mentioned that using translations has allowed her to learn more English and that she uses her mother's cellphone to find videos in two languages or with captions in Spanish. In relation to literacy, Zara does not like writing because when she writes on paper "te duelen las manos" [the pencil hurts my hands] (Zara, interview, December 20, 2018). She does not have a laptop, computer, or tablet at home.

In her digital multimodal writing products, she wrote in English about her dream house (see Figure 31), and in Spanish, she wrote about a day in a park that was dirty (see Figure 32).


1

# My pretty house

2

## My pretty house


My house have a garden. I like it because it has flowers. The flowers are rainbow flowers. I Like rainbow flowers because they are pretty like the unicorn I Like unicorn because they are so pretty.



3

## My pretty house


Also, it has two bedrooms and two bathrooms and two closets . I Love my house a lot because I Like my house and I can sleep in two bedrooms or shower in two bathrooms.



4

## My pretty house

I like my house because it is the color of the rainbow and I like my garden because it is so pretty. And when my mom looks the garden he loves the flowers because she likes the color red and my mom loves the flowers.



My pretty house

For this reasons I love my happy and pretty house. You can visit me anytime!




Figure 31. Zara's English Multimodal Writing



### El parque susio

Uf que feo uele la basura- dijo mi mama. Yo recuerdo que estabamos en el  
parque.

Primero yo estaba en el parque. Pero lo que paso es que me dijo mi mama que  
recojiera la basura y yo recoji la basura. Yo observe que el bote de basura estaba lleno  
de basura las cosas se salian. de la basura.



Después de que recoji la basura el parque estaba limpio. Después le dije a mi  
mama que el parque. estaba limpio y mi mami dijo ha que riquo. Yo me senti triste y  
enojada porque no podia jugar en el parque yo no. Queria que el parque estuviera  
susio.

Figure 32. Zara's Spanish Multimodal Writing

The Dirty Park. Uf, the trash smells bad, said my mother. I remember that we were at the park. First I was at the park. But what happened was that my mom told me to pick up the trash and I pick it up. I observed that the trash can was full and the trash was falling to the floor. After I pick up the trash the park was clean. After this I told my mom that the park was clean and my mother told me – ah that's nice. I felt sad and mad because I couldn't play n the park. I did not want the park to be dirty.

After analyzing her writing samples, I found that she had a strong command of visual and spatial modes of meaning. She included images, fonts of different colors and styles, as well as color backgrounds. Furthermore, she arranged the features in her document in a way that made easy to interpret the meaning of her writing. However, she explains that this process was not easy or performed randomly but required certain intentionality.

In terms of content, both of her samples offered complex sentence structures and had a consistent format. In English, however, she was able to elaborate and include effective transitions and vivid examples such as, “I like rainbow flowers because they are pretty like a unicorn.” The structural elements available in Spanish and English denote that she is able to control some structural elements such as beginning and end punctuation as well as capitalization in addition to paragraphing. In Spanish, she was able to indent the beginning of her paragraphs and in English she included a paragraph per slide. In Zara’s English writing, she was able to present a piece with accurate spelling; whereas, in Spanish she was able to write the majority of high frequency words (que, dijo, yo, se) correctly but had some common spelling mistakes proper of the language. For example, the sound of the letter /q/ was utilized to spell some words (requerdo, riquo) that would require the use of the letter “c.” Her bilingual strategies demonstrate the influence of Spanish to English at the sentence level. For example, in the sentence “my mom looks the garden” she omits the word “at” and denotes that she is typing a direct translation of the Spanish phrase “mi mamá mira el jardín”.

I found that she left many words without correction in Spanish, whereas in English she provided an accurately spelled text. To develop her English document, I saw her relying on Google Translate more than the spelling check tool. When I asked Zara during an interview if she liked the Spelling Tool to check her work she mentioned that “Esa rayita roja no me ayudó

tanto a ser mejor escritora porque me hizo pensar que no escribí bien.” [That red line did not help me much because it made me think that I did not write correctly]. This negative impression of the spelling tool led her to leave her piece without polishing her spelling. This supports the notion that in order for students to develop their languages and literacy, they need to have a positive perception of themselves and the learning process.

Zara shared that Google Translate was an effective tool to learn English and Spanish. The conversation in Table 31 shows what Zara thinks about Google Translate.

Table 31

*Zara on Google Translate Transcription*

<b>SPEAKER</b>	<b>SPANISH</b>	<b>ENGLISH</b>
<b>Researcher</b>	¿Qué tal la opción de Google Translate?	What do you think about Google Translate?
<b>Zara</b>	Esa me ayudo como que si quiero saber algo en inglés lo pongo allí y después allí pones lo que quieres saber y allí te va a salir en inglés.	That one helped me like if I want to know something in English I put it there and then you type what you want to know and it will pop out in English.
<b>Researcher</b>	¿Y por qué te ayudo?	Why did it help you?
<b>Zara</b>	Porque así me hace aprender más inglés.	Because like that it made me learn more English.
<b>Researcher</b>	¿Cómo?	How?
<b>Zara</b>	Porque si tu no sabes tanto inglés allí la computadora te va a ayudar. Y también si tu no sabes en español también te va a ayudar.	Because if you don't know that much English the computer is going to help you. Also if you don't know Spanish, it will help you.

The biliteracy development of Zara seemed to be influenced by the type of support. Zara enjoyed the bidirectionality that Google Translate provided but disliked seeing her words underlined. It would seem that Google Translate was more dynamic and fluid than the spelling

tool. Zara did not leave comments to her peers and deleted the comments that she received. Apparently Zara perceives feedback negatively .

For Zara, a sequential bilingual, the multimodal writing offered her opportunities to develop her languages using translations and modes of meaning making. The collaboration component was not an area that she opted not to explore.

### **Chapter Summary**

In this chapter, I presented a description of Ms. Park's classroom, her language arts block as well as participating students, a detailed description of the multimodal writing project, and a description of the findings for the questions: How do emergent bilinguals use their full linguistic repertoire to construct texts while working in multimodal writing? And how does multimodal writing facilitates the development of biliteracy?

The analysis of the multimodal writing artifacts, field notes, video and audio recordings, as well as interviews, indicates that when children are provided with writing opportunities that allow them to utilize their full linguistic repertoire to convey meaning through different systems, they can develop their biliteracy. The findings showed that biliteracy is a special form of literacy that cannot be understood as that of monolinguals. This study's findings point that emergent bilinguals use bilingual practices such as translations, bilingual phonetic principles to encode words, metalinguistic awareness and translanguaging to construct multimodal texts, while they utilize online interactivity and modes of meaning to elicit voice, elaborate, and discuss their writing. Participants experienced a range and variety of literacy practices as part of a social practice and mediated by digital tools.

In multimodal writing, collaboration in the form of online interactivity and face-face allows students to assume the role of learner-teachers regardless their preconceived level of

achievement. The findings also indicate that different modes of meaning empower the content of a text, in particular visual modes. The visual modes also allow students to produce more language as they serve as a scaffold to develop ideas. In addition, multimodal writing serves as a platform to meaningfully develop vocabulary and spelling. In this study, I discussed two features for this purpose: Google Translate and spelling check tool. Finally, the findings point that multimodal writing empowers bilingual students because it helps them to develop positive perspectives towards bilingualism.

## CHAPTER V

### DISCUSSION, IMPLICATIONS, AND CONCLUSIONS

“Until I can take pride in my language, I can take pride in myself”

—Gloria Anzáldua, *How to Tame a Wilde Tongue*

Digital literacies permeate different social spheres in the 21<sup>st</sup> century. To respond to new literacy demands in the sphere of education, national and state education agencies have developed technology standards as part of the knowledge and skills that students must master to become literate; therefore, schools are now challenged to develop traditional and digital literacies. The push for technology integration in the classroom has become evident; however, the way in which teachers and classrooms adopt these technologies varies. The type and purpose of the digital activities encouraged by teachers can range from low-grade to premium-grade (Gee, 2012). Furthermore, the digital divide between mainstream students and linguistic minorities represents a challenge for schools. According to Cooper (2002), Latinos are part of the minorities in the United States that do not have access to technology at home, and therefore, their opportunities to develop digital literacies are scarce. According to Ek, Machado-Casas, Sanchez, and Alanis (2010), in most instances, schools are the only arena where Latino students can develop digital literacies.

For emergent bilinguals, the integration of technology can represent an opportunity to meaningfully utilize and develop literacy in more than one language as well as digital literacies.

This study posits itself within the efforts of other scholars (Elola & Oskoz, 2017; Garcia, 2014; Prieto et al., 2016) to promote authentic and meaningful language learning experiences for emergent bilinguals. This study aimed to explore how students use their linguistic repertoire and develop biliteracy using multimodal writing.

In this chapter, I discuss the knowledge gained in this study by elaborating on the meaning of the findings and presenting interpretations using the theoretical framework and literature review. Findings include four prominent themes that contribute to answering the research questions: 1) emergent bilinguals use bilingual practices when constructing multimodal texts, 2) emergent bilinguals use online collaboration and modes of meaning making to develop their voice and writing while engaging in multimodal writing, 3) multimodal writing makes possible contextualized practice to support vocabulary and spelling 4) multimodal writing empowers bilingual writers.

In addition, I discuss the implications of the study's findings for practitioners and for possible future research. I conclude the chapter discussing the significance of this study to understand the intersection of digital practices and biliteracy development for emergent bilingual students in dual language programs.

### **Digital Literacies and Biliteracy Development**

The findings in this study can be summarized and interpreted through a pedagogy of multiliteracies with a dynamic bilingualism orientation. Figure 33 represents a visual of this conceptualization. The visual consists of four dimensions represented with circles. The surrounding circle is labeled dynamic bilingualism. This circle surrounds all components of the project, as all interactions among students followed that approach. The second circle represents the digital literacies utilized in the study during different stages.

The third concentric circle represents the Google Apps utilized in each stage. Although Google Slides and Google Docs were the main platforms where the students typed, features such as spelling check and Google Translate are highlighted as those facilitated specific digital literacies and responded to the multiliteracies framework. The last circle is a pie divided in four that represents each section of the multiliteracies framework. I will briefly describe each section of the pie chart.

First, students were immersed in situated practice while working on their multimodal writing using different modes of meaning making and Google Apps to develop their voice, writing, and vocabulary. Second, students became learner-teachers as they provided feedback to each other, worked on writing conventions, grammar and spelling. Through cross-linguistic connections, translations, and online collaboration, the students created a safe space for overt instruction. Third, the students conducted practices that were reflective of critical framing. For instance, the students used their languages bidirectionally and intentionally moved from Spanish to English for phonetic principles and literal translations and from English to Spanish for codeswitching and loan-words. Furthermore, they used different modes of meaning to construct a stronger writing piece. Finally, students experienced opportunities to develop metalinguistic awareness and demonstrated a sense of empowerment as bilingual writers as they created a new type of writing where they capitalized their full linguistic repertoire. Throughout the multimodal writing project, the students were immersed in a dynamic bilingualism approach that led to translanguaging practices. The type of experiences and activities that the students conducted while working digitally on a multimodal writing piece facilitated opportunities to develop biliteracy in all components of the project.



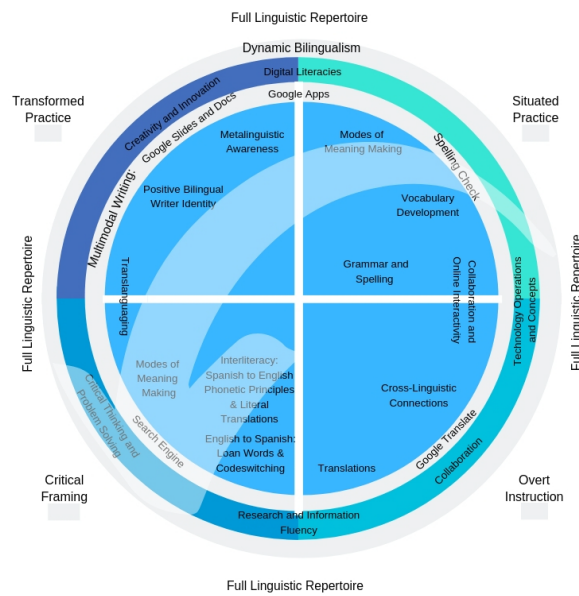


Figure 33. Multimodal Writing Project

### Students' Linguistic Repertoires Used to Construct Bilingual Multimodal Writing

In this section, I discuss findings related to how emergent bilinguals utilize their full linguistic repertoire when working in multimodal writing in English and Spanish as it relates to research question 1.

#### Theme 1: Bilingual Practices to Construct Multimodal Texts

The bilingual writing process that the students experienced can be explained through the different components of a pedagogy of multiliteracies framework (New London Group, 1996). One component of the framework is situated practice and is understood as the students' immersion in meaningful practices within a community of learners. During the multimodal writing project, the students explored writing in meaningful ways and engaged in unique bilingual practices. Although all students published monolingual writing products, the data shows that the process that the students experienced was fully bilingual, as they draw from their

full linguistic repertoire to complete the writing tasks and displayed two main bilingual practices, translanguaging and metalinguistic awareness.

According to Velasco and García (2014), translanguaging is an effective strategy that can legitimize the writing process of bilinguals. During this study, translanguaging practices were observed in different stages of the writing process. Students demonstrated a clear understanding of the topic they were writing about, included relevant ideas acquired through situated practice, developed more ideas and vocabulary with peers' support using overt instruction, and later composed their multimodal text using the vocabulary or ideas in the context of their writing critical framing. To illustrate, students revised their English peers writing. First they read it and understood the text in English, and then they typed their response in Spanish. In this study, students showed that they did not need to separate their languages while constructing a text, but instead they could use them strategically. Students decided to make comments in Spanish about the English writing, possibly because they felt that their Spanish writing could convey the message better than English, even though the final product was conducted in English. This bilingual practice is aligned with Garrity, Aquino-Sterling, and Day (2015) who also found that when bilingual children were asked a question in one language, they would respond in the language that fit the specific situation without necessarily following the language in which the question was posed.

That is, bilinguals decide how to utilize their linguistic repertoire, taking into consideration the situation and the speaker. According to Baker and Wright (2017), this strategic decision-making is termed complementarity principle and is defined as the ability to utilize languages to fit the situation in which bilinguals are immersed. In this study, the students were well aware that in their classroom the language that had been favored for language arts

instruction was Spanish, as evidenced in the observations described in chapter four where students only exposure to English was through calligraphy exercises and randomized spelling words. Possibly for this reason, the students felt that the language to communicate their feedback had to be Spanish and the language to continue their writing English. In some form, it could seem that the sequential approach to which the students were exposed did not do them justice, as the majority of them were simultaneous bilinguals and therefore had been exposed to English and Spanish. This leads to another important point, spontaneous biliteracy.

Spontaneous biliteracy relates to students applying their linguistic knowledge acquired in one language when writing in another one (Gort, 2006). As previously discussed, this group of students did not receive language arts instruction in English; nonetheless, that was not an impediment for them to construct a text in English and were able to do so by using their other language, Spanish. In the study, Greta and other students relied on digital supports such as visuals in the forms of pictures or videos that prompted the description of oral language and writing. Of particular importance was the spontaneous biliteracy that Greta experienced while working in her multimodal writing when she demonstrated that she was able to read her text in English without having received any reading instruction in her second language, as presented in the findings of chapter four. These events add to the literature that has described similar results in terms of spontaneous biliteracy (Bauer et al., 2017; Duran, 2017; Gillanders et al., 2017; Pendergast et al., 2015; Reyes & Azuara, 2008; Soltero-Gonzalez & Butvilofsky, 2016), literature that found students exposed to sequential bilingual approaches or monolingual school environments were able to experience an emergent spontaneous biliteracy.

Furthermore, students demonstrated a deeper understanding of their languages by making cross-linguistic connections among languages, which led to metalinguistic awareness. For

example, chapter four showed how Megan adjusted the spelling of the word see to convey the meaning of the word “said.” Through the process, Megan explains how the sound of the letter “d” is missing, which is the same in English and Spanish, and realizes that the digraph “ee” sounds like the letter “I” in Spanish. She discovered and applied her bilingual capabilities in ways that are exclusive of bilinguals. In line with a dynamic bilingualism and a literacy squared approach (Escamilla et al., 2014), Megan demonstrates that bilinguals cannot just separate their languages to produce a monolingual document, but instead she can utilize the phonics and spelling of her two languages to convey the meaning that she desires.

In this study, a popular tool for the students was Google Translate, as it allowed them to make translations from Spanish to English or viceversa. The application featured the possibilities of seeing the spelling of the words side by side and hearing its pronunciation. Translations are considered a translanguaging practice (García & Wei, 2014). In this study translation served two purposes, to provide a platform for Greta a new immigrant to participate in the English multimodal writing project, and for the rest of the students, to find terms that they did not know how to say or spell. This finding is aligned with Pacheco and Miller (2016) who found that when children translate their messages, they develop metalinguistic awareness of how language works and how to manipulate their languages for specific purposes.

In this study, the multimodal writing project allowed the students to utilize meaningful modes of meaning not only as a feature to be showcased in the final product but as a resource embedded within the writing process of the students. Greta and her classmates utilize all four linguistic modes or abilities, listening, speaking, reading, and writing, as they translated their message in one language to the other. In the case of Greta, it could be argued that she was involved in concurrent translations; however, the text that Greta created served different

purposes and not just a direct translation of her text. That is, she did not utilize this process as a mechanic exercise of randomized terms but did it within a situated practice about a topic of her life. The translations were a way to facilitate her biliteracy development. In her own words, Greta describes how the biliteracy process took place while she translated her story: “yo me dejo llevar por Translate que me lo pronuncie bien y me lo grabo en mi mente y ya lo puedo escribir en la computadora” [I entrust myself to translate, I let it pronounce it well and I memorize it in my brain and then I can write it in the computer] (Greta, interview, December 21, 2018). She strategically used a digital tool, Google Translate, to reflect and memorize the nuances of the language including the sentence structure and vocabulary while constructing a multimodal writing using her native language and English. In this particular case, it is easy to differentiate her first and second language as she was a new immigrant, however this categorization becomes blurrier as emergent bilinguals develop more sophisticated biliteracy.

In the case of the rest of the students who were simultaneous bilinguals, translations were used differently in comparison to Greta, but they still served the same purpose, to facilitate the development of biliteracy. For example, one student said,

Me siento que puedo porque aprendo unas nuevas palabras. Solo cuando en translate no sabemos solo lo usamos y ya sabemos esa palabra ya no tenemos que usar translate. Cuando no sabia palabras de translate lo podia poner en español y en ingles ya sabia porque ahí nos decía. Ya me siento muy bien. [I feel that I can learn new words. When we do not know a word we just use translate to learn that word and after that we don't need to use it anymore. When I did not know words I could use Spanish or English and translate would give the words. Now I feel very good]. (Omar, interview, December 20, 2018)

Both applications of Google Translate could be framed on what The New London Group (1996) defines as transformed practice where students use and re-create discourses using real life purposes. Several students explained that they felt that were able to apply and use the skills gained through translation in their writing.

Using the multiliteracies pedagogies, translanguaging is practice that can occur as part of the critical framing component, which has the goal of framing the mastery of a skill with a conscious control within specific contexts (New London Group, 1996). Through translanguaging to support their writing process, students exercise a conscious control that critical framing requires. Furthermore, translanguaging in this study facilitates the learning of metalinguistic awareness which is a critical feature of biliteracy development. For example, in chapter four, Elías utilizes translation to find the spelling of the word delicious. He uses translanguaging practices as he reads the word in English, reflects about it in Spanish, reads the word again using Spanish phonemic principles, and then reflects about the ending of the word delicious and delicioso, to understand that –ous in English conveys the same meaning as –oso in Spanish. Through this process he utilizes multimodal writing to translanguage, find cross-linguistic connections, and build on his metalinguistic awareness. The whole process does not take more than five minutes; however, it involves Elías in a critical and conscious process to develop language at his bilingual potential. According to Butvilofsky et al. (2017), in order to develop authentic bilingual trajectories for students, it is necessary to teach to the language potential of students and not where the students actually are. In this rigorous but relevant project, the students were challenged to work to their language potential to develop biliteracy.

In summary, the writing process of bilinguals differs from that of monolinguals in that they use their full linguistic repertoire in unique ways to construct bilingual texts. Digital

literacies, in the form of multimodal writing, served as a medium through which students were able to utilize their languages naturally as they employ translanguaging practices that in turned allowed them to learn metalinguistic awareness abilities that are important to develop their biliteracy.

## **Theme 2: Emergent Bilinguals Use Online Collaboration**

In Vygotsky's (1986) sociocultural theory, he asserts that learning occurs through interactions with the social environment. That is, learning is socially constructed and created. In the field of digital literacies, Gee (2012) identifies that online collaboration is one of the learning principles of good digital learning and recommends to schools to include "contexts of interaction where the world and other people talk back" (p. 34). For the aims of this project, collaboration was important in the construction of bilingual texts because as discussed in the findings of Bauer et al. (2017) through collaboration and translanguaging students use metalinguistic skills. The importance of collaboration is also reflected in the work of Axelrod and Cole (2018) whose study demonstrated that collaboration was a key factor for the students while they were immersed in translanguaging practices constructing different literacy artifacts for the school. The difference in this study was that in addition to face to face collaborations students engaged in online collaboration to construct and edit texts together. During this study, students experienced opportunities to collaborate when they were paired with peers to provide feedback. They also collaborated in the construction of each other's writing through the posting of digital comments. For example, Jocelyn provided feedback about Greta's writing when she found that a sentence did not make sense in English (save very rich). Jocelyn's English proficiency allowed her to understand that the sentence that Greta typed did not make sense. This collaboration was carefully planned as a practice that would allow students to learn from one another and extend

their linguistic repertoires. The use of digital literacies for this project would have been meaningless without the human interaction through online collaboration or conversations among peers.

Furthermore, online collaboration allowed students to meaningfully participate regardless of their academic achievement. Online collaboration allowed students to construct a social presence that was different from the one constructed in school. In this study, struggling learners became effective collaborators and student editors. In chapter four, I mentioned the case of Bella, a student who was always quiet and passive in face-to-face interactions but became active and voiced her ideas and reasons to select specific visuals. In the same way, Megan expressed her pride saying “yo ayude muchas veces a Bella y a otros” [I helped Bella and other students many times] (Megan, interview, December 20, 2018). The multimodal writing project provided spaces for this group of students to construct a new identity that allowed them to feel important in the learning process of themselves as well as their peers. For these students, online collaboration created a third space in the classroom. According to Moje, Ciechanowski, Ellis, Carrillo, and Collazo (2014), a third space, in-between, or hybrid space can be a physical or socialized space where people interact. These third spaces counteract two opposing realities and create an arena where individuals can work together and create new forms of literacy. In the case of Megan and Bella, multimodal writing allowed them to create their own arena where they could collaborate with their peers to construct their multimodal writing projects. The exchanges that occurred in that third space were reflective of translanguaging practices as previously discussed in the example of Jocelyn and Greta collaboration. Therefore, the multimodal writing project also created a translanguaging space. For Wei (2018), a translanguaging space permits bilinguals to integrate different social spaces and linguistic codes that have been separated through different



practices in different places. In this classroom, the block of language arts was exclusively for Spanish reading and writing instruction; therefore, the multimodal writing project created an arena where English and Spanish literacies could coexist.

Within those translanguaging spaces, the modes of meaning making had an important role in the construction of the bilingual multimodal writing project of the students. In this study, the participants demonstrated engagement and motivation while using images to construct their texts. According to Soltero-Gonzalez (2009), oral language utilized to provide meaning to visual texts can enhance the students writing. This study confirmed Soltero-Gonzalez's finding, as the images facilitated opportunities for the students to explain the content of the visual text, which translated in the addition of details. For example, as described in chapter four, in Zara's searching and selection process, a colorful garden was orally described to me in Spanish but was later written in English.

The vocabulary was co-constructed with the aid of visuals that the students later on described in their writing using their whole linguistic repertoire. This finding is also supported with the work of Pacheco and Miller (2016) who found that bilinguals utilized their heritage language and English to describe images that they utilized as they created an eBook. Similarly in this study, students demonstrated that they could engage in translanguaging practices, alternating among their languages to talk about a student-selected visual to later continue writing utilizing the student-selected target language to respond their writing prompt. This finding is important because traditionally linguistic modes of meaning making take centerpiece to scaffold the writing of students, for example students are provided with word-walls, lists of verbs in different tenses, synonyms and other resources. However, those traditional approaches could take a more holistic

stance by allowing students to explore more than one mode of meaning to construct their writing, including visual, spatial, or audio modes of meaning making.

In summary, online collaboration can facilitate the development of biliteracy as a social and cultural act, and product of the meaningful exchanges of students in different languages in a digital platform. Multimodal writing provides students with a third space where even reluctant writers can productively participate and meaningfully engage in the writing process.

Furthermore, the inclusion of different modes of meaning in multimodal writing allow students to utilize translanguaging practices and vocabulary that can enhance both, the students' bilingual writing process and the students' final written product.

### **Multimodal Writing to Develop Biliteracy**

In this section, I sought to discuss how multimodal writing facilitates the development of biliteracy as it relates to research question 2.

### **Theme 3: Multimodal Writing Makes Possible Contextualized Practice to Support Vocabulary**

A central finding that contributes to answer this question indicates that the opportunity to engage in multimodal writing fostered students' vocabulary and spelling development. To discuss this theme, I would like to begin with a quote of Ms. Park's: "grammar and spelling are not the most fun thing to do" (M. Park, informal conversation, October 3, 2018). When delivering her grammar and spelling instruction, her sitting posture included the spine bent and ankles crossed. She portrayed the look of a person who was tired. The students in response seemed to mechanically respond to the grammar and spelling exercises. It would seem that traditional approaches to teach grammar do not do justice to the teaching abilities of educators and capabilities of the students. Notwithstanding the negative feelings that the teaching of

grammar and spelling can convey to both, students and teachers, orthographic knowledge is paramount in the students' educational journey. According to Kiernan and Bear (2018), the spelling development of emergent bilinguals is crucial because it can improve the reading comprehension and writing development of students while it also provides a glance for educators to understand the orthographic knowledge of students. Furthermore, spelling and vocabulary knowledge seem to have a great impact in academic achievement (Templeton & Bear, 2018). According to research on developmental spelling, emergent bilinguals acquire their orthographic knowledge, assessed through spelling, in similar ways as monolingual English speakers (Kiernan & Bear, 2018; Yeong, Fletcher, & Bayliss, 2014) with the difference that emergent bilinguals' linguistic approximations can be discussed from a translanguaging stance.

During this study, students explored a different way to study spelling and grammar. To do so, they relied on translanguaging practices while utilizing Google Translate, spelling tool check, and face-to-face or online collaboration with their peers. In chapter four, I discussed how during the first steps of the multimodal writing project, the focus was on making meaning through writing without emphasizing standard or correct spelling but instead students using their own language approximations and the linguistic knowledge that they possessed in any of their languages. When students had almost a complete piece of writing, they started to focus on words that were not spelled in a standard way. For this, each one of the students developed their own spelling list where they used contrastive analysis between their language approximation and the standard spelling of a word. This allowed students to practice spelling in a meaningful, more autonomous, and contextualized way.

While working on grammar and spelling, the students used their linguistic repertoire in an integrated manner, such as using Spanish phonology to type and reflect on the standard English

spelling of some words. The data of this study confirms the findings of Kiernan and Bear (2018) and Reynolds et al. (2003) who found that emergent bilingual learners usually misspelled words that included single English phonemes that were represented by different letters in their other language. To illustrate, I presented how Alfredo spelled the word “hard” as “jard” and explained how a bilingual analysis of the spelling of Alfredo would provide a more holistic approach of his biliteracy potential as he identifies the sound of the letter /j/ in Spanish to represent the sound of the letter /h/ in English. According to Gort (2006), interliteracy (using linguistic features from one language to the other) is a typical stage of writing unique of bilinguals that tends to fade as more refined forms of biliteracy are learned. In the previous example, for Alfredo the use of the Spanish sound /j/ accurately conveys the sound of the English letter /h/ in the word hard. However, for him that linguistic approximations or unconventional spelling is “palabras mala” [wrong words] as it is not spelled standardly.

In addition to the spell check tool, the students worked in Google Translate. A tool that allowed students not only to visually identify the standard spelling of words but to analyze it using different linguistic domains such listening and speaking. In chapter four, I presented how Karina utilized this tool to find how the word “rio” [river] was spelled in English. Karina was able to see the words side by side, decided to listened how the word river was pronounced, and while reading the word river she repeated the pronunciation of the word several times coming to the conclusion that “la e no suena” [the letter e is mute] (Karina, 7 years old). Just like Karina, most students relied on their oral language to problem-solve the spelling in their writing. This confirms the findings of Bauer et al. (2017) and Yaden and Tardibueno (2004) who found that when facing difficult to spell words, students utilize oral language to analyze and match the sounds in words. This process of discovery and full integration of the students’ languages shows

how biliteracy development requires the strategic use of both languages and Google Translate, as well as providing situated learning for students with contextualized practice that translates in the development of English and Spanish vocabulary and spelling in a safe and supported environment.

Some of the students explained that working on spelling using spelling check and Google translate was useful and gave them independence as learners because, “si la maestra estaba ocupada yo podía resolver mi problema solito, no tenía que esperar y podía seguir trabajando” (Omar, interview, December 20, 2018) [if the teacher was busy, I could solve my problems on my own, I did not have to wait and could continue working on my own]. This illustrates that students do not need to be filled up with knowledge as in a banking concept of education (Freire, 2014), but instead, they can create their own knowledge using their own experiences and in this case, appropriate scaffolding in the form of translations and spelling check tools.

According to the data, the students considered that Google Translate as well as the spell check editor allowed them to learn more words. The main difference between the approach in this study and the traditional approach is the personalization of the learning of the students in terms of language and vocabulary, meaning each student works on the standard spelling of their own writing, and therefore all students work on different words based on their linguistic repertoire. This personalization was not teacher generated and was not produced after testing students, but happened naturally within the process of their writing in a way that allowed students to take control of their learning. Therefore, Google Translate and spell check tools have the potential to supplement the spelling and grammar instruction received during language arts but in a contextualized way.

Using a multiliteracies framework (The New London Group, 1996), I position this finding as part of situated practice and overt instruction. That is, through their writing experience the spelling practice was situated. The spelling words did not come from an external source but from their own writing, products of their current capabilities in both languages. To refine those capabilities through spelling and grammar, the students relied on the use of Google Translate. Google Translate provided the overt instruction for students to find out their terms. The spelling lists that the students generated were personalized as they included words that were already part of their full linguistic repertoire; however, they learned to spell them conventionally, and at the same time, they used higher order thinking skills to identify their mistakes as well as the conventional spelling of a word.

The instruction of spelling and grammar for emergent bilinguals is crucial to their academic achievement. This study suggests the use of teaching practices that mirror a holistic view of bilingualism and includes the whole linguistic repertoire of the students. For example, the instruction of grammar and spelling can be more personalized when analyzing and teaching those skills in the context of the students' own writing. Finally, the integration of multimodal writing can facilitate the process of teaching grammar and spelling in a contextualized form providing digital tools for students that can facilitate the development of more standard forms of spelling, such as Google Translate and spelling check tools.

#### **Theme 4: Multimodal Writing Empowers Bilingual Writers**

I present in this discussion an issue that was observed during the first two weeks of the study, which was the brief and unfocused writing of students in Spanish, which in turn led to Ms. Park's decision that "writing in English would be too much for them" (M. Park, informal conversation, October 1, 2018). However, she also acknowledged that she had only told students

“siéntate y escribe” (M. Park, observation, October 4, 2018) [I have only told you to sit down and write]. During the students’ interviews, several students described negative feelings towards writing in English in Ms. Taylor’s class and mentioned that writing in Ms. Park’s class was not their most favorite activity.

While working on the multimodal writing project, I observed that the students demonstrated a sense of empowerment when writing. This observation was confirmed by the students’ interview responses when they mentioned that they felt more comfortable and capable of writing. For example, some of the statements of the students included, “me sentí como algo así que yo podía escribir más bien y aprendo unas palabras nuevas” [I felt something like I was able to write better and learn new words] (Omar, 7 years old), “antes como que me equivocaba mucho en ingles y ahora ya no y tambien puedo mejorar español en la computadora” [before I used to make many mistakes in English but now I don’t and I can improve in Spanish using the computer] (Lily, 7 years old), “siento que ya no es tan dificil” [I feel that now it is not as complicated] (Greta, 8 years old), “antes no sabia escribir y ahora si” [before I did not know how to write, and now I know] (Alfredo, 8 years old) and “me siento mejor y menos nervioso” [I feel better and less nervous] (Elias, 8 years old), are evidence of the positive self-perception of the students as bilingual writers. This finding could be aligned with the work of Gianakos (2013) who explained that the integration of digital literacies can be motivating for students especially in activities that they regularly do not enjoy. The data also pointed that even the most reluctant writers and struggling learners were able position themselves as capable learners and bilingual writers.

It is important to discuss that the integration of digital literacies was motivating for students, as discussed by Gianakos (2013), and also an interesting tool that seems to works for

language learning. According to Axelrod and Cole (2018), translanguaging has positive biliterate writing outcomes because it provides a safe environment that allows students to take risks. In this multimodal writing project, the students strengthened not only their written products but their positive perception of themselves as capable bilingual writers.

In the case of Greta, a new immigrant, who according to Ms. Park would “shut-down and say I can’t it is in English” (M. Park, informal conversation, October 23, 2018), while working on multimodal writing, Greta used translanguaging to write, share, and understand the multimodal writing of her peers in both languages. For instance, she used translations not only to write her text but also to understand what her peers had written in their samples, which in turn allowed her to fully participate and collaborate with her peers. Aligned with Pointer and Gort (2016), translanguaging served as a tool for sociocultural integration as it guides students to comprehend and communicate with different communities. Greta confirmed that translanguaging through translations and peer collaboration was a tool for language brokering, which has been discussed by scholars such as Alvarez (2014) and Orellana and García (2014). Furthermore, according to scholars, as a learning strategy translanguaging practices have the power of supporting the development of biliteracy (Ortega, 2019; Velasco & García, 2014; Wei, 2018) as evidenced in Greta’s projects presented in chapter four. Greta during the final interview explained, “si yo sigo trabajando así unos días más entonces yo casi puedo ser bilingüe” (Greta, interview, December 20, 2018) [If I continue working like this a few more days, I will become bilingual”. Although it will take more than a few days for Greta to become bilingual, she has transformed her response towards working in English as something that she can do and that can even lead her to develop her biliteracy.



In the case of Brady, a special education student and simultaneous bilingual, the multimodal writing project allowed him to organize and express his thoughts in a way that had not been possible through handwriting. Brady was able to produce complete sentences and a brief story in both languages, English and Spanish. According to Gort and Bauer (2012), all bilingual students, simultaneous and sequential, have the potential to develop literacy in two languages given supportive contexts (Gort & Bauer, 2012). In this case, digital literacies contributed to provide those contexts linguistically and socially. For example, while working on his Spanish project and inserting pictures, he received positive praise from his peers about his work which led him to express his desire of “yo quiero trabajar bien” (Brady, interview, December 20, 2018) [I want to work well]. The multiple components of the multimodal writing project and the design of the activity involving collaboration and the promotion of translanguaging practices seem to have a positive effect in the students’ self-perceptions as bilingual writers.

In the case of Bella and Megan, both struggling learners, the multimodal writing project allowed them to use their voice. According to Anzaldua (2007), “until I can take pride in my language, I cannot take pride in myself” (p. 59). While working on their projects, Bella spoke and responded to her peers about the rationale of her image selection, as presented in chapter four. And Megan felt proud about her role as student-editor as she asserted, “yo ayude muchas veces a Bella y a otros” [I helped Bella and other students many times] (Megan, 7 years old). Both students were proud about their work, which in turn reflected their language and language practices. Bilingualism was positively embraced as something dynamic and flexible, as evidenced in the bilingual practices described during theme one of this chapter. After having a

positive connotation of their particular bilingual realities, these two students embraced a positive self-perception as bilingual and capable writers.

Through a multiliteracies framework, the students experienced transformed practice (The New London Group, 1996) of writing as participants were able to shift from traditional writing and spelling practices to the development of new literacies, through a multimodal writing experience, which in turn seems to have empowered students. Students displayed confidence and joy during the writing process. In the students' own words, they felt capable, successful, and happy in their own space. For young students, this positive visualization of themselves is important, as the students develop their identities and knowledge of the world from an early age.

In summary, the multimodal writing project allowed students to take pride on their unique bilingualism and forge positive perceptions of the students as capable writers, including new immigrants, special education students, and struggling learners. The sheltered space that the project provided for students allowed for spaces to translanguage, collaborate, and develop their linguistic repertoires.

### **Conclusions**

The multimodal writing project was specifically designed to explore how emergent bilinguals utilized their linguistic repertoire and the project would facilitate the development of biliteracy. This study was designed following a multiliteracies framework and dynamic bilingualism approach which allowed students to use their languages as resources for learning (Ruiz, 1984) and use language strategically in a context that was designed to integrate as possible language arts and social studies with digital literacies. After analyzing and discussing the study findings, I conclude that multimodal writing can facilitate bilingual practices that are conducive

to the development of biliteracy, such as translanguaging, cross-linguistic connections, and metalinguistic awareness.

During the study, the participants took an active role when they developed their writing skills, vocabulary and spelling or collaborated in face-to-face and online environments using their full linguistic repertoire. The motivational component of writing a multimodal piece using digital tools such as Google Apps, including Google Docs, Slides, and Translate, sheltered and enriched the learning process of the students. The findings indicate that the students developed a positive image of themselves as capable bilingual writers in the 21<sup>st</sup> century.

This study also challenges the misconceptions of some teachers towards integration of technology, as described in chapter two. For instance, it is argued that technology can distract students from learning content and skills (Hutchinson & Reinking, 2011). In this study, there is evidence that using multimodal writing facilitated the development of linguistic skills in both languages while students constructed written texts.

The significance of this study is situated in its examination of bilingual multimodal writing experiences as a tool to develop biliteracy and foster holistic bilingual practices of Latina/o bilingual elementary students. Furthermore, the junction of technology with biliteracy contributes to understand the value of providing bilingual students with educational opportunities that are not commonly found in a traditional bilingual classroom. This study contributes to the paucity of research on the use of technology to mediate writing instruction and biliteracy development.

Moreover, this study posits itself as a mediator between majority and minority languages because it exhorts to the maintenance and development of both. In this study, students used the

power of their languages by using their full potential as a liberating and transformative process. In this study, both languages were equally valued.

### **Implications**

The research findings in this study provided several implications for practitioners of emergent bilinguals and researchers in the field. In this section, I will describe some of these implications at three different levels: school districts, administrators, and finally teachers. After this, I include the theoretical implications for further research.

#### **Implications for Practice**

**District Level.** At the district level, decisions are made in relation to the type of programming and curriculum for bilingual students that schools must follow. One implication at this level is that when considering programming for students, such as dual language, late and early exit programs is to consider hybrid moments throughout the content and language allocation. In some districts, the advocacy for the total separation of languages, where teachers and students are prompted to remain in the language of instruction is against the natural learning process of biliterate students. While it is important to offer instruction in target languages, it is equally important to plan moments of the day within content areas for students to use their full linguistic repertoire for academic activities. As seen in this project, the products of the students were monolingual but the process that the students experienced followed a bilingual stance. That is, the co-existence of the languages of students in their brain set place for different ways of processing and understanding information.

Also, in order to ameliorate the digital divide that linguistic minorities regularly experience, it is important to allocate technology across schools equitably. That is, distributing

the same number of resources without considering the needs of specific populations, sets students, in particular bilingual students at a disadvantage.

A third implication includes providing schools with examples of premium-grade (Gee, 2012) digital literacy experiences. That is, just like there are different levels of knowledge objectives and taxonomies to make the learning experiences rigorous and relevant; the same kind of taxonomies should be developed for digital literacies so that schools have a clear understanding of the possibilities that technology can offer. Furthermore, a separate taxonomy for language learning and technology as well as professional development for this area are encouraged.

**Administrators Level.** For administrators, a lesson learned through the implementation of a bilingual multimodal writing project demonstrates how educators can develop the knowledge and skills through integrated units of study that take into consideration the language demands as well as the digital demands for students. One way in which administrators can support teachers is by providing resources that teachers can utilize to plan an integrated unit that includes technology and language. In addition, administrators can create learning communities among the staff to create, apply or adapt rubrics to evaluate the writing samples of the students in both languages side by side to have a holistic idea of the linguistic capabilities, strengths, and areas of development for bilingual students. In campuses where monolingual teachers serve bilingual students, this practice is imperative so that students are not instructed under a deficit approach. Also, administrators can promote events that showcase the biliteracy development of students. For example, students can document in a portfolio writing samples in both languages and in both formats, paper based and digital.

**Teachers Level.** The first implication is to foster a positive image of bilingualism among students. It does not suffice telling the students that they are bilingual because they know two languages, but to help students to become aware of how unique their learning is as they can utilize more than one linguistic repertoire. It is important to show students that using their full linguistic repertoire to develop one or another language is appropriate, powerful, and normal.

Furthermore, it is necessary to leave aside the personal perceptions of language acquisition and apply with fidelity the bilingual program suggested, including the time and content allocation. This study demonstrated that students were capable of writing in English and Spanish; however, opportunities to write in both languages were scarce as the teacher feared that the students would fail. Even with the best intention of helping students, stopping or avoiding the development of biliteracy simultaneously can have detrimental outcomes for students.

Third, teachers can acknowledge the full linguistic repertoire of students by including assessing instruments that can provide a holistic picture of the students' biliteracy. That is, often times monolingual instruments are utilized to evaluate the students' literacies. These instruments do not take into consideration the bilingual practices or strategies that bilingual students can employ to construct texts. Therefore, instead of counting those strategies as mistakes, teachers could record them as bilingual strategies and identify next steps to solidify the biliteracy process of the students instead of penalizing them.

Fourth, contextualized experiences to develop grammar, spelling, and phonics through writing should be provided. That is, writing instruction is complex and requires students to have knowledge of different forms of language such as content, structure, and spelling, however this practices should be promoted as much as possible in a contextualized way. Decontextualized approaches do not allow students to meaningfully integrate and internalize rules of grammar and

spelling. Instead, “students are victims of the mistaken belief that grammar lessons must come before writing, rather than grammar being something that is best learned through writing” (Cleary, 2014, para. 4). Therefore, the extensive teaching of these isolated features should be avoided.

Finally, teachers can employ technology in the classroom not only as a tool that delivers instruction to students, but as a tool where students can plan and create rigorous and relevant projects for the students. Teachers could make an inventory of uses of technology for language learning where they document what they utilized through the week and possibly brainstorm with other teachers how they could enrich their current applications of technology to move from low-grade to premium-grade (Gee, 2012) digital literacies experiences for bilingual students.

### **Implications for Research**

I recommend furthering investigations about how digital literacies can foster the development of biliteracy. Specifically, an examination of how the applications of technology can enhance the reading and writing skills of students is exhorted. Throughout this study, I noticed how students became more confident when writing in English and could not avoid thinking about how technology could empower bilingual readers as well.

Furthermore, research is needed to evaluate the different technologies around literacy available for elementary students. For instance, the digital literacy programs offered to students mirroring traditional literacy experiences could be juxtaposed with digital literacy experiences that promote a more holistic view of literacy or multiliteracies.

In addition, during the students’ interviews, several students described negative feelings towards writing in English during math and science. A study of digital literacies or multimodal writing in the areas of math and science could be another area to explore.

The analysis of the data indicates that when emergent bilinguals are provided with multimodal writing opportunities, they can authentically and meaningfully use their full linguistic repertoire and build on their biliteracy. This is significant because in this century the current demands require students to become not only biliterate but also multiliterate. The junction of technology with biliteracy represents a powerful tool for language learning. Any positive or negative outcome that digital literacies may have in the development of biliteracy of students, depends on the specific type of application. The findings in this study pointed that holistic approaches in digital literacies can facilitate the use of all linguistic repertoires as well as the development of biliteracy.

As an anecdotal record, a month after the implementation of the multimodal writing project, I was contacted by the assistant principal to share Ms. Park's impressions about her class. After the students were examined in reading and writing, Ms. Park concluded that the participants of this study were performing higher in relation to the rest of the students of the grade level. The assistant principal expressed that although not all students were exceeding expectations, as a whole, the students had demonstrated growth as evidenced in their literacy performance. Continuing to explore how to empower bilingual students could be another line for further research.



## REFERENCES

- Agirdag, O. (2010). Exploring bilingualism in a monolingual school system: Insights from Turkish and native students from Belgina schools. *British Journal of Sociology of Education, 31*(3), 307-321.
- Altheide, D. L., & Schneider, C. J. (2013). *Qualitative media analysis* (2<sup>nd</sup> ed). Thousand Oaks, California: SAGE Publications.
- Alvarez, S. (2014). Translanguaging tareas: Emergent bilingual youth as language brokers for homework in immigrant families. *Language Arts, 91*, 326-339.
- Anderson, M., & Perrin, A. (2018). Nearly one-in-five teens can't always finish their homework because of the digital divide. *Pew Research Center*. Retrieved from <http://www.pewresearch.org/fact-tank/2018/10/26/nearly-one-in-five-teens-cant-always-finish-their-homework-because-of-the-digital-divide/>
- Anzaldúa, G. E. (2007). *Borderlands/la frontera: The new mestizo* (3<sup>rd</sup> ed.). San Francisco, CA: Aunt Lute Books.
- August, D., & Shanahan, T. (2006). *Developing literacy in second language learners: Report of the national literacy panel on language-minority children and youth*. Mahwah, NJ: Erlbaum.
- Axelrod, Y., & Cole, M. W. (2018). The pumpkins are coming...vienen las calabazas...that sounds funny: Translanguaging practices of young emergent bilinguals. *Journal of Early Childhood Literacy, 18*(1), 129-153.
- Baker, C., & Wright, W. E. (2017). *Foundations of bilingual education and bilingualism* (6<sup>th</sup> ed.) Bristol, UK: Multilingual Matters.
- Banks, M. (2007). *Using visual data in qualitative research*. Thousands Oaks, CA: Sage.
- Bauer, E. B., Presiado, V., & Colomer, S. (2017). Writing through partnership: Fostering translanguaging in children who are emergent bilinguals. *Journal of Literacy Research, 49*(1), 10-37.
- Barone, D. (2003). Second grade is important: Literacy instruction and learning of young children in a high poverty school. *Journal of Literacy Research, 35*(4), 965-1018.

- Barone, D., & Wright, T. E. (2008). Literacy instruction with digital and media technologies. *Reading Teacher, 62*(4), 292-302.
- Beacco, J. C. & Byram, M. (2003). *Guide for the development of language education policies in Europe from linguistic diversity to plurilingual education*. Strasbourg: Language Policy Division. Council of Europe.
- Beeman, K. & Urow, C. (2012). *Teaching for biliteracy: Strengthening bridges between languages*. Philadelphia, PA: Caslon Publishing.
- Bernabei, G., & Reimer, J. (2013). *Fun-size academic writing for serious learning*. London , UK: Corwin Literacy Press.
- Biswas, S. (2014). How to Teach Multiliteracies. *The Canadian Journal For Teacher Research*.
- Burnett, C. (2010). Technology and literacy in early childhood educational settings: A review of research. *Journal of Early Childhood Literacy, 10*(3), 247-270.
- Bus, A. G., Verhallen, M. J. A. J., & de Jong, M. T. (2009). How onscreen storybooks contribute to early literacy. In A. G. Bus & S. B. Neuman (Eds.), *Multimedia and literacy development: Improving achievement for young learners* (pp. 153-167). New York, NY: Taylor & Francis Group.
- Butvilofsky, S. A., Hopewell, S., Escamilla, K., & Sparrow, W. (2017). Shifting deficit paradigms of Latino emergent bilingual students' literacy achievement: Documenting biliterate trajectories. *Journal of Latinos and Education, 16*(2), 85-97.
- Canagarajah, S. (2011). Translanguaging in the classroom: Emerging issues for research and pedagogy. *Applied Linguistics Review, 2*(1), 1-28.
- Carlisle, J. F., & Beeman, M. M. (2000). The effects of language instruction on the reading and writing achievement of first-grade Hispanic children. *Scientific studies of Reading, 4*(4), 331-353.
- Cenoz, J., & Gorter, D. (2013). Towards a plurilingual approach in English language teaching: Softening the boundaries between languages. *TESOL Quarterly, 47*(3), 591-599.
- Chin-Ting, H., Ming-Chaun, L., & Ching-Chung, T. (2014). The influence of young children's use of technology on their learning: A review. *Educational Technology & Society, 17*(4), 85-99.
- Chumak-Horbatsch, R. (2012). *Linguistically appropriate practice: A guidebook for early childhood practitioners working with immigrant children*. Toronto: University of Toronto Press.
- Cleary, M. N. (2014) The wrong way to teach grammar. *The Atlantic*.

- Cortes, C. E. (1986). The education of language minority students: A contextual interaction model. In C. E. Cortes (Ed.), *Beyond language: Social and cultural factors in schooling language minority students* (pp. 3-34). Los Angeles, CA: California State University.
- Cooper, M. N. (2002). *Does the digital divide exist? Bush administration shrugs, but evidence says yes*. Report by the Consumer Federation of America (2002, May 30). Retrieved June, 4, 2018 from <https://consumerfed.org/pdfs/ddivide0502.pdf>
- Crawford, J. (2004). *Educating English learners: Language diversity in the classroom*. Bilingual Education Services Inc.
- Creese, A., & Blackledge, A. (2010). Translanguaging in the bilingual classroom: A pedagogy for learning and teaching? *Modern Language Journal*, 94(1), 103-115.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. London, UK: SAGE Publications Inc.
- Creswell, J. W., & Miller, D. L. (2000). Determining validity in qualitative inquiry. *Theory Into Practice*, 39, 124-130.
- Cummins, J. (2007). Rethinking monolingual instructional strategies in multilingual classrooms. *Canadian Journal of Applied Linguistics*, 10(2), 221-240.
- Cummins, J. (2017). Teaching minoritized students: Are additive approaches legitimate? *Harvard Educational Review*, 87(3), 404-426.
- Cummins, J. & Early, M. (2010). *Identity texts: The collaborative creation of power in multilingual schools*. Trentham Books Ltd.
- Deacon, D., Pickering, M., Golding, P., & Murdock, G. (1999). *Researching communications: A practical guide to methods in media and cultural analysis* (2<sup>nd</sup> ed). Bloomsbury USA.
- De Mejia, A. M. (2002). *Power, prestige, and bilingualism: International perspective on elite bilingual education*. UK: Multilingual Matters Ltd.
- Deyhie, D., & Swisher, K. (1997). Research in American Indian and Alaska Native education: From assimilation to self determination. In M. W. Apple (Ed), *Review of Research in Education* (pp. 113-194). Washington, DC: American Educational Research Association.
- Duran, L. (2017). Audience and young bilingual writers: Building on strengths. *Journal of Literacy Research*, 49(1), 92-114.
- Dyson, A. H., & Genishi, C. (2005). *On the case: Approaches to language and literacy research case study book*. New York, NY: Teachers College.

- Dworin, J. E. (2003). Insights into biliteracy development: Toward a bidirectional theory of bilingual pedagogy. *Journal of Hispanic Higher Education, 2*(2), 171-186.
- Dzekoe, R. (2017). Computer-based multimodal composing activities, self-revision, and L2 acquisition through writing. *Language Learning & Technology, 21*(2), 73-95.
- Edwards, R. & Holland, J. (2013) *What is qualitative interviewing?* New York, NY: Bloomsbury Academic.
- Ek, L. D., Machado-Casas, M., Sánchez, P., & Alanis, I. (2010). Crossing cultural borders: La Clase Mágica as a university-school partnership. *Journal of School Leadership, 20*(6), 820-849.
- Elola, I., & Oskoz, A. (2017). Writing with 21<sup>st</sup> century social tools in the L2 classroom: New literacies, genres, and writing practices. *Journal of Second Language Writing, 36*, 52-60.
- Emerson, R., Fretz, R., & Shaw, L. (1995). *Writing ethnographic fieldnotes*. Chicago: University of Chicago Press.
- Erhel, S., & Jamet, E. (2016). The effects of goal-oriented instructions in digital game-based learning. *Interactive Learning Environments, 24*(8), 1744-1757.
- Escamilla, K. (2007). Considerations for literacy coaches in classrooms with English language learners. *Literacy Coaching Clearinghouse. National Council of Teachers of English*.
- Escamilla, K. (2009). Semilingualism applied to the literacy behaviors of Spanish-speaking emergent bilinguals: Biliteracy or emergent biliteracy? *Teachers College Record, 108*, 2329-2353.
- Escamilla, K., Geisler, D., Ruiz, O., & Hopewell, S. (2005, January). Literacy squared: Transitions to biliteracy. Paper presented at the Annual Conference of the National Association for Bilingual Education, San Antonio, TX.
- Escamilla, K., Hopewell, S., Butvilofsky, S., Sparrow, W., Soltero-Gonzalez, L., Ruiz-Figueroa, O., & Escamilla, M. (2014). *Biliteracy from the Start: Literacy squared in action*. Philadelphia, PA: Caslon Publishing.
- Falchi, L., Axelrod, Y., & Genishi, C. (2014). “Miguel es un artista” and Luisa is an excellent student: Seeking time and space for children’s multimodal practices. *Journal of Early Childhood Literacy, 14*(3), 345-366.
- Ferreiro, E., & Teberosky, A. (1982). *Literacy before schooling*. Portsmouth, NH: Heinemann.
- Flores, N., & Rosa, J. (2015). Undoing appropriateness: Raciolinguistic ideologies and language diversity in education. *Harvard Educational Review, 85*(2), 149-171.

- Flores, N., & Schissel, J. L. (2014). Dynamic bilingualism as the norm: Envisioning a heteroglossic approach to standards-based reform. *TESOL Quarterly*, 48(3), 454-479. doi: 10.1002/tesq.182
- Flynn, N. (2007). Good practice for pupils learning English as an additional language: Lesson from effective literacy teachers in inner-city primary schools. *Journal of Early Childhood Literacy*, 7(2), 177-198.
- Freeman, Y., & Freeman, D. (2011). *Between worlds: Access to second language acquisition*. Portsmouth, NH: Heinemann.
- Freeman, Y., Freeman, D., & Mercuri, S. (2018). *Dual language essentials for teachers and administrators*. Portsmouth, NH: Heinemann.
- Freire, P. (2014). *Pedagogy of the oppressed*. New York, NY: Bloomsbury Publishing.
- Fu, D. (1995). *My trouble is my English: Asian students and the American dream*. Portsmouth, NH: Heinemann.
- Gandara, P. & Contreras, F. (2009). *The Latino education crisis: The consequences of failed school policies*. Cambridge: Harvard University Press.
- Garcia, A. (2014). La fotonovela digital: A sociocultural tool for biliteracy, digital literacy, and visual literacy learning of Latina/o bilingual children at an afterschool club. (Doctoral Dissertation). *The University of Texas at San Antonio*.
- García, O. (1992). Societal multilingualism in a multicultural world in transition. In H. Byrnes (Ed.), *Languages for a multicultural world in transition: Northeast conference reports on the teaching of foreign languages* (pp. 1-27). Lincolnwood, Illinois: National Textbook Company.
- García, O. (2009a). *Bilingual Education in the 21<sup>st</sup> Century: A Global Perspective*. West Sussex, UK: Wiley-Blackwell.
- García, O. (2009b). Racializing the language practices of U.S. Latinos: Impact on their education. In J. Cobas, J. Feagin, & J. Duany (Eds.), *How the United States racializes Latinos: White hegemony and its consequences* (pp. 101-115). New York, NY: Routledge.
- García, O. (2014). Countering the dual: Transglossia, dynamic bilingualism and translanguaging in education. In R. Rubdy & L. Asagoff (Eds.), *The global-local interface, language choice and hybridity* (pp. 100-118). Bristol, UK: Multilingual Matters.
- García, O., Bartlett, L., & Kleifgen, J. (2007). From biliteracy to pluriliteracies. In P. Auer, & L. Wei (Eds.), *Handbook of applied linguistics on multilingual communication* (pp. 207-228). Germany: Mouton de Gruyter.

- García, O., & Kleifgen, J. (2010). *Educating emergent bilinguals: Policies, programs, and practices for English language learners*. New York, NY: Teachers College Press.
- García, O., Kleifgen, J., & Falchi, L. (2008). From English language learners to emergent bilinguals. Equity matters. Research review No.1. *Campaign for Educational Equity*, Teachers College: Columbia University.
- García, O., & Wei, L. (2014). *Translanguaging: Language, bilingualism and education*. New York, NY: Palgrave Macmillan.
- García, O., & Woodley, H. H. (2015). Bilingual education. In M. Bigelow & J. Enns-Kananen (Eds.), *The Routledge handbook of educational linguistics* (pp. 132-144). New York, NY: Routledge.
- Garrity, S., Aquino-Sterling, C. R., & Day, A. (2015). Translanguaging in an infant classroom: Using multiple languages to make meaning. *International Multilingual Research Journal*, 9(3), 177-196.
- Gee, J. P. (2010). A situated sociocultural approach to literacy and technology. Paper presented at Arizona State University.
- Gee, J. P. (2012). The old and the new in the new digital literacies. *The Educational Forum*, 76(4), 418-420.
- Gee, J. P., & Hayes, E. (2010). *Women and gaming: The Sims and 21<sup>st</sup> century learning*. New York, NY: Palgrave Macmillan.
- Gee, J. P., & Hayes, E. (2011). *Language and learning in the digital age*, London: Routledge.
- Gennari, R., Melonio, A., Raccanello, D., Brondino, M., Doderò, G., Pasini, M., & Torello, S. (2017). Children's emotions and quality of products in participatory game design. *International Journal of Human-Computer Studies*, 101, 45-61.
- Genesee, F. (2015). Myths about early childhood bilingualism. *Canadian Psychology*, 56, 6-15.
- Genesee, F., Lindholm-Leary, K., Saunders, W. M., & Christian, D. (2006). Educating English language learners: A synthesis of research evidence. *Linguistics and Education*, 18(1), 90-92.
- Glesne, C. (2016). *Becoming qualitative researchers: An Introduction* (5<sup>th</sup> ed). New York, NY: Pearson.
- Giannakos, M. N. (2013). Enjoy and learn with educational games. Examining factors affecting learning performance. *Computers & Education*, 68, 429-439.

- Gillanders, C., Franco, X., Seidel, K., Castro, D. C., & Mendez, L. I. (2017). Young dual language learners' emergent writing development. *Early Child Development and Care, 187*(3-4), 371-382.
- Godwin-Jones, R. (2018). Second language writing online: An update. *Language Learning & Technology, 22*(1), 1-15.
- Gort, M. (2006). Strategic codeswitching, interliteracy, and other phenomena of emergent bilingual writing: Lessons from first grade dual language classrooms. *Journal of Early Childhood Literacy*. doi.org/10.1177/1468798406069796
- Gort, M. (2012). Codeswitching patterns in the writing-related talk of young emergent bilinguals. *Journal of Literacy Research, 44*(1), 45-75.
- Gort, M. (2019). Developing bilingualism and biliteracy in early and middle childhood. *Language Arts, 96*(4), 229 -243.
- Gort, M., & Bauer, E. B. (2012). Holistic approaches to bilingual/biliteracy development, instruction, and research. In M. Gort & E. B. Bauer (Eds.), *Early biliteracy development: Exploring young learners' use of their linguistic resources* (pp. 1-6). New York: Routledge.
- Gottlieb, M. & Ernst-Slavit, G. (2014) *Academic language in diverse classrooms. Definitions and Contexts*. Thousand Oaks, CA: Corwin.
- Grosjean, F. (1998). Transfer and language mode. *Bilingualism: Language and Cognition, 1*(3), 175-176.
- Grosjean, F. (2010). *Bilingual: Life and reality*. Cambridge, Mass: Harvard University Press.
- Grosjean, F. (2016). The complementarity principle and its impact on processing, acquisition, and dominance. In C. Silva-Corvalan & J. Treffers-Daller (Eds.), *Language dominance in bilinguals: Issues of measurement and operationalization* (pp. 66-84). Cambridge: Cambridge University Press.
- Grosjean, F., & Byers-Heinlein, K. (2018). *The listening bilingual: Speech perception, comprehension, and bilingualism*. Hoboken, NJ: Wiley.
- Guerrero, C. H. (2010). Elite vs. folk bilingualism: The mismatch between theories and educational and social conditions. *Colombian Journal for Teachers of English, 17*, 165-179.
- Heller, M. (2007). *Bilingualism: A social approach*. Toronto, CA: Palgrave.
- Herdina, P., & Jessner, U. (2002). *A dynamic model of multilingualism: Changing the psycholinguistic perspective*. Clevedon, UK: Multilingual Matters.

- Hesse-Biber, S. N., & Leavy, P. (2005). *The practice of qualitative research*. London: Sage Publications Inc.
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development*, 55(3), 223-252.
- Hopewell, S. & Butvilofsky, S. (2016). Privileging bilingualism: Using biliterate writing outcomes to understand emerging bilingual learners' literacy achievement. *Bilingual Research Journal*, 39(3-4), 324-338.
- Hopewell, S., & Escamilla, K. (2014). Biliteracy development in immersion contexts. *Journal of Immersion and Content-based Language Education*, 2(2), 181-195.
- Hornberger, N. (2004). The continua of biliteracy and the bilingual educator: Educational linguistics in practice. *International Journal of Bilingual Education and Bilingualism* 7(2-3), 155-171.
- Hornberger, N. H., & Kvietok-Dueñas, F. (2019). Mapping biliteracy teaching in indigenous contexts: From students shyness to student voice. *Anthropology and Education Quarterly*, 50(1), 6-25.
- Hornberger, N. H. & Link, (2012). Translanguaging and transnational literacies in multilingual classrooms: A biliteracy lens. *International Journal of Bilingual Education and Bilingualism*, 15(3), 261-278.
- Hornberger, N. H. & Skilton-Sylvester, E. (2000). Revisiting the continua of biliteracy: International and critical perspectives. *Language and Education*, 14(2), 96-122.
- Howie, P. & Bagnall, R. (2013). A beautiful metaphor: Transformative learning theory. *International Journal of Lifelong Education*, 32(6), 816-836.
- Hutchinson, A., & Reinking, D. (2011) Teachers' perceptions of integrating information and communication technologies into literacy instruction: A national survey in the United States. *Reading Research Quarterly*, 46(4), 312-333.
- da Silva Iddings, C. A., and Reyes, I. (2017) Learning with immigrant children, families and communities: The imperative of early childhood teacher education. *Early Years: An International Journal of Research and Development*, 37(1), 34-46.
- International Society for Technology in Education (2007). *National educational technology standards for students*. ISTE
- Jewitt, C. (2006). *Technology, literacy, learning: A multimodal approach*. Abingdon/New York: Routledge.



- Jiménez, R. T., David, S., Fagan, K., Risko, V. J., Pacheco, M., Pray, L., & Gonzales, M. (2015). Using translation to drive conceptual development for students becoming literate in English as an additional language. *Research in the Teaching of English*, 49(3), 248-271.
- Johnson, R. B., & Christensen, L. B. (2014). *Educational research: quantitative, qualitative, and mixed approaches* (4<sup>th</sup> ed). London: Sage Publications Inc.
- Kabuto, B. (2011). *Becoming biliterate: Identity, ideology, and learning to read and write in two languages*. New York: Routledge.
- Kalantzis, M., & Cope, W. W. (2012) *New learning: elements of a science of education* (2<sup>nd</sup> ed). Melbourne: Cambridge University Press.
- Krashen, S. (1981). *Second language acquisition and second language learning*. Oxford, UK: Pergamon Press.
- Kiernan, D., & Bear, D. (2018) What spelling tells us about the orthographic development and word study instruction with emergent bilingual secondary students. *Reading Psychology*, 39(3), 227-252.
- Korat, O., & Shamir, A. (2007). Developing an educational E-book for fostering kindergarten children's emergent literacy. *Computers in the Schools*, 24(1-2), 125-143.
- Labbo, D. L. & Reinking, D. (2003). Computers and early literacy education. In N. Hall, J. Larson, & J. Marsch (Eds.), *Handbook of Early Childhood Literacy* (pp. 338-354). London: Sage Publications Inc.
- Leavy, P. (2017). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. New York, NY: The Guilford Press.
- Lee, O., Mahotiere, M., Salinas, A., Penfield, R. D. & Maerten-Rivera, J. (2009). Science writing achievement among English language learners: Results of three year intervention in urban elementary schools. *Bilingual Research Journal*, 32, 153-167.
- Lenters, K., & Grant, K. (2016). Feedback loops: Assembling student editors, stories, and devices for multimodal peer feedback. *Language Arts*, 93(3), 185-199.
- Karchmer, R. A., Leu, D. J., Mallette, M. H. & Kara-Soteriou, J. (2005). *New literacies for new times: Innovative models of literacy education using the internet*. Newark, DE: International Reading Association.

- Lewis, G., Jones, B., & Baker, C. (2012). Translanguaging: Origins and development from school to street and beyond. *Educational Research and Evaluation: An International Journal on Theory and Practice*, 18(7), 641-654.
- Lucas, T., & Katz, A. (1994). Reframing the debate: The roles of native languages in English only programs for language minority students. *Tesol Quarterly*, 28(3), 537-561.
- Machado-Casas, M., Alanis, I., & Ruiz, E. (2017). Innovative technologies as social pedagogy: Transforming informal educational practices in the United States. *Pedagogia Social. Revista Interuniversitaria*, 29, 55-66.
- Makalela, L. (2015). Moving out of linguistic boxes: The effects of translanguaging strategies for multilingual classrooms. *Language and Education*, 29(3), 233-247.
- Manning, J. (2017). In vivo coding. In J. Matthes (Ed.), *The international encyclopedia of communication research methods*. New York, NY: Wiley-Blackwell.
- Manyak, P. C. (2006). Fostering biliteracy in a monolingual milieu: Reflections on two counter-hegemonic English immersion classes. *Journal of Early Childhood Literacy*, 6(3), 241-266.
- Marchetti, L. & Cullen, P. (2016) A multimodal approach in the classroom for creative learning and teaching. *CASALC Review 2015-2016*, 5(1), 39-51.
- Martinez-Roldan, C. M. (2015). Translanguaging practices as mobilization of linguistic resources in a Spanish/English bilingual after-school program: An analysis of contradictions. *International Multilingual Research Journal*, 9(1), 43-58.
- Marshall, C. & Rossman, G. B. (2011). *Designing qualitative research*. London: Sage Publications Inc.
- Martin-Beltrán, M. (2014). “What do you want to say?” How adolescents use translanguaging to expand learning opportunities. *International Multilingual Research Journal*, 8(3), 208-230.
- Matera, C., & Gerber, M. M. (2008). Effects of a literacy curriculum that supports writing development of Spanish speaking English learners in Head Start. *NHSA Dialog*, 11(1), 25-43.
- Melrose, S. (2009). Naturalistic generalization. In A. J. Mills, G. Durepo, & E. Wiebe (Eds.), *Encyclopedia of Case Study Research*. Thousand Oaks, CA: Sage Publications.
- Mercuri, S., & Ramos, L. (2014). Technology-based biliteracy centers for the 21<sup>st</sup> century learner. *GIST Education and Learning Research Journal*, 9, 196-216.

- Mezirow, J. (2009). Transformative learning theory. In J. Mezirow, and E. W. Taylor (Eds), *Transformative learning in practice: Insights from community* (pp. 18-32). San Francisco, CA: Jossey-Bass.
- Miles, M. B., Huberman, M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook*. London: Sage Publications Inc.
- Moll, L. C., Saenz, R., & Dworin, J. (2001) Exploring biliteracy: Two student case examples of writing as a social practice. *Elementary School Journal*, 101(4), 435-449.
- Moore-Russo, D., & Shanahan, L. E. (2014) A broader vision of literacy: Including the visual with the linguistic. *Journal of Adolescent & Adult Literacy*, 57(7), 527-532.
- Moje, E. B., Ciechanowski, K. M., Ellis, L., Carrillo, R., & Collazo, T. (2014). Working toward third space in content area literacy: An examination of everyday funds of knowledge and discourse. *Reading Research Quarterly*, 39(1), 38-70.
- Murray, O. T., & Olcese, N. R. (2011). Teaching and learning with I-Pads, ready or not? *Tech Trends*, 55(6), 42-48.
- Musanti, S. I., & Rodriguez, A. I. (2017). Translanguaging in bilingual teacher preparation: Exploring pre-service bilingual teachers' academic writing. *Bilingual Research Journal*, 40(1), 38-54.
- Neuman, N. M., & Neuman, D. L. (2014) Touch screen tablets and emergent literacy. *Early Childhood Education Journal*, 42(4),231-239.
- Núñez-Castellar, E. P., Van Looy, J., Szmalec, A., & De Marez, L. (2014) Improving arithmetic skills through gameplay: Assessment of the effectiveness of an educational game in terms of cognitive and affective learning outcomes. *Information Sciences*, 264, 19-31.
- Orellana, M. F. & Garcia, O. (2014). Language brokering and translanguaging in school. *Language Arts*, 91(5), 311-312.
- Ortega, L. (2019). SLA and the study of equitable multilingualism. *Modern Language Journal*, 103, 23-38.
- Otheguy, R., Garcia, O., & Reid, W. (2015). Clarifying translanguaging and deconstructing named languages: A perspective from linguistics. *Applied Linguistic Review*, 6, 281-307.
- Pacheco, M. B., & Miller, M. E. (2016). Making meaning through translanguaging in the literacy classroom. *Reading Teacher*, 69(5), 533-537.
- Pandya, Z. J. (2012). Issues in the assessment of English learners' literacy skill development in multimodal classrooms. *Journal of Adolescent & Adult Literacy*, 56(3), 181-185. doi: 10.1002/JAAL.0001peny24

- Patten, M. (2009). *Understanding research methods: An overview of the essentials* (7<sup>th</sup> ed). London: Routledge.
- Pendergast, M., Bingham, G., & Patton-Terry, N. (2015). Examining the relationship between emergent literacy skills and invented spelling in prekindergarten Spanish-speaking dual language learners. *Early Education and Development*, 26(2), 264-285.
- Pennycook, A. (2001). *Critical applied linguistics: A critical introduction*. London: Routledge.
- Pontier, R., & Gort, M. (2016). Coordinated translanguaging pedagogy as distributed cognition: A case study of two dual language bilingual education preschool coteachers' languaging practices during shared book readings. *International Multilingual Research Journal*, 10(2), 89-106.
- Pulinx, R., Van Avermaet, P., & Agirdag, O. (2016). Silencing linguistic diversity: The extent, the determinants, and consequences of the monolingual beliefs of Fleming teachers. *International Journal of Bilingual Education and Bilingualism*. doi: 10.1080/13670050.2015.1102860
- Prieto, L., Arreguin-Anderson, Yuen, T., Ek, L. D., Sanchez, P., Machado-Casas, M. & Garcia, A. (2016). Four cases of sociocultural approach to mobile learning in La Clase Magica, an afterschool technology club. *Interactive Learning Environments*, 24(2), 345-356.
- Raynolds, L. B., Uhry, J. K., & Brunner, J. (2013). Vowel representations in the invented spellings of Spanish-English bilingual kindergartners. *Reading and Writing*, 23, 495-513.
- Reyes, M. L. (2001). Unleashing possibilities: Biliteracy in the primary grades. In M. de la Luz Reyes & J. J. Halcon (Eds.), *The best of our children: Critical perspectives on literacy for Latino students* (pp. 96-121). New York, NY: Teachers College Press.
- Reyes, I. (2006). Exploring connections between emergent biliteracy and bilingualism. *Journal of Early Childhood Literacy*, 6(3), 267-292.
- Reyes, I. (2012). Biliteracy among children and youth: A review of the research. *Reading Research Quarterly*, 47(3), 307-327.
- Reyes, I., & Azuara, P. (2008). Emergent biliteracy in young Mexican immigrant children. *Reading Research Quarterly*, 43(4), 374-398.
- Reyes, I., & Hornberger, N. (2016). The continua of biliteracy. *Language Arts*, 93(5), 397-402.
- Ruiz, R. (1984). Orientations in language planning. *NABE Journal*, 8(2), 15-34.
- Rumberger, R. W. & Tran, L. (2010). State language policies, school language practices, and the English Learners achievement gap. In P. Gandara & M. Hopkins (Eds.), *Forbidden*

- language: English learners and restrictive language policies* (pp. 192-215). New York, NY: Teachers College Press.
- Saldaña, J. (2013). *The coding manual for qualitative researchers*. London: Sage Publications Inc.
- Santa Ana, O. (2004). Chronology of events, court decisions, and legislation affecting language minority children in American public education. In O. Santa Ana (Ed.), *Tongue tied: The lives of multilingual children in public education* (pp. 87-110). Lanham, MD: Rowan & Littlefield.
- Schmidt, R. (2000). *Language policy and identity politics in the United States*. Philadelphia: Temple University Press.
- Shin, D. (2014). Web 2.0 tools and academic literacy development in a US urban school: A case study of a second grade English language learner. *Language and Education, 28*(1), 68-85.
- Shin, D. & Cimasko, T. (2008). Multimodal composition in a college ESL class: New tools, traditional norms. *Computers and Composition, 25*, 376-395.
- Schugar, H., Smith, R., & Schugar, J. T. (2013). Teaching with interactive picture e-books in grades K-6. *Reading Teacher, 66*(8), 615-624.
- Skutnabb-Kangas, T. (2000). *Linguistic genocide in education or worldwide diversity and human rights?* Mahwah, NJ: Lawrence Erlbaum Associates.
- Skutnabb-Kangas, T., & Phillipson, R. (2017). *Language rights. Series critical concepts in language studies*. London: Routledge.
- Snow, M., Eslami, Z. R., & Park, J. H. (2015). English language learners' writing behaviors during literacy-enriched block play. *Journal of Early Childhood Literacy, 18*(2), 189-213.
- Soltero-Gonzalez, L. (2009). Preschool Latino immigrant children: Using the home language as a resource for literacy learning. *Theory Into Practice, 48*(4), 283-289.
- Soltero-Gonzalez, L. & Butvilofsky, S. (2016). The early Spanish and English writing development of simultaneous bilingual preschoolers. *Journal of Early Childhood Literacy, 16*(4), 473-497.
- Soltero-Gonzalez, L., Escamilla, K., & Hopewell, S. (2012). Changing teachers' perceptions about the writing abilities of emerging bilingual students: Towards a holistic bilingual perspective on writing assessment. *International Journal of Bilingual Education and Bilingualism, 15*(1), 71-94.
- Steinkuehler, C. A., & Williams, D. (2006). Where everybody knows your (screen)name: Online games as "third places." *Journal of Computer-Mediated Communication, 11*(4), 885-909.

- Suarez-Orozco, C., Suarez-Orozco, M. M., & Todorova, I. (2008). *Learning a new land: Immigrant students in American society*. Cambridge, MA: Belknap Press of Harvard University Press.
- Tancock, S., & Segedy, J. (2004). A comparison of young children's technology enhanced and traditional responses to texts: An action research project. *Journal of Research in Childhood Education, 19*(1), 58-65.
- Templeton, W. S., & Bear, D. R. (2018). Word study, research to practice: Spelling, phonics, meaning. In D. Lapp & D. Fisher (Eds.), *Handbook of research in the teaching of English* (4<sup>th</sup> Ed.) (pp. 207-232). New York, NY: Routledge.
- The New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review, 66*(1), 60-93.
- Timmis, S., Broadfoot, P., Sutherland, R., & Oldfield, A. (2015). Rethinking assessment in a digital age: Opportunities, challenges and risks. *British Educational Research Journal*, doi: 10.1002/berj.3215.
- U. S. Department of Education, Office of English Language Acquisition, Fast Facts. (2017). *Languages Spoken by ELs*. Retrieved from <https://www2.ed.gov/about/offices/list/oela/fast-facts/index.html>
- Vandommele, G., Van den Branden, K., Van Gorp, K., & De Maeyer, S. (2017). In school and out-of school multimodal writing as an L2 resource for beginner learners of Dutch. *Journal of Second Language Writing, 36*, 23-36.
- Velasco, P., & García, O. (2014). Translanguaging and the writing of bilingual learners. *Bilingual Research Journal, 37*, 6-23.
- Vygotsky, L. S. (1986). *Thought and language* (A. Kozulin, Trans.), Cambridge, MA: MIT Press.
- Warschauwer, M., & Ware, P. (2006). Automated writing evaluation: Defining the classroom research agenda. *Language Teaching Research, 10*(2), 157-180.
- Weber, R. M., & Longhi-Chirlin, T. (2001). Beginning in English: The growth of linguistic and literate abilities in Spanish-speaking first graders. *Reading Research and Instruction, 41*(1), 19-50.
- Wei, L. (2018). Translanguaging as a practical theory of language. *Applied Linguistics, 39*, 9-30.
- Wilde, J. (2007). Peer conferences: Strategies and consequences. *Inside Writing Communities, Grades 3-5: A Professional Development Workshop for Teachers*, Workshop 6.

Washington, DC: Annenberg Media. Retrieved from  
[http://www.learner.org/workshop/writing35/pdf/s6\\_peer\\_conferencing.pdf](http://www.learner.org/workshop/writing35/pdf/s6_peer_conferencing.pdf).

- Williams, C., & Lowrance-Faulhaber, E. (2018). Writing in young bilingual children: Review of research. *Journal of Second Language Writing, 42*, 58-69.
- Yaden, D. B., & Tardibuono, J. M. (2004). The emergent writing development of urban Latino preschoolers: Developmental perspectives and instructional environments for second-language learners. *Reading and Writing Quarterly, 20*, 29-61.
- Yelland, N. J. (2018). A pedagogy of multiliteracies: Young children and multimodal learning with tablets. *British Journal of Educational Technology, 49*(5), 847-858.
- Yeong, S. H. M., Fletcher, J., & Bayliss, D. M. (2014). Importance of phonological and orthographic skills for English reading and spelling: A comparison of English monolingual and Mandarin-English bilingual children. *Journal of Educational Psychology, 106*(4), 1107-1121.
- Yin, R. K. (2009). Case study methods. In J. L. Green, G. Camilli, & P. B. Elmore (Eds.), *Complimentary methods in education research* (pp. 111-122). New York, NY: Routledge.
- Zapata, A., & Laman, T. T. (2016). I write to show how beautiful my languages are: Translingual writing instruction in English-dominant classrooms. *Language Arts, 93*, 366-378.
- Zúñiga, C. E. (2016). Between languages as problem and resource: Examining teachers' language orientations in dual language programs. *Bilingual Research Journal, 39*(3), 339-353.

## APPENDIX A



## APPENDIX A

### MODEL OF BILINGUAL WRITING (Gort, 2006)

Phenomenon	Definition relative to this model	Contingent upon	Expectation for Spanish-dominant student in partial immersion two way program	Expectation for English-dominant student in partial immersion two way program
I. Strategic Code-switching	Use of one language while engaged in the process of writing the other	Relative strength of L1 and L2 (language dominance); bilingual development; linguistic context; language proficiencies.	Use of L1 while composing in English and/or use of English while composing in L1	Use of English while composing in L2
A. Oral codeswitching	Oral use of one language while engaged in the process of writing the other	Same as above	Use of oral L1 while composing in English and or use of oral English while composing in L1	Use of oral English while composing in L2
B. Written (lexical) codeswitches	Written use of one language while engaged in the process of writing the other	Same as above	Use of written English while composing in L1	Use of written English while composing in L2
II. Literacy	Developmentally	Relative	(see below)	(see below)

Application	appropriate application of cross-linguistic processes/skills	strength in L1 and L2 literacy (biliterate development)		
A. Application of cross-linguistic emergent literacy processes and skills	Developmental and temporary cross-linguistic processes/skills (these disappear and/or develop into developmentally mature literacy processes/skills)	Same as above and opportunity	What initially occurs in L1-only, occurs next in both languages, then in neither (or) what initially occurs in L1-only, occurs next in both languages, then in neither	What initially occurs in English-only, occurs next in both languages, then in L2 only, then in neither (or) what initially occurs in English-only, occurs next in both languages, then in neither
B. Application of cross-linguistic mature literacy processes and skills.	Cross-linguistic processes, skills once learned/acquired are maintained (eventually in both languages)	Same as above and opportunity	What initially occurs in L1-only then occurs in both languages	What initially occurs in English only then occurs in both languages.
III. Interliteracy	Temporary application of language-specific linguistic elements and writing conventions of one language to other language	Bilingual development and biliterate development (i.e. relative strength of L1/L2, and relative strength of L1/L2 literacy)	(see below)	(see below)
A. Application of language-specific linguistic elements of literacy of one language to the other	Temporary application of language specific linguistic elements of writing (i.e. syntax,	Bilingual development (i.e. relative strength of L1 and L2)	What initially occurs in L1, occurs temporarily in both L1 and English, and then in L1 only	What initially occurs in English only, occurs temporarily in both English and L2, and then in English

	phonology, semantics) of one language to the other			only
B. Application of language-specific writing conventions of one language to the other	Temporary application of language-specific writing conventions (i.e. graphophonemic relationships, ortography, print conventions) of one language to the other	Biliterate development (i.e. relative strength of L1 and L2 literacy)	What initially occurs in L1 only, occurs temporarily in both L1 and English, and then in L1 only and (possibly) what initially occurs in English only, occurs temporarily in both L1 and English, and then in English only	What initially occurs in English only, occurs temporarily in both English and L2, and then in English-only

## APPENDIX B

## APPENDIX B

### INTERVIEWS

<b>Interview B Prior Study Implementation</b>	
<b>Objective:</b> To explore the perspectives and practices about biliteracy and technology.	<b>Frequency:</b> Once prior the development of the writing task.
<b>Questions for Students</b>	
Tell me about your reading and writing classes.	
What is your favorite part? What is your least favorite part?	
How do you feel when you are asked to write in Spanish? English?	
Tell me how do you do when you have to write in English but you don't know how to say something? How do you solve that problem?	
How do you use computers/tablets at school? Home?	
<b>Questions for Teacher</b>	
Tell me about your language arts block.	
How do you plan your writing block?	
How do you think that Spanish literacy connects with English literacy?	
What are the challenges that you have experienced when teaching literacy, in English and Spanish, to your students?	
How do you utilize technology in your language arts block?	
What are the literacy skills that students need in the 21 <sup>st</sup> century?	

## APPENDIX C

APPENDIX C

<b>Interview 2</b> <b>During the writing process</b>	
<b>Objective:</b> To learn how students utilize the multiple Google Apps features to convey meaning in their writing in two languages.	<b>Frequency:</b> Once during the writing process.
<b>Questions for Students</b>	
What is your favorite feature in Google Apps? Why?	
What is the part that you like the least? Why?	
I noticed that this word is underlined? Why do you think is underlined? (autocorrect feature)	
Why did you learn about the spelling of this word?	
What do you think about Google Apps showing you how to spell _____ word?	
Did you like to receive feedback while you were writing?	
Why did you decide to use this feature (video, image, photo, voice, etc.)?	
How did you find this (video, image, photo, voice, etc.)? Was it difficult/easy?	
Why do you think that adding this (video, image, photo, voice, etc.) will help to tell your story?	

## APPENDIX D



APPENDIX D

<b>Interview 3</b> <b>After the writing process</b>	
<b>Objective:</b> To observe the students' experiences after working in bilingual multimodal texts in both languages.	<b>Frequency:</b> Once at the end of the study.
<b>Questions for Students</b>	
What was your favorite/least favorite part of your writing? Why?	
Who did you share your writing with?	
Did you receive any comments on your writing? What did they say?	
Did you like to receiving comments from your friends/family/teacher of your writing?	
What do you think about writing in English/Spanish in the computer?	
What do you think about Google Translate?	
Do you like to see your classmates writing on-line/ in paper? Why?	
Would you recommend Google Apps to other students? Why?	

## APPENDIX E

## APPENDIX E



The Institutional Review Board for Human Subjects Protection (IRB)  
Division of Research, Innovation, and Economic Development  
Office of Research Compliance

July 20, 2018

To: Laura Ramos López

From: Institutional Review Board

Subject: Approval of a New Human Research Protocol

IRBNet ID: 1246596-1

IRB# 2018-121-06

**Project Title: Digital Literacies to Develop Biliteracy: A Case Study of Latino Emergent Bilinguals Exploring Multimodal Writing in English and Spanish.**

Dear Researcher,

The IRB protocol referenced above has been reviewed and **APPROVED ON July 20, 2018**.

Basis for approval: Expedited 6 and Expedited 7

**Approval expiration date: July 19, 2019**

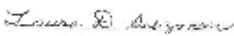
**Recruitment and Informed Consent:** You must follow the recruitment and consent procedures that were approved. If your study uses an informed consent form or study information handout, you will receive an IRB-approval stamped PDF of the document(s) for distribution to subjects.

**Modifications to the approved protocol:** Modifications to the approved protocol (including recruitment methods, study procedures, survey/interview questions, personnel, consent form, or subject population), must be submitted to the IRB for approval. Changes should not be implemented until approved by the IRB.

**Approval expiration and renewal:** Your study approval expires on the date noted above. Before that date you will need to submit a continuing review request for approval. Failure to submit this request will result in your study file being closed on the approval expiration date.

**Data retention:** All research data and signed informed consent documents should be retained for a *minimum* of 3 years after completion of the study.

**Closure of the Study:** Please be sure to inform the IRB when you have completed your study, have graduated, and/or have left the university as an employee. A final report should be submitted for completed studies or studies that will be completed by their respective expiration date.

Approved by:   
Laura D. Seligman  
Interim Chair, Institutional Review Board

## BIOGRAPHICAL SKETCH

Laura Berenice Ramos López resides at 12922 Westhorpe Dr, Houston, Texas, 77077. She holds a Bachelor of Arts in Communication Sciences from the Instituto Tecnológico y de Estudios Superiores de Occidente in 2005. She began her career in education after certifying in Region IV Education Services in 2006. Laura went on to complete her Masters' Degree in Education specializing in Bilingual Education and English as a Second Language from the University of Texas at Brownsville in 2013. A Doctor of Education in Curriculum and Instruction specializing in Bilingual Education was earned from the University of Texas Rio Grande Valley in May 2019.

Laura's work experience in education includes a year as an educational consultant; one year as a multilingual programs specialist at Houston Independent School District, Houston, Texas and nine years as a master teacher in dual language classrooms at the elementary level.