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A CASE STUDY OF ELEMENTARY TEACHERS' CRITICAL UNDERSTANDING  
OF CULTURALLY RELEVANT SCIENCE EDUCATION: MEXICAN  
AMERICAN TEACHERS OF MEXICAN AMERICAN STUDENTS

A Dissertation

by

NORA ALICIA LUNA

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

DOCTOR OF EDUCATION

December 2020

Major Subject: Curriculum and Instruction



A CASE STUDY OF ELEMENTARY TEACHERS' CRITICAL UNDERSTANDING  
OF CULTURALLY RELEVANT SCIENCE EDUCATION: MEXICAN  
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December 2020



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## ABSTRACT

Luna, Nora Alicia, A Case Study of Elementary Teachers' Critical Understanding of Culturally Relevant Science Education: Mexican American Teachers of Mexican American Students.

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There is much research on White teachers' negative assumptions and biases about their students of color. Less is known about Mexican American teachers. It is often assumed that there exists a strong understanding of culturally relevant science when both teachers and students are of similar cultural backgrounds. Through the conceptual frameworks of culturally relevant pedagogy and LatCrit, this investigation gave insight into, not only the ways the Mexican American teachers conceptualized culturally relevant science as part of their pedagogy, but also the struggles they experienced with the Spanish language. This study added insight by exploring the interactions of Mexican American teachers and their students in the setting of the fifth grade science classroom. Mexican American teachers experienced struggles and tensions negotiating with intersecting identities. Through an inductive approach, data was collected through pre and post interviews, lesson observations, reflective journals, and school documents from two participants and with the author as participant observer. Findings that emerged included 1) personal tensions with the Spanish language, 2) conceptualized Spanish language tensions in the classroom, 3) a struggle with dichotomous feelings of caring and complicity, and 4) cultural relevance gives way to a curriculum infused with White ideology. The organization of this



dissertation began with a description of the data on each participant, the analyzation of the data, researcher's reflexivity, and a summarization.

Teachers in this study experienced a rigid dichotomy of feeling proud of their Mexican American heritage yet feeling an allegiance to the colonized Eurocentric patriarchy in power. Likewise, they struggled with promoting English as the dominant language yet implying that the Spanish language was not valued in an academic setting. Implications from the findings are that teachers of color are not very different from White teachers because of the acculturation and assimilation from hegemony of the dominant culture they have acquired in the American education system. Findings from this study exhibited teachers of color being complicit to the hegemony of whiteness in public schools and participated in the assimilation of their students due to the fidelity to the whitened curriculum.

## DEDICATION

The completion of my doctoral studies has been a monstrous undertaking that I would not have been able to accomplish without the love, support, and encouragement from my family. My daughter, Riana Alyssa, my mother, Beatrice Luna, and my father, Ricardo Luna have made a lot of sacrifices and have been a great inspiration to me. They motivated me when I thought I could not go on. They supported me and most importantly, they believed in me when others did not. Thank you so much for your love and patience during the journey to accomplish this amazing and worthwhile endeavor.



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I am also grateful to my research participants who gave their time and attention to my research. Their assistance and cooperation were greatly appreciated and will never be forgotten. Thank you all for being a contributing ally in this most awesome endeavor.



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## CHAPTER I

### MEXICAN AMERICAN: PRIDE AND PREJUDICE

I am a Mexican American. There is a pride I feel in being part of a people, culture, and tradition that is unique, yet I also feel the prejudice from a society that does not value the diversity and contributions of the Mexican American people. I begin this ethnographic case study by unpacking the research question, statement of the problem, rationale, and purpose of the study, explaining my positionality and personal relevance, defining the terms, and concluding chapter one with a summary. I continue with the literature review by giving background information on science education in America, Texas science education, culturally relevant pedagogy (CRP) and its challenges, the brief intellectual history of Latinx critical race theory (LatCrit), critical race theory and LatCrit in education and conclude chapter two with a summary. I then described the methodology including ethnographic case studies in chapter three, four emerging findings in chapter four, along with discussion, limitations, and finally, concluding remarks in chapter five.

#### **Research Question**

The research question guiding this qualitative ethnographic case study is: “How do Mexican American teachers of Mexican American students conceptualize culturally relevant science teaching when their school does not advocate it?” In this study I examined teachers of color, specifically Mexican American teachers, situated in a science classroom setting interacting

with students of color, specifically Mexican American students, during a science lesson. This study investigated ways the Mexican American teachers conceptualized culture as part of their pedagogy.

### **Statement of the Problem**

Social, historical, political, and cultural factors have created learning environments in science that have marginalized females and students of color, including Mexican American students. This is true for grades K-12 in both elementary and secondary. Preparation of elementary teachers has failed to effectively address this issue resulting in many teachers not prepared to ensure their students' success. In teacher preparation programs, the majority of enrollment are White, middle-class females (Moore, 2008). The Department of Education's National Center for Educational Statistics (NCES, 2019) stated that statistics show White teachers are still the majority in 2015-2016 even though the minority population has increased. Many have had little or no contact with students of diverse cultures, have never experienced diverse classrooms, and do not have the experience to teach them (Moore, 2008). Many of these teachers have negative assumptions and biases (Moore, 2008). A large body of literature has examined cultural conflicts between white teachers and students of color (Jupp, Berry, & Lensmire, 2016; Jupp, Leckie, Cabrera, & Utt, 2019; Gay, 2010; Delpit, 2002).

However, less is known about understanding science classroom environments when students and teachers are of similar cultural backgrounds as that of the Mexican American students. There are a disproportionate number of students of color compared to teachers of color. Often, it is assumed that when teachers and students are from similar cultural backgrounds, that teachers possess a strong understanding of culturally relevant science. Gold Elementary is a good location to conduct this study because most teachers are not only Mexican American but

are also educating Mexican American students, yet the disparity continues. Could it be that other Mexican American teachers have also been acculturated and assimilated into the dominant culture and are marginalizing their students without malice or ill intentions? Have they too been subjected to the internalization of hegemonic White school curriculum? I hope to ascertain these assertions in this ethnographic case study by interviewing Mexican American teachers, observing interactions during a science lesson, perusing reflection journals and analyzing school documents.

### **Rationale for the Study**

The rationale for this study has to do with bringing to light social justice for Mexican American students in an educational setting. The reason I chose to research the above mentioned question is due to my own personal belief that Mexican American students deserve a quality education just like all White Americans. A quality education is one in which students are made to feel good about themselves so that they are challenged in academics, understand that their self-esteem is valued, are taught about the world and their culture and history so they understand the interrelatedness of everyone, they learn about the importance of justice and equity, and that not everything that is being taught is absolute truth so it is permissible to challenge the teacher. According to Ladson-Billings (1995), the characteristics of a quality education are defined in culturally relevant pedagogy as follows:

The essential elements of such teaching involve developing conceptions of self and others that are based on accurate historical and social information; encouraging social relations that are communal, interdependent, equitable, and just; and developing conceptions of knowledge as socially constructed and open to intellectual challenge (p. 389).



Although dated, the elements of a quality education are still relevant today. These include a self-conceptualization, knowing that there is an interdependence with society, and that all knowledge is socially constructed and therefore ever changing.

Mexican American children's experiences in school are very different than that of their White peers due to their culture being very different from school culture. Are teachers contributing to or subtracting from Mexican American students' academic achievement? According to Valenzuela (1997), in a study of a high school with a high Hispanic population, she found administrators, teachers and students all in a never-ending cycle of blame for underachievement. If students of color marginalized by systemic inequities have Mexican American teachers, wouldn't there be an improvement in their science achievement because there would exist empathy and sensitivity to their plight? A study by Bianco, Leech, and Mitchell (2011) found that African American students and other students of color were positively influenced by teachers of color, in which they were more likely to consider attending college. I sought to understand the perspectives of the Mexican American teacher when communicating with students. I wanted to get an insight into the potential relationships that develop when teachers and students understand each other because of similar cultural backgrounds. I will discuss my background so as to lay a foundation of the manifestation of internalized White domination.

Growing up, I never knew that I lived in poverty or that I was a minority. Being of Mexican American descent was not evident to myself until I moved to Austin to attend The University of Texas. Attending a large university allowed me to get my first real glimpse of affluent White students. No matter how hard I tried, I did not fit in. I felt so alone and at times the lack of sense of belonging was strong. I am sure that others felt the same way. The United

States is the country where I was born yet I am still made to feel like a stranger. Esposito (2011) found that women of color were made to feel like they did not belong in predominantly White institutions of higher learning in America. They felt they continuously had to negotiate the gaze of White peers and professors while combatting feelings that they did not belong. Chavez (2012) experienced a school setting where she felt the sting of racism due to being a Mexican American child and internalized feelings of being different from her teacher (Perez Huber, 2010).

I grew up with feelings of insecurity. My insecurities were due to my position as a Mexican American in a dominant culture. The Anglos in our community were the minority yet they controlled the people in town. The word minority in this case, means few. There was one man who was like the leader of all the Anglos. When Mexican American people spoke his name, they always referred to him by his first and last name in a whisper. I grew up hearing stories about these powerful men. I would overhear the adults talk about how men used to just disappear or end up murdered and it was thought that they probably made the wrong people upset. We even studied about this man in our Texas history class. We learned that he had ties with Lyndon B. Johnson, at the time, the future 36th president of the United States and it was rumored that there were some connection to the infamous Box 13 scandal, in which Johnson won the Texas senate seat after 202 additional votes were mysteriously found.

The only truth I know about this man was that my grandmother asked him for help once. My grandmother took in children like some people take in strays. She raised a lot of other people's kids, sort of like a foster mother. Even my mother was taken in and adopted by her. One of her kids, Juan, was a teenager who got into trouble with the law and was put in jail. She went and asked this powerful man to please get him out of jail. He told her he would investigate

it and see what he could do. Within the hour, Juan was at home. I cannot even imagine the courage it took for this poor lowly Mexican Indian woman to beg this gringo for help.

I did not know it at the time, but I was acculturated into a dominant ideology of White supremacy. Growing up and hearing about this powerful Anglo made me associate all *gringos* with this power over Mexican Americans. I grew up around White supremacy and I internalized it. I will discuss it at greater length in a later chapter.

Besides growing up around White supremacy, I went to school at a time when being American meant speaking only English and following dominant White ideologies and customs. Mexican American children were not allowed to speak in Spanish at school. I also felt so embarrassed about eating tacos at the school cafeteria. I wished so badly that my mother would let me eat peanut butter and jelly sandwiches at school like kids on television ate.

I felt that a hyphenated American such as Mexican-American was considered to be a lower class citizen. It has taken many years to alleviate some of these feelings, but it is a journey that I am still on. I have come to realize that this was what being marginalized by systemic inequalities felt like. I internalized that being a *gringa* was better than being me, yet little did I know that others felt the same way. According to Freire (1970) oppressed people internalize dominant rhetoric and start believing in their own inferiority. Anzaldua (1981) quoted as saying, “It’s taken over thirty years to unlearn the belief instilled in me that white is better than brown - something that some people of color never will unlearn” (p. 225).

When I left the small town I grew up in, I left for Austin, Texas. I wanted to go as far away as I could from the environment, I had grown up in. In college I made a lot of friends with students from Central and South America. They all spoke Spanish, so I started speaking Spanish. I was embarrassed because they told me I did not speak Spanish very well. That made

me appreciate Hispanics because I came to realize that they came from beautiful countries, spoke a beautiful language and had very interesting cultures. These cultures that I was learning about were so fascinating to me. I had never been exposed to other cultures before because in school we only learned about superficial facts like the location on the map and the language they spoke. According to White-Kaulaity (2007) and Sykes (2014), Native Americans experience the same problems at school because their culture is not valued in American schools. Native Americans value their rich oral traditions, which are not accepted or valued in many/most mainstream American schools. Cline and Necochea (2003) also felt their rich storytelling traditions strong in Latin and African cultures were not considered as important as reading books in United States schools.

Feelings of inferiority lessened when I studied for my master's degree at The University of Texas - Pan American. I was asked by my professor's questions that I had never considered before. Questions such as "How do you know you are Mexican American? When did you first realize you were part of a minority? Have you ever been discriminated against? Culturally relevant pedagogy's second tenet offers students an opportunity to learn about their culture in order to be proud of it (Borrero & Sanchez, 2017). White people are not asked, "How does it feel to be white?" because they do not think about their own whiteness since they do not know what it is like not to be white. It was the same for me. How does it feel to be brown? I do not know what it is like not to be brown. Nevertheless, as I was growing up, somehow, I still had my own prejudices against the Mexican American culture because I could not unlearn that being white was better. Feelings of inferiority still permeated in my being but not as strongly as before.

I am now a bilingual science teacher who has taught Mexican Americans students my whole teaching career. I do not want my students feeling the way I did growing up. I want them

to feel pride in their Mexican American culture. This can be learned in schools with teachers who acknowledge and value students of different cultures. This ethnographic case study took place in a Texas elementary school named Gold Elementary (a pseudonym) that has a 98% (greatschools.org) Mexican American population of which 22% are Spanish-English bilingual (greatschools.org). “Today, students of color are more segregated than ever before” (Ladson-Billings, 1995, p. 55). Gold Elementary, which is located on the west side of a major city in Central Texas has a population of 2.3 million people. According to the National Center for Education Statistics (NCES, 2019), Gold Elementary had a total enrollment of 450 students. The majority of Gold students are considered low socio-economic students in which 95.7% participate in the National School Lunch Program (NSLP). The student demographics reflect the teachers, as 82% are Mexican American.

Although a high Mexican American population, of the total Gold student body, only 22.2% of the students are enrolled in bilingual and English language learning programs because many students are second and third generation Mexican Americans. I asked the district bilingual coordinator why the percentage of students in the bilingual program was so low. He told me that many parents do not speak to their children in Spanish at home and others are “parent denials”. A parent denial is a term used at Gold Elementary in which parents do not want their children in the bilingual program. Parents want their children with the White peers so they can learn English faster. I spoke to a parent about the importance of being able to speak two languages fluently and she responded that coming from Mexico, “*El inglés es una necesidad, no un lujo*” (English is a necessity not a luxury). She continued to say that opportunities are much more available to Mexican Americans who can speak English. There is a stigma about being in a bilingual program in American schools. In a study by Lee (1998) on minority parent perceptions of the bilingual

program, two-thirds of the parents interviewed preferred their children in English classrooms.

Mexican American parents understand through experiences in living in an American society that being able to speak English is a much greater asset than being bilingual. This is the beginning of the subtractive process where the Spanish language is being erased in school.

I imagine that if my parents were to be given that same choice when I was in school, they would have also put me in a monolingual classroom. After learning to speak English, I rarely spoke Spanish at home. It was common for my parents to speak in Spanish and for me to reply in English. No one ever questioned me about this because it was just understood that English was valued more in school and society as a whole and future career advancements in American society required speaking English correctly. This was also a common occurrence in the community I lived in. It seemed to me that all the children spoke in English and the adults spoke in Spanish. Learning to speak in English also enabled us to watch and understand television because all channels were in English.

Another obstacle faced by Mexican American students is the state mandated standardized tests being required to determine school and student success. After becoming a bilingual teacher, I found that many Mexican American students were not able to pass the State of Texas Assessment of Academic Readiness (STAAR) science test. Gold had a passing score of 67% for the 2018-2019 school year (TEA, 2019). Social, historical, political, and cultural factors have created learning environments in science that have marginalized not only females, but also students of color, including Mexican American students in our P-12 schools. I wondered if the marginalization of Mexican American students contributed to feelings of insecurity like the ones I had experienced in school. I also pondered on whether the marginalization of Mexican American students was due to teachers having gone through American schools that promoted a

dominant culture and contributed to the achievement gap prevalent in educational institutions. The preparation of elementary teachers has often failed to effectively address the issues of teaching marginalized students resulting in many not being prepared to ensure that all students succeed in their classrooms. I reflected on the missing cultural connection not made in school, to the Mexican American way of life I grew up with. I felt like I had an assortment of puzzle pieces spinning in my head. I decided to find out if I could make a difference in teaching science by helping Mexican American students through a curriculum that was developed by the dominant culture.

Mexican American people like me attended schools in which we were taught and acculturated into the dominant language. Science teachings in the classroom have gone through many changes. The history of the development of science in America continually evolved. It transformed from a curriculum about studying life in communities to one of technological advancements in space study. The government's involvement through regulated federal funding encouraged improvement in schools but its downfall was that it made available money competitive in nature causing a continual disparity among the students of color and their white peers (Bybee & Pruitt, 2017).

I remember going to school in the 70's and not being taught science in a way that I understood it. One year, out of the blue, my fifth-grade teacher started teaching science in Spanish. I thought she was crazy! I had never had any formal academic Spanish training and she wanted me to learn the parts of a car motor in Spanish? This is an example of bureaucracies implementing paradoxical programs in schools without putting much thought into them. All the Spanish I knew had long been subtracted. The Spanish language was implemented into the curriculum just because students had Spanish last names, creating a greater disparity in science

education that year because a whole year was wasted. According to Bybee and Pruitt (2017) new programs are started and then discontinued in short periods of time.

After six years of not speaking Spanish in school, I refused to try to learn Spanish. I spoke Spanish until I was five. When I started school, I transitioned into speaking English and stopped any desire to speak the Spanish language. I now know that my reluctance to speak Spanish was due to a shaming that was a common occurrence during that time in education. Gloria Anzaldua (1987) wrote about it and is cited very often because she was able to verbalize what many felt but few could articulate. Drawing from Anzaldua, Bartolomé (2006) wrote the following:

At a personal level, Anzaldua helped me understand much of what had troubled me growing up as a Chicana and a member of a historically subordinated cultural group in the United States: She helped me understand why I felt a sense of inferiority and self-hate, why I resented whites, and why I felt shame and rejection whenever I spoke Spanish in places where it was frowned upon and among people who held the expectation that I (and my family members) should assimilate-that is, lose our language and culture in order to become imperfect facsimiles and, ultimately, unacceptable copies of white Americans. (p. 26)

The stripping away of the marginalized in American schools did not just happen to Mexican Americans. I once went to visit the Alabama Coushatta Native Americans and I started speaking to a girl. I do not remember how the conversation led to speaking English in school, but she told the exact same story as mine. It was as if I was hearing her tell my story. She spoke her native language until she started school and was forced to stop speaking it while in school. She said teachers would punish children if they did not speak English. Many marginalized students have



gone through these experiences. There still exists a remnant of colonization in American schools where the reproduction of deficit thinking is perpetuated. Social justice cannot be achieved if Mexican American students are not able to identify with the curriculum through their culture and are valued for the knowledge they bring from home.

### **Positionality/Personal Relevance**

I began this section with a description of positionality as it relates to epistemology in the research framework and methodology. My positionality includes an intimate understanding of the trials and tribulations experienced by Mexican American teachers as an insider and includes self-scrutiny by reflexivity. I continue by expounding on my personal relevance in the research. I was able to voice my cultural understanding and experiences to advocate for change.

#### **Positionality**

The use of an ethnographic case study was appropriate for grounding this study philosophically by bringing to light and providing in-depth insight into the Mexican American culture. This was accomplished specifically in the context of the uniqueness of the Mexican American teachers interacting with Mexican American students in the science classroom setting. As a professional educator, I was able to relate to the Mexican American teachers I observed, I shared many of the same experiences, and empathized in their struggles and tensions. As for my positionality in the framework, I was the participant observer in this ethnographic case study. Consequently, my positionality included the incorporation of self-scrutiny by reflexivity (Bourke, 2014). “Reflexivity requires the researchers to be aware of themselves as the instrument of research” (Borg, Karlsson, Kim & McCormack, 2012, para.32). I appreciated and valued the rich Mexican American history, culture, language, and traditions. This positionality affected my research because the findings were interpreted with more sensitivity as an insider. “Sensitivity to

the methodological literature on the self and on one's social identities in conducting inquiry, interpreting data, and constructing the final narrative accomplish this" (Marshall & Rossman, 2016, p. 73). My angle, which has to do with cultural standing in the construction of knowledge, was generated through that of an insider, intimate and emotionally invested in the Mexican American teachers I studied, yet as a researcher, I could be considered an outsider because of the position of power I held in the interpretation of actions in the research.

### **Personal Relevance**

This ethnographic case study was relevant to me because this study pertains specifically to Mexican American teachers and their experiences in the science classroom in which I have experienced for the past twenty years. I had the opportunity to voice my cultural experiences and advocate for change. For many years, I experienced stereotype threats. Stereotype threat is the threat of living up to a negative stereotype (Ladson-Billings, 2018). I tried to hide my ability to speak Spanish and was secretly ashamed of being Mexican American because I did not want to be associated with a culture that had too many negative connotations and that was not truly considered American. This study was very personal to me because I do not want my students to feel the way I did. I want them to feel proud of their heritage. I feel our schools should promote the Mexican American culture and language by valuing it in teachers' pedagogy. Students should be made aware that it is okay to question and criticize society norms in public schools and this can only be done if they have effective empathizing teachers that respect them as individuals. All this can be accomplished through teacher awareness of the power they possess through their pedagogy and in challenging the dominant culture embedded in the curriculum. This qualitative study will bring forth that awareness that will eventually lead to dialogue and change.

My positionality is salient to this study. I began this section by describing my positionality in the epistemology and methodology. I then chronicle the positionality as it relates to my personal and professional journey through this research and finally discuss my personal relevance to the study. My intentions are to provide accurate and detailed descriptions of my observations and stay true to the findings. The combination of all the preceding positionalities will encompass a framework that is compassionate and multidimensional.

### **Definition of Terms**

Researching the underachievement of all students of color is beyond the scope of this paper. I will only be focusing on Mexican American teachers and students because at Gold Elementary they are the majority. I will use the term *Mexican American* when discussing my students because of its saliency in my Central Texas context where the census term Hispanic or the left-critical terms such as Chicanx or Latinx terms impose ideological means that are not always part of my students', especially immigrant students, vernacular. Of course, the term Mexican American also captures both longstanding and historic Texas residents along with recent Mexican and indigenous immigrants.

Acculturation - shifting of values, belief systems and behaviors that occur from continuous contact between two cultures (Baldwin-White, Kiehne, Umana-Taylor, & Marsiglia, 2017).

Hegemony - a dominance in America so well rooted in the oppressive structures that it is considered the norm and accepted as such.

Nativism - the practice of assigning values to real or imagined differences, in order to justify the superiority of the native, and to defend the native's right to dominance, at the expense of the non-native (Perez Huber, 2010, p. 80)

Tex-Mex – a person who is born in Texas with Mexican heritage and speaks a language that is a hybrid of both English and Spanish.

White - A person having a phenotype that does not include color such as black, brown, yellow or red and does not have ethnic population connections considered subgroups in America.

Whiteness - hegemonic racial structuring of social and material realities operating in the present moment that perpetuate racialized inequalities and injustices (Jupp, Berry, & Lensmire, 2016, p. 4).

White privilege - the structural privileges and unearned benefits conferred on White-skinned individuals through the quotidian functioning of whiteness (Jupp, Leckie, Cabrera, & Utt, 2019, p. 5).

### **Chapter I Summary**

To summarize this chapter, I laid the foundation of this study by describing the Mexican American pride I felt because of the appreciation of people, culture, and traditions, yet also the prejudices I felt by belonging to a subordinated cultural group in America. I began this ethnographic case study by unpacking the research question, expounding on the statement of the problem, and giving the rationale and purpose of the study. I then discussed positionality and personal relevance in the research, defined the terms, and lastly, concluded with a summary.

## CHAPTER II

### LITERATURE REVIEW

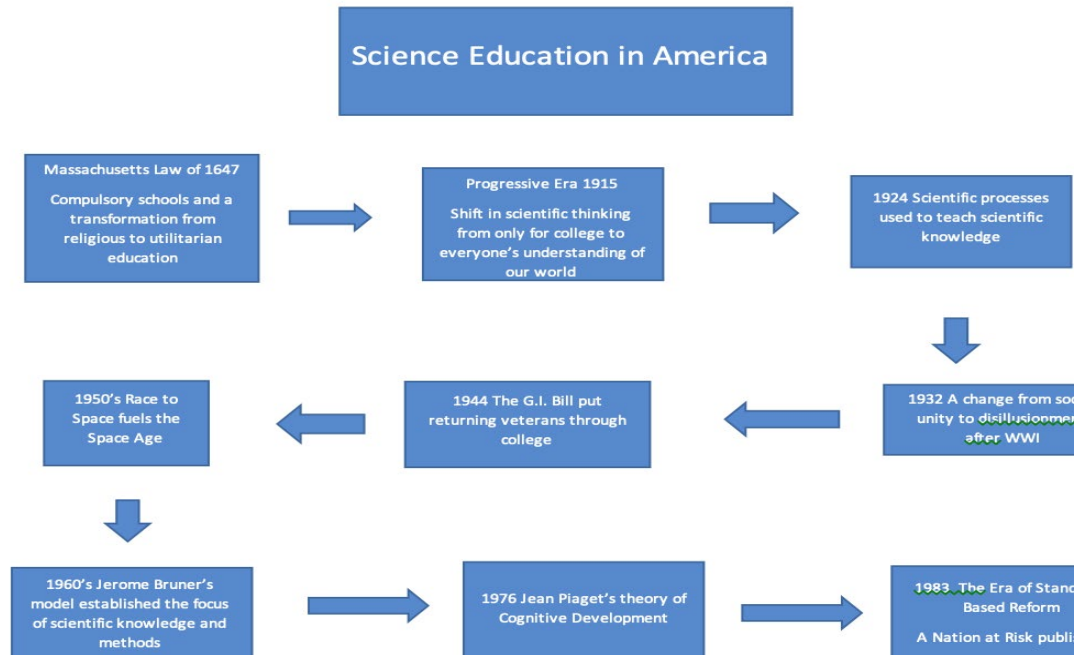
I began this chapter with a review of the formation of whiteness in science education curriculum, which allowed an insight into the establishment of the hegemony in the curriculum currently in use. Next, I proceed with a discussion on Texas science education's standardization of curriculum and assessment, including how standardization became so firmly rooted in the United States education system. This will be followed by culturally relevant pedagogy and its challenges which explores the literature on the possibilities of advancing student success with a connection to the culture of diverse students of color yet expounds on challenges preventing positive outcomes. I continue with a brief intellectual history of Latinx critical race theory (LatCrit) provided for use as a lens to expose dominance in hegemonic societies such as our educational institutions and conclude with critical race theory (CRT) and LatCrit race theory in education. The literature will show that the conceptualization of culturally relevant pedagogy by Mexican American teachers is tainted with a hegemonic influence permeated in education that began long ago and advocated by the patriarchy in power that continues today.

#### **The Formation of Whiteness in Science Education Curriculum**

The education system in America has evolved continuously throughout the ages. From humble beginnings promoting the understanding of the world we live in into technological advancements in space exploration. Changes occurred because of social, political, economic, or

cultural paradigm shifts, yet one thing remains a constant. Affluent white men have promulgated the ideas of Western tradition in science education and other academic content (Schubert, 1993). “The strengths of intellectual traditionalists lie in the transmission of the Western cultural heritage” (Schubert, 1993, p. 85).

The patriarchy in power first pushed western traditions in education during the colonization of the new land where many immigrants came looking for a new life. Schooling the children began due to religious beliefs that ignorance and salvation were not mutually exclusive. Education progressed because of the establishment of communities in the northern and southern colonies. Education became compulsory with science instruction taking a prominent position due to the advancements in the industrial revolution. The Progressive Era made a shift in the science paradigm with instruction including all students not just the ones going to college. A transformation occurred after World War I’s social unity to disillusionment during the Great Depression. World War II saw an influx of soldiers coming back from war to attend college thanks to the G.I. Bill. Science was being taught using the scientific method when a big surge in society's attitude about science changed due to the Race to Space. The competition with Russia was the driving force that caused the questioning of the science curriculum. When Sputnik 1 was launched, the American people would not stand by and let Russia flaunt superiority. This transformed into a revolutionary change in science curriculum that underwent continuous reform promulgated by the critical report titled *A Nation at Risk*. Reform evolved into the national standards which we have to date. The science way of knowing came about by the influence of a privileged group that dominated the science beliefs of the time.



*Figure 1 Timeline of Science Education in America*

Major reform in curriculum happened because of changes in the thinking of “society, learner, subject matter, and curriculum development technology” (Schubert, 1993, p. 91), but it should be noted that these changes occurred due to the hegemonic influences of White western civilization. This critical view of curriculum reform came from a diverse group of scholars from different contextual backgrounds but all of them having formed their ideals from epistemological racial biases.

“Early in the history of the United States, schooling was reserved for the social elites- white, male, wealthy children” (Ladson-Billings, 2018, p. 95). Affluent white men, the patriarchy in power, subjugated both people of color and women in these western traditions. The evolving science education that I have just described in the preceding paragraphs are about White middle class boys. Boys of color are not included in this history, first because of slavery

and then after the civil war because of prejudice. Women too were subjugated. “The deeply entrenched deficit orientation toward ‘difference’ (i.e., non-Western European race/ethnicity, non-English language use, working-class status, femaleness) that prevails in the schools in a deeply ‘cultural’ ideology of White supremacy” (Bartolomé, 1994, p. 179).

Western civilization has dominated for hundreds of years and their epistemologies became ingrained so deeply that they were considered the norm. Scheurich and Young (1997) posit that the dominant group makes up ‘the world’ or ‘the Real’ in its own image. The most influential thinkers and “educational leaders” (e.g., Kant, Flaubert, Churchill, Ford, Weber, Dewey) (p. 8) all have been White. “It is they who have developed the ontological and axiological categories or concepts like individuality, truth, education, free enterprise, good conduct, social welfare, etc. that we use to think (that thinks us?) and that we use to socialize and educate children” (Scheurich & Young, 1997, p. 8). These people derive their ideas from what they know and from their own social context. Dominant epistemologies stem from the social histories of the dominant White race:

Epistemological racism means that our current range of research epistemologies-positivism to postmodernisms/post structuralisms-arise out of the social history and culture of the dominant race, that these epistemologies logically reflect and reinforce that social history and that racial group (while excluding the epistemologies of other races/cultures), and that this has negative results for people of color in general and scholars of color in particular (p. 8).

The science way of knowing we have today come from research conducted by a privileged culture that has dominated the science beliefs based on their history and denigrated the epistemologies of other races/cultures.



Science is based on Western worldviews which are Eurocentric in nature. Current science content which is dominated by discoveries attributed to White males also omits contributions from women and people of color (Jupp et al., 2019; Boutte, Kelly-Jackson, & Johnson, 2010). The famous quote attributed to Winston Churchill (unknown origin), says, “history is written by the victors” clearly reflects the hegemony of the White male that has ruled our science evolution as evidenced in past science education. Science education emerged in the U.S. from a privileged Eurocentric culture (Boutte et al., 2010) and has continued to evolve in the same manner. According to Borrero, Ziauddin, and Ahn (2018), this is perpetuated in schools through the “dominant narrative - the white man’s story - and they leave out all other histories that were involved in an incident” (p. 28).

The landmark article on white privilege written about by McIntosh (1988) gave new insight to White people about the experiences Black people have lived with for centuries. This article exposed the privileges experienced by White people just because of the color of their skin. As McIntosh (1988) so eloquently wrote, “White privilege is like an invisible weightless knapsack of special provisions, maps, passports, codebooks, visas, clothes, tools, and blank checks” (para. 3). The understanding of White privilege gives a clearer lens into the experiences of students of color that have traditionally been ignored by the hegemonic culture. By integrating the research of other criticalities, theoretical and epistemological lenses have left a legacy of colonialism and assimilation that continue today.

## **Texas Science Education**

### **1920’s Texas Research Flawed**

One question I always wonder about is, “Why are students of color considered inferior to their White peers?” According to research by Blanton (2000), during the 1920’s, Texas

researchers experimented on the intelligences of White, Mexican American, and African American children. “They concluded that there existed a hierarchy of racial intelligences-Whites at the top, African Americans on the bottom, and Mexican Americans in a tenuous middle position influenced by class and skin color” (p. 1014). Their research was conducted with racist preconceptions and errors in methodology. Their findings left a racist legacy of White supremacy that still lives on today not only in Texas but the rest of the United States. The testing phenomenon continues to stigmatize students of color due to the “measurable underachievement by minorities, particularly Mexican Americans and African Americans” (Blanton, 2000, p. 1014) and students of color from other cultures.

### **Standardized Tests are the Norm in Texas**

Texas is populated with people of many different cultures yet the school systems in Texas assess their students using a standardized test. Texas is a state rich in cultural diversity with about one third of the population being Hispanic or Latino (U.S. Census Bureau, 2018) yet in which the norm is the existence of a culture of standardization in schools (McNeil, 2000). Schools in Texas, under the auspices of the Texas Education Agency (TEA) all follow the Texas state standards called the Texas Essential Knowledge and Skills (TEKS), which outlines what students should learn in science. The required curriculum includes Earth and Space Science, Physical Science, and Life Science (Official website, The Texas Education Agency, 2019). The high stakes standardized test administered in Texas that assesses the TEKS curriculum standards is called The State of Texas Assessment of Academic Readiness (STAAR) test. Science is tested in fifth and eighth grade. It is called a high stakes test because if students do not pass, they can be retained in the same grade. Districts and schools are held accountable for the students’ academic success in accountability ratings, which can lead to either monitoring or interventions by the

TEA or ultimately school closing (Chomsky & Robichaud, 2014). The STAAR test assesses all students using the same standards, no matter the diversity of the students.

### **Hegemonic Education Rationale**

We live in a society that promotes the hegemonic education rationale that schools are testing environments that stress uniformity and standardization. It is as if education has embraced a culture of standards and testing. A dichotomy that exists in schools is the aspiration of all students to develop individuality, creativity, and critical thinking yet stifle this same creativity and developmental growth by teaching them only to answer multiple-choice questions. The main objective of the STAAR test is to measure school and student success but has evolved into the dominant logic of a “multi-dimensional phenomenon by uniformed and standardized criteria” (Chomsky & Robichaud, 2014, p. 3). School districts, administrators and even teachers measure the success of their students with STAAR test results. If the students do well on the test, it results in a great sense of accomplishment for the individual students. The student has successfully assimilated to whiteness. Jordan (2005) argues that standardized tests can help identify student’s strengths and weaknesses providing educators with a guide on developing better educational programs. Accountability tactics hold schools responsible for ignoring the needs of the marginalized while at the same time imposing draconian oppression. Many factors affect test scores that are out of the control of the teacher or even the school because of the systematic marginalization of students by society. Critics assert that standardized tests are culturally biased and are developed with the norm being White middle-class children, not students from other cultures or ethnicities. Standardized tests have morphed into a monster that is culturally biased in favor of the dominant Eurocentric culture.

For students of color, standardized tests are often biased due to questions being written based on the norm of the dominant culture (Phillips, 2006). Students with limited English language proficiency, cannot understand the questions and what ends up happening is that science knowledge is not being tested, instead we are “merely giving them an intense vocabulary test about the English language” (Phillips, 2006, p. 52). Students from minority cultures have different home experiences and sometimes cannot make connections to the standardized test questions. Another problem with standardized tests is that hegemonic labels stigmatize and promote notions that “poor students and students of color [are] less academically able” (De Lissovoy, 2012, p. 470) and also promote stereotyping while adding to assumptions, which negatively defining students. So much emphasis is put on the STAAR test results, that many times children are considered failures if they do not pass. Instead of using the word failure, the euphemism ‘at risk’ is used throughout their school careers. Lee and Buxton (2010) contend that academically ‘at risk’ students are predominantly the low-socioeconomic students, students of color, or students learning English.

The personal histories and stories of students are silenced due to the need to complete content timelines established by the district curriculum. Too many teachers are aware of the negative effects of ‘teaching to the test’ but many are worried about losing their jobs due to low-test scores. “The hyper-focus on standardization, testing, and a narrow definition of achievement occlude many teachers from investing the time that it takes to build authentic relationships” (Borrero & Sanchez, 2017, p. 279-280). Intellectual activities that engage students are eliminated and instead fragmented bits of information are taught to conform to the knowledge encountered on standardized tests mandated by bureaucracies in power. Teachers are pressured into covering as much content as possible to better prepare their students for the standardized test (Kellinger,

2012). Standardized tests can assess student performance, but students may possess skills and intelligences beyond what can be measured on state mandated standardized tests. Students are being deprived of a well-rounded education when teachers are spending much of their academic time on testing strategies (McNeil, 2000). The education rationale is the full acceptance of the hegemony of standardized tests known to have begun with racist negative influences yet have had full support by the patriarchy in power that continues to extend whiteness.

### **Culturally Relevant Pedagogy (CRP)**

#### **The Salience of Culture in Education**

Bilingual students must overcome the negative portrayal of speaking a second language while learning an academic discipline such as science and using their own unique ways of knowing to succeed in American schools. Tang (2015) posits “that every individual, through the process of enculturation into the norms and values of their respective discourse communities, acquires various literacy practices as ways of using language to make meaning of human experiences” (p. 312). Standards in education are based on the norms in society, and when students are not the norm, they are marginalized. The marginalization of students of color because of their Mexican American culture or other culture, can negatively affect their lived experiences in the school setting.

There exists a complex relationship when adding culture as a pedagogical tool when teaching culturally and ethnically diverse students of color. Teachers as agents of change can be the driving force to positively enhance the school experience for students who are representative of a different race, culture, or language. Research shows that many teachers do not know how to teach students of color (Irizarry & Raible, 2011; Gay, 2002) such as Mexican American students. According to Irizarry and Raible (2011), even teacher education programs do little to develop

knowledge and skills to effectively work with students who are culturally diverse. This difference in culture causes a disconnect between teachers and students of color, teachers are constantly searching for pedagogy that addresses the underachievement of these students (Irizarry & Raible, 2011).

### **Towards a Theory of Culturally Relevant Pedagogy**

To this end, I draw from the landmark article *Toward a Theory of Culturally Relevant Pedagogy* by Gloria Ladson-Billing (1995), a pedagogical framework that addresses a student's culture called culturally relevant pedagogy. The landmark article has been cited extensively in contemporary research (Borrero & Sanchez, 2017; Borrero et al., 2018; Freire & Valdez, 2017; Parhar & Sensoy, 2011; Paris, 2012; Paris & Alim, 2014; Sleeter, 2012) in documenting the struggles of oppressed African-American students. I contend that the work of Ladson-Billings can be adapted to my research on Mexican American students because they are both considered students of color and also struggle in school due to marginalization (Gutstein, Lipman, Hernandez, & de los Reyes, 1997) although Ladson-Billings' CRP was developed on work with white teachers and African American students and I will also be assessing issues specific to Mexican Americans students such as language and immigration. Sleeter (2012) points out that culturally relevant pedagogy in contemporary research is called by many names such as "multicultural teaching, equity pedagogy, sociocultural teaching, culturally responsive pedagogy, or social justice teaching" (p. 573). "Culturally relevant pedagogy rests on three criteria: (a) students must experience academic success; (b) students must develop and/or maintain cultural competence; and (c) students must develop a critical consciousness through which they challenge the status quo of the current social order" (Ladson-Billings, 1995a, p. 286). Parhar and Sensoy (2011) explain the praxis of culturally relevant pedagogy in the classroom:

This approach asserts the value of focusing classroom curricula and practice upon students' cultural frames of reference. It is a pedagogy that recognizes students' differences, validates students' cultures, and asserts that upon cultural congruence of classroom practices, students will discover increasing success in school (p. 191-192).

Students bring knowledge learned from home, family, culture, traditions, and community. If teachers take advantage of this knowledge that all students possess and connect it to pedagogy, students are better able to comprehend and achieve success.

### **Academic Achievement**

The first criterion in culturally relevant pedagogy is academic achievement. It is pertinent that all students learn academic content such as reading, math, science, writing, and technology. They must also experience success in the academic content in order to build self-esteem. Mexican American students have the added need of learning to speak, read, and write the English language. All this has to be accomplished in an educational setting that does not believe in them (De Lissovoy, 2012). Culturally relevant pedagogy in action can be seen when a connection is built between theoretical and pedagogical concepts "based on the cultural realities and lived experiences of K-12 students" (Borrero & Sanchez, 2017, p. 281). In an empirical study by Irizarry and Raible (2011), culturally relevant pedagogies first criteria: academic achievement was in line with research conducted on exemplary teachers of Latino students. The rhetoric that is prolific in American schools is that students of color such as Mexican American students just cannot overcome underachievement in schools, yet this study found that exemplary teachers who held close contact and connections with the community around the school, connected community culture with classroom instruction, and used the homeland language to

communicate in an open space were able to provide improved educational experiences that maintained classroom culture when weaved into instruction, which promoted academic achievement. In an empirical study of third grade English Language Learners, Ebe (2010) found that when students read about their own culture relevant to them, they were more interested and engaged. “Validating and celebrating students’ backgrounds and cultural experiences can often lead to reading engagement and increased reading proficiency” (Ebe, 2010, p. 196). The following are studies in which educators of minority students took other measures to find relevant materials and resources.

### **Cultural Competence**

The second criterion in culturally relevant pedagogy is for students to be proud of their heritage and to have cultural competence. “Culturally relevant teachers utilize students’ culture as a vehicle for learning” (Ladson-Billings, 1995a, p. 287). Valuing the student’s language, traditions, culture, and religion allows students to be proud of their families and the place where they come from. Curriculum should be “organized around knowledge of communities, cultures, and traditions that give students a sense of history, identity, and place” (Giroux, 2009, p. 16) making it relevant to students. Being able to speak in Spanish when trying to convey information and feeling the classroom climate as a safe place to do it promotes feelings of comfort and security. Ladson-Billings (1995a) posits that a teacher that “...encouraged students to use their home language while they acquired the secondary discourse of ‘standard ‘ English” (p. 287) was better able to promote feelings of value for their culture. An empirical study by Borrero and Sanchez (2017), culturally relevant pedagogy second criteria: cultural consciousness was in line with a pedagogical tool called Asset Mapping, in which students explored stories of their communities and their lives’ portrayals in personalized maps that focused on cultural strengths.



They found that students learned about themselves, learned about their peers, and learned about community building by sharing their work in a gallery walk. Students made connections to their lives outside of school through school pedagogy in line with cultural consciousness. “Reflecting on culturally informed beliefs, values and assumptions will ultimately make teaching easier as strategies are put in place to engage students who may have been previously excluded so that they become active participants in their own learning” (Tangen & Spooner-Lane, 2008, p. 68). If I had been taught with culturally relevant pedagogy, I would have learned to be proud of my Mexican American heritage.

### **Sociopolitical Consciousness**

The third criteria, which is sociopolitical consciousness, is probably the most empowering to marginalized students because it draws on the Freirean notion of “conscientization” which is an awareness of contradictions in society (Freire, 1970). Dewey (1902) spoke before the National Council of Education and acknowledged that the function of education has been social. Dewey (1907) believed that the purpose of schools was to advance our societies by transforming students into adults that would be contributing members of society. Holbrook (2010) referred to this as citizen science because science knowledge “is used for the benefit of society” (p. 82). Freire claimed that the problem with society is that in order to liberate us, it needs to be viewed with a critical lens (Freire, 1970). Educators can point out realities in the sociocultural realms these students live. “Effective teachers did not eschew the historical legacies of these communities and the struggles they have endured to gain access to equitable public education” (Irizarry & Raible, 2011, p. 201).

The third proposition is in line with Dewey and Freire because as Ladson-Billings (1995) states, we must develop students that will be contributing members of society but also be able to

analyze that society for self-awareness. Educators must be explicit in teaching students “critical thought and healthy skepticism” (Giroux, 2009, p. 15) to pursue their own enlightenment. In order to accomplish this goal, “students must develop a broader sociopolitical consciousness that allows them to critique the cultural norms, values, morals, and institutions that produce and maintain social inequities” (Ladson-Billings, 1995a, p. 288). Teachers need to understand that they are in a position to challenge the critical consciousness of their students by empowering them to develop awareness of the power and privilege around them.

Besides being able to read and work math problems, they must also develop “technological, social, and political skills in order to be active participants in a democracy” (Ladson-Billings, 1995a, p. 286). An empirical study by Cruz (2012), culturally relevant pedagogy third criteria: sociopolitical consciousness was in line with a pedagogical use of *testimonio* when students described their memory, feelings, associations, and fears, “after the civil unrest of the Rodney King trial exploded in the streets of Los Angeles” (p. 465). Through the use of *testimonios*, Cruz (2012) found that students were able to share the memories of their own migration struggles and were given the opportunity to give students ‘voice’ to conceptualize their feelings, experiences, and struggles with racial issues of the time. Bilingual students come to school with a plethora of unique ways of knowing (Kinney, 2015) they learned at home which includes the Mexican American culture.

Furthermore, CRP research is salient for Mexican American students to succeed and must be given opportunity, resources, and the academic challenges necessary to overcome obstacles in educational institutions that make them feel inferior. Many Mexican American students may also feel that the science instruction is boring (Lin, Hong, & Huang, 2012; Tang, 2015) but what is really the issue is that students are not being engaged through instruction that does not alienate

them from learning (Lin et al., 2012). “To address this disconnection, many science educators have strongly advocated the need to examine how youths’ cultural knowledge and experiences can be used as resources to link with school science” (Tang, 2015, p. 312). If there is no connection between school science and the students’ interest, they can be turned-off by school science. It is recognized that interest in science starts to wane in secondary (Carlone, Scott, & Lowder, 2014) making it imperative for educators to make instruction inviting. A common misconception by educators is that a display of apathy by students (Valenzuela, 1997) means that they are uninterested or not smart enough to learn the science content but in reality “students’ silent resistance or carelessness in learning science was misunderstood as passivity or a lack of intelligence” (Lin et al., 2012, p. 40). A study by Carlone et al. (2014) found that through the integration of cultural experiences that interest the students such as soccer, and the use of two different environments, the science classroom and the soccer field, a more interesting and motivational science lesson was developed. This was salient especially “for students with low interest, enjoyment, or engagement in science” (Lin et al., 2012, p. 40). Tang (2015) claimed that by using the cultural food of the students as out-of-school knowledge, they could make home connections, which could be included in science pedagogy.

### **Challenges of Culturally Relevant Pedagogy (CRP)**

Although there are many educational possibilities in utilizing culturally relevant pedagogy, there are some educational challenges as well. I will elaborate on the following educational challenges that exist when utilizing culturally relevant pedagogy. Ladson-Billings (2014) argued that many times culturally relevant pedagogy has been “used and misused since its inception” (p. 74). The educational challenges that have been the most prevalent to CRP are time constraints, pressures of standardized tests, lack of knowledge of the criteria in culturally

relevant pedagogy, misinterpretation, essentialization, a fear of teaching controversial cultural issues, and lack of relevant materials by educators.

### **Time Constraints**

The first educational challenge when implementing culturally relevant pedagogy is time. “As the work of teachers is standardized and pressurized, attempts to work with culturally responsive pedagogy become increasingly difficult” (Sleeter, 2012, p. 577). Teachers are under so much pressure to complete district timelines that there is not much time left for developing curriculum (Freire & Valdez, 2017; Sleeter, 2012) that will be relevant to students of color.

### **Micromanaging by Administrators**

Also, another reason for not utilizing culturally relevant pedagogy in the classroom is the continuous checking up on teachers by administrators to make sure that district curriculum is being followed and that the teacher is keeping up with the district timeline. According to Sleeter (2012), teachers claim to be hesitant in using culturally relevant pedagogy due to the constant pressure to raise practice test scores. “Teachers in schools where students are underachieving tend to be pressured toward standardization rather than responsiveness to their diverse students” (p. 577). There seems to be not enough time to teach correctly due to the standardized testing environment that is prevalent in American schools.

### **Essentializing CRP**

Besides pressures on teachers, another common occurrence is the misinterpretation of the pedagogy. “Many practitioners, and those who claim to translate research into practice, seem stuck in very limited and superficial notions of culture” (Ladson-Billings, 2014, p. 77). Teachers cannot implement culturally relevant pedagogy because there is a lack of knowledge and they do not know how to teach it (Freire & Valdez, 2017). An empirical study by Mason (2017)

described how a suburban elite privileged school tried to implement CRP when an increase in students of color enrolled in the school. Misunderstandings, resistance, and tension by the affluent White community ensued and prevented the school transformation towards CRP.

Another educational challenge of culturally relevant pedagogy is that of essentialism. Borrero et al. (2018) found that many teachers essentialized culture consciousness by thinking they could simply follow step-by-step procedures or implement the use of checklists. Essentialism has the effect of developing incorrect assumptions that reduce the complexity of the pedagogy (Mason, 2017; Sleeter, 2012). It is not enough for educators to celebrate an important figure in history; they must also connect culture to academic learning. “The idea that adding some books about people of color, having a classroom Kwanzaa celebration, or posting ‘diverse’ images make one ‘culturally relevant’ seem to be what the pedagogy has been reduced to” (Ladson-Billings, 2014, p. 82). There exists a misunderstanding about instruction on culture that if left invalidated, discredits their prior knowledge. Indeed, Sleeter (2012) would argue:

The tendency to view culturally responsive pedagogy as cultural celebration that is disconnected from academic learning seems to be fairly common among educators who have not examined their own expectations for the academic learning of historically underachieving students, and whose attention has become focused on learning about other cultural traditions as an end itself (p. 569).

For culturally relevant pedagogy to be effective, it has to be connected to the content being taught. Students must be able to understand how their culture fits into the school learning so they can make a connection from the home to the school. Because many teachers do not understand the importance of that home-school connection, they think that celebrating different cultures is adequate for fulfilling the tenets of culturally relevant pedagogy.

## **The Notion of being Colorblind**

Furthermore, another educational challenge is fear of teaching issues that are controversial in nature (Gay, 2010). In an empirical study by Parhar and Sensoy (2011), they found that educators felt it was sometimes easier to neglect dialogue on racism, sexism, or classism when they were unsure of how to handle difficult conversations. “White teachers’ fear and reluctance to talk about issues of race” (Irizarry & Raible, 2014, p. 439) caused students to be reluctant to discuss their feeling of racial inferiority. There exists a misconceived notion by some teachers that claim they are colorblind (Gay, 2010). Being colorblind is a notion that to end discrimination, everyone is seen the same and is treated equally (Ladson-Billings, 2018; Gay, 2010). Other teachers are ‘color mute’ or do not speak about racial issues (Pollock, Deckman, Mira, & Shalaby, 2010). This leads to erroneous thinking because racism does exist and if completely ignored by educators, maintaining silence thus perpetuates racism and oppression even more in American schools.

## **A Lack of Culturally Relevant Resources**

A major challenge in education when utilizing culturally relevant pedagogy is the lack of relevant material (Freire & Valdez, 2017). Learning in the classroom cannot happen with textbooks that are not written in a context that is familiar to the students. If no connection can be made to their prior knowledge and experiences, comprehension is difficult. If culturally relevant textbooks are not available, teachers will have to develop their own resources, or a cultural connection cannot be made. “A problem many teachers face is finding CRP material and “difficulty finding cultural connections in content areas like math and science” (Freire & Valdez, 2017, p. 63). There exists an inaccessibility of culturally relevant textbooks. A study found that in Puerto Rican schools, teachers had to write their own culturally relevant textbooks because

they could not locate any in the U.S. (Gonzalez-Espada, Llerandi-Roman, Fortis-Santiago, Guerrero-Medina, Ortiz-Vega, Feliu-Mojer, & Colon-Ramos, 2015). In an empirical study by Gritter, Scheurerman, Strong, Schuster and Williams (2016), they found that because no culturally relevant material was available for Native Americans, they had to bring in storytellers to present their culture. An educational challenge that is prevalent in schools is the misconception that academic content cannot be taught with culturally relevant textbooks. This misconception stems from teachers not being familiar with the contributions of many ethnic groups.

### **Culturally Sustaining Pedagogy**

Culturally relevant pedagogy was a precursor to culturally sustainable pedagogy (CSP). Although these pedagogies are similar, a change in stance, according to Paris (2012) was needed. Paris contends while teaching students with their culture as a backdrop, it is also important for pedagogies to include sustaining a competence in the dominant culture. “That is, culturally sustaining pedagogy seeks to perpetuate and foster – to sustain – linguistic, literate, and cultural pluralism as part of the democratic project of schooling” (p. 95). Paris studied students who were vested in Hip-Hop culture as a way of including their culture and mixing it with the African American Language (AAL), the Caribbean American culture, and across racial boundaries of Latinxs, and Pacific Islander youth. Our nation is so diversified that these ethnicities do undergo a connectedness that “through understanding and embracing the cultural fluidity” (Paris, 2012, p. 95) need to be studied in a way that they are used and lived daily by young people. Paris (2012) contends instead of focusing on the dominant culture or the culture of the many students of color, a pluralistic society should be the goal for an ever-evolving society of global youth continually navigating identities across “racial and national boundaries” (p. 95).

Paris' (2012) argument insisting that culturally sustaining pedagogies (CSP) are similar to culturally relevant pedagogies in that they both constitute an importance in exploring and respecting linguistic, literate and cultural differences of all Americans both the dominant and minorities. The main difference between culturally relevant pedagogy and culturally sustaining pedagogy is that the dominant culture must be integrated into all the other cultures in order to have "common, across-group cultural practices (in the case of language in most institutional settings in the United States, Dominant American English) to exist and thrive" (p. 95). Metaphorically speaking, like a melting pot of all the different cultures, while in culturally relevant pedagogies, the dominant culture is still the main culture taught and focused on and supported by 'other' cultures.

I did not focus on culturally sustaining pedagogies as a framework because I did not feel it was relevant to my study since Gold Elementary is composed of a 98% Mexican American population. The rationale for not including culturally sustaining pedagogies is due to teachers having limited exposure to it because of its newness and not being able to discuss it with their students because it is not part of the teacher background. In contrast, CRP is now apparent in educator preparation programs. In fact, even CRP seems to be an afterthought or only partly understood.

## **The Brief Intellectual History of Latinx Critical Race Theory**

### **Critical Theory's Start in Europe**

Critical theory first came about during the 1930's through the Frankfurt School, a group of German theorists such as Adorno, Horkheimer, and Marcuse, whose writings were greatly influenced by Marxist theory (Stoilescu, 2016). They felt that when societies were not closely watched, the dominant class would take over. The anti-systemic movements of 1968 to



the present were a turning point for “the ongoing crisis in the humanities and the human sciences” (Jupp, Berry, Morales, & Mason, 2018, p. 307). The voice of the marginalized was getting stronger and with world politics closely watching the United States as a leader, they had no choice but to start trying to calm political and social struggles (Wallerstein, 1989). As a result, knowledge production evolved into “new fields such as cultural studies, critical legal studies, ethnic studies, multicultural education, pedagogical studies, gender studies” (Jupp et al., 2018, p. 308) among others. Although these new fields did not come from critical theory, they came about because of a societal need that generated new critiques “of ‘universality’ in the humanities and ‘objectivity’ in the human sciences” (Jupp et al., 2018, p. 308) and formed the foundations of critical theory that continue today. “The foundations of critical theory stand in evaluating and criticizing society, culture, and civilization, in order to reveal, describe, and critique social inequity” (Stoilescu, 2016, p. 146). Critical theory takes similar positions as critical legal studies and critical race theory. Two such positions include the embeddedness of the research and the researcher in history and the centrality of conflict.

### **Critical Theory in the United States**

In the United States, critical theory transformed into Critical Legal Studies as a movement by Black legal scholars to critique the injustices in the American legal system (Berry, 2010). It then expanded to Critical Race Theory (CRT) due to continued injustices in America due to racism. CRT began with a theoretical framework for exploring laws and policies that were considered neutral yet overtly perpetuated race, ethnic, and gender subordination (Delgado Bernal, 2002). Ricardo Delgado, as cited in Chapman (2011), claimed that research was negatively impacted by scholars who were naïve as to the perspectives of minorities’ way of living and views of the world. To right the absence of the minorities, scholars of color began to

conduct research using social justice as a foundation. Chapman (2011) explains that throughout the history of America, racism has always been deeply entangled in dominant ideologies over ‘others’:

The pervasiveness of race informs the rationales for decisions at all levels of government. CRT posits that the U.S.A. developed and prospered through its dependence upon the work of slaves and immigrants and the subjugation of Native American nations. The forging of the U.S.A. through the oppression, dominance, and annihilation of people of color is stitched into the fabric of the country; and this history creates binaries and hierarchies of race, class, and gender that remain woven in the laws, policies, and social understandings that shape the country. (p. 221)

Race and racism is socially constructed for the benefit of the elite in power. Bureaucracies are constructed to build a strong nation through the oppression of the marginalized people of color. This history is not written about in textbooks or is included in school curriculum allowing for the dominant culture to be reproduced and perpetuated.

### **From Critical Race Theory to LatCrit Race Theory**

**Critical race theory emerged.** CRT was important because of the need to expose embedded domination by hegemonic societies and privileged cultures who oppressed the unsuspecting marginalized. The oppressed people in society many times do not even know that they are oppressed because that is all they know (Freire, 1970). “Individuals in these societies are [were] acculturated to feel comfortable in relations of domination and subordination rather than equality and independence (Kincheloe & McLaren, 2005, p. 303). Solorzano, Ceja, and Yosso (2000) point out that there are five tenets to CRT. These tenets include intersectionality between

race, racism, and other forms of oppression, challenging dominant ideology such as meritocracy, objectivity, and neutrality, social justice, experiential knowledge, and trans disciplinary approaches. The following is a description of each of the tenets.

The first tenet of intersectionality between race, racism and other forms of oppression that is commonly experienced by Mexican Americans and other Hispanics means that a combination of reasons for discrimination contribute to marginalization often by unsuspecting White contemporaries. The intertwined connections of their ethnicity to race and racism, undocumented status and social class contributes to internalized feelings of the acceptance of White domination and their justification of exclusionary practices (Perez Huber, 2010). The second tenet of CRT is challenging dominant ideology such as meritocracy and deficit model thinking in which studies by Delgado Bernal (2002) found the belief that cultural ways of knowing were valuable to formal schooling but often unappreciated in the public realm. Likewise, in a study by Aragon (2018), she found that a common misconception, the belief that Hispanic parents do not care about their children's education, was false. The third tenet is social justice which is needed due to the hegemonic structures of a society that had its origins in colonization. Teaching Mexican Americans to read with a critical eye and to question the histories written in textbooks is a way that social justice can come about and it can only transpire when educational issues that are causing a disparity among minorities are included in discourse. The fourth tenet in CRT is experiential knowledge. While learning the academic and cultural curriculum of the dominant White race, students of color learn to navigate through a cultural community that is different from their own making it necessary to learn from sources outside the school about their "racial/ethnic heritage and history as well as promote cultural customs and racial/ethnic pride" (Ayon, 2016, p. 469). The fifth tenet of CRT is trans disciplinary approaches,

which allows researchers to draw on research methods and understanding of other disciplines in order to improve and understand the experiences of marginalized students (Delgado Bernal, 2002). By integrating the research of other criticalities, theoretical and epistemological lenses have paved the way for CRT. As a lens for analysis, CRT was insufficient to analyze the potential marginalization of Mexican Americans in this study. To remedy this deficiency, there was a need for Latinx critical race theory.

**LatCrit is more specific.** LatCrit theory is like CRT except that it digs deeper into specific issues that only affect Latinx communities. Valdes (2005) argues that LatCrit is complementary to CRT and acts more like a cousin to LatCrit. “LatCrit is a framework meant to function in congruity with CRT and gives educational researchers a more focused lens to examine the experiences of Latinx students and their respective communities” (Perez Huber, 2009, p. 643). Besides issues of race, ethnicity, and gender like CRT, LatCrit extends it to include additional pejorative racial stereotypes, experienced by the Mexican American and other communities, such as issues of language, immigration, culture, identity, phenotype, and sexuality (Aragon, 2018; Delgado Bernal, 2002; Noboa, 2013; Perez Huber, 2010; & Solórzano & Delgado Bernal, 2001) and “explores the relationships between Latinxs and the law” (Haney-Lopez, 1997, p. 280). “LatCrit has stood firmly committed to anti essentialism-the acknowledgement of the great diversity in the Latinx community-and anti-subordination” (Aoki & Johnson, 2008, p. 1157). Latinx have a multidimensional identity that is intersected with racism, sexism, classism, and other forms of oppression (Solórzano & Delgado Bernal, 2001; Delgado Bernal, 2002). “Scholars who shaped LatCrit wanted a theory that focused on the unique history and challenges facing the Spanish speaking diaspora of immigrants in the United States” (Chapman, 2011, p. 223) with intentions to “dismantle hierarchies and traditions of

oppression” (Valdes, 2005, p. 162). LatCrit is better able to acknowledge the Mexican American academic experiences in this study.

**LatCrit’s five tenets.** LatCrit can be further conceptualized through the scrutiny of five concepts that overlap. According to Jupp, Berry, Morales, and Mason (2018), these concepts include “mestizx borderland identities, immigrant, and transnational experiences, translanguaging and transgressive language phenomena, Latinx transgressive sexualities, and testimonios as critical praxis” (p. 310).

**Mestizx borderland identities.** LatCrit is used as a lens on issues of helping designate the mestizx borderland identity. Mestizx comes from the Spanish word *mestizo* which means “people of mixed Indian and Spanish blood” (Anzaldua, 1987, p. 5) who became a race called Mexicans. Mexicans, Mexican Americans, Texans, and Chicanos became the offspring of the mestizos who settled in lands of the Southwest United States (Anzaldua, 1987). The borderland identity, the Latinx, is very complex due to the mixing of cultures, languages, traditions and religions. LatCrit provides a lens “to debunk oppressive myths like all Latinas/os are Hispanic, or white, or Roman Catholic, or heterosexual” (Valdes, 2005, p. 154). In reality, there is a possibility that there are some Latinx who can identify with all of the preceding, but there are many more Latinx who do not. It is a major fallacy to think that all Latinx can be described with the same stereotypes. “Latinas/os were, for the most part, invisible” (Valdes, 2005, p. 153).

Latinxs encompass an amalgam of diverse “national origins, races and ethnicities: Chicanas/os, Puerto Ricans, Cubanas/os, Dominicanas/os, Nicaraguenses, Salvadoreñas/os, Colombianas/os, and many more” (Valdes, 2005, p. 154). This allows for a pan-ethnicity of “hybridized, indigenous, African, and European racially blended identities” (Jupp et al., 2018, p. 310) in the inclusion of complex identities in the rejection of White supremacy.

**Phenotype complexity explained.** LatCrit gives a lens to examine the experiences of Latinos such as Mexican American and others, who encounter prejudices due to phenotype, or skin color. Phenotype is a notable characteristic of many Latinos. There exists a major misconception that discrimination due to phenotype occurs only to Black people (Luna, 2003). This is a common misconception because the color of one's skin has been a significant precursor to discrimination in which Mexican Americans have been subjected to, not only in the dominant White community but also within their own communities. It is common to call a dark-skinned Mexican or Mexican American "Prieto" or "Moreno" (dark-skinned). In the Mexican American community, due to colonization connections, it is my experience that we measure standards of beauty to Eurocentric phenotype (White skinned) making dark-skinned phenotypes unattractive. (Anzaldua, 1981; Ayón & Philbin, 2017), thus when someone is born with a lighter complexion, they are considered more attractive. For example, when I was a baby, I was called *guera* (light-skinned) while my brother was called *prieto* (dark-skinned). I was considered lucky because of my light skin while my brother was not, just because of our phenotype.

**Stereotype threat is prevalent.** Besides phenotype, another LatCrit lens to acknowledge the experiences of students of color is through stereotype threat. The intersectionality of race and nativism or those feeling superior to marginalized people, their immigration status, and the importance of keeping it a secret, and low socioeconomic class perpetuated due to their undocumented parents all contributed to marginalization. Stereotype threat is a widely believed and often accepted portrayal people have that are "pictures in the head that simplify our thinking about other people" (Aronson, 2004, p. 15). Stereotype threat is often thought of in derogatory terms for people of color. The intertwined connections of their ethnicity to race and racism, undocumented status and social class can transform into internalized feelings of the acceptance

of White dominance and their justification of exclusionary practices (Perez Huber, 2010). This self-relegation to a lower hierarchy occurs very often in communities of color through stereotype threat.

**Second concept is immigrant and transnational experiences.** LatCrit is salient to education because it specifically examines the unique experiences of immigrant status particular to Mexican Americans and other Latinx. Latinxs are discriminated against due to false assumptions that all Mexican Americans are undocumented Mexican immigrants (Perez Huber, 2010). Deficit model thinking discriminates against people of color who are considered foreigners that come *to take jobs from Americans* or receive benefits that are considered American entitlements. A term being used to describe a nationalistic identity is nativism (Perez Huber, 2010). Oftentimes this practice of feeling superior to immigrants is rooted in White supremacy. Throughout the history of the United States, immigrants have been grossly mistreated because they did not fit in with what the dominant culture considers American (Perez Huber, 2010). The continued oppression of anyone who has imagined differences exists even today where “perceptions of the native have been tied to definitions of whiteness” (p. 81). I will use the term Mexican American in place of Latinx because of personal preference.

Nativism can also cause oppression from within. In a study by Ayón (2016), she found that marginalized students of color experienced discrimination by being questioned on their nativity or immigration status, threatened that their parents would be taken away by immigration officials, or derogatory remarks about their skin tone or accents. Ayón (2016) also found that there existed intragroup discrimination where the more acculturated dominated and oppressed Latinxs who were recent immigrants and less acculturated. “These experiences lead to conflicts

within the Latino community and social isolation for individuals who are the victims of discrimination” (p. 469)

**Translanguaging and transgressive phenomena.** LatCrit exposes the interpersonal and institutional discrimination and how it is experienced in the classroom (Ayón & Philbin, 2017). “Interpersonal discrimination manifests through verbal abuse in the form of microinsults, microassaults, and physical attacks. Institutional discrimination occurred in schools as teachers minimized children’s connection to the Spanish language or culture (microinvalidation), enforced informal “no Spanish in the classroom” policies, and practiced differential treatment toward Latino children” (p. 19). Incidents of microaggressions can manifest as racial jokes (Ayón & Philbin, 2017; Yosso, Smith, Ceja, & Solorzano, 2009) that may not be meant to be hurtful yet can have devastating internalized long lasting effects (Perez Huber, 2010).

Emerging bilinguals commonly and naturally use translanguaging to freely move from one language to the next very proficiently (Cole, 2019). I am proud to be able to use translanguaging when I speak but it is looked down upon by Spanish monolinguals (Petron & Greybeck, 2014). Adults have a problem with the mixing of languages, and it was once frowned upon by educators. A separation of the languages was the norm in schools. Bilingual programs preferred the separation of languages and it was thought that a clear and explicit boundary between the languages should be kept distinct. Jupp et al. (2018) argue that translanguaging offers “challenges to oppressive academic and genteel language conventions that seek to tame wild tongues in schools and universities” (p. 310).

A paradigm shift has occurred in how translanguaging is used in an educational setting, largely due to the works of Gloria Anzaldua (1987) and her theorization of border crossings. This was the term she used to explain how common it was for Mexican Americans to switch between



two languages and cultures. It is common for bilinguals to speak in one language such as English when having a conversation and interjecting a word in Spanish when the English word is forgotten. Using this strategy helps emerging bilinguals learn the English language faster (Cole, 2019). Daniel, Jimenez, Pray, & Pacheco (2017) allege that bilingual students feel their bilingual abilities are relegated and considered subversive by teachers. Translanguaging is a strategy that can promote social justice by providing spaces for innovation and reform of “learning environments conducive to language and academic development for diverse student populations” (Langman, 2014, p. 184). Translanguaging also provides a path to cognitive and linguistic engagement in the construction of knowledge when science activities require an inquiry approach (Garza & Arreguin-Anderson, 2018). Code switching is like translanguaging except that language is alternated in full sentences.

**Latinx transgressive sexualities.** LatCrit provides a lens for Latinxs to challenge dominant liberal ideas and to voice their transgressive sexualities to influence anyone identifying with the same propensity. “Latinx transgressive sexualities provide conceptual content for challenging gendered sexual norms for Latinxs both within and beyond their communities and narrate coming-out counter-stories of libratory pleasures, communities, and transgressive practices” (Jupp et al., 2018, p. 310). The intersectionality of culture, gender, and sexuality offers several layers available for oppression. “For the lesbian of color, the ultimate rebellion she can make against her native culture is through her sexual behavior” (Anzaldua, 1987, p. 19). In my experience, being queer is only talked about in whispers or completely ignored within the Mexican American family unit.

**Testimonio is a voice for the marginalized.** LatCrit invites Latinx to analyze and disrupt deficit model thinking by giving voice through counter stories (Solórzano & Yosso,

2001) and *testimonios* (Perez Huber, 2010) which are salient to education because it allows those in the margins of society to tell of their experiences. It is also used as “a tool for analyzing and challenging the stories of those in power and whose story is a natural part of the dominant discourse” (Solorzano & Yosso, 2001, p. 475). Aragon (2018) used counter stories to contradict the overarching deficit thinking of White majoritarian ideology that claims low income parents of color do not value education. Cruz (2012) contends *testimonio* is a way for the reader to be “given the opportunity to become complicit as an observer and as a witness” (p. 462), in other words to become part of the story. “There are no Supermen in these stories, but the stories are truth-telling and are survivor-rich” (Cruz, 2012, p. 462). Counter stories and *testimonios* advance the understanding of the lived experiences of people of color because they serve as critical praxis and are legitimate and appropriate to voice the lived experiences of people of color (Solórzano & Delgado Bernal, 2001). They are not recognized by the academy and are even considered illegitimate research because they do not follow Eurocentric epistemologies, which are rooted in White supremacy. Perez Huber (2010) argues that when only one perspective is realized in traditional research, an “apartheid of knowledge” occurs perpetuating oppression of marginalized people of color.

### **CRT and LatCrit in Education**

Pertaining to education, Solórzano and Delgado Bernal (2001) contend that CRT and LatCrit provide a lens to challenge race and racism in education by “examining how educational theory and practice are used to subordinate and marginalize Chicana and Chicano students” (p. 312). LatCrit theorists expose the dichotomies that are prevalent in education in which there is a potential for oppression of the marginalized students and the potential to incite the empowerment to invoke emancipation (Delgado Bernal, 2002). LatCrit will serve as an underpinning for my

research because of the empowerment available to teachers of students of Mexican American descent. According to Jupp et al. (2018), a changing world requires diversification for the sake of knowledge production. With a growing Mexican American presence in our education systems, challenges to Eurocentric ideology in which White culture rules supreme must continue to manifest through a LatCrit lens.

Both CRT and LatCrit have been instrumental in educational research because it has been used as a tool to theorize race in education. Educational research needed some critical race based epistemologies because Mexican American students were experiencing multiple forms of oppression in the educational system. Because of their culture, many experiences are unique to the Mexican American community and need to be studied (Delgado Bernal, 2002) “through a more focused examination of the unique forms of oppression” (Perez Huber, 2010, p. 79) experienced by this community of color. In education research, LatCrit has been studied for the analysis of professors’ experiences (Solórzano & Yosso, 2001), Latinx students’ school experiences (Aragon, 2018; Ayón, 2016; Ayón & Philbin, 2017; Perez Huber, 2009; Irizarry, 2014; Worthy, Rodriguez-Galindo, Assaf, Martinez & Cuero, 2003), and teachers’ conscientization (Noboa, 2013; Salinas, Franquiz & Naseem Rodriguez, 2016).

In this study, I will not utilize all of the concepts of LatCrit but will apply them to the findings where applicable understanding that LatCrit as a framework can work both as a dichotomy in which educational structures and discourses can work as a way to marginalize or as a way to empower teachers (Solórzano & Delgado Bernal, 2001).

## **Chapter II Summary**

To summarize this section, I began chapter two with a discussion on how science education evolved from its colonial formations of a young America to the white Eurocentric

perspectives of today giving insight into the establishment of hegemony in school curriculum. Next, I expounded with a discussion on Texas science education's standardization of curriculum and assessment describing the dominant cultures standardization as the norm in the American education system. This was followed by culturally relevant pedagogy and its challenges of advancing student success in the science classroom, I continued with a brief intellectual history of Latinx critical race theory (LatCrit) used as a lens for examining the marginalization by hegemonic societies, and conclude with critical race theory (CRT) and LatCrit race theory in education. The literature allowed for the framework and conceptualization of culturally relevant pedagogy and LatCrit to explore hegemony in education advanced and advocated by the patriarchy in power and whiteness in America.

### CHAPTER III

#### METHODOLOGY

A qualitative ethnographic case study research design was utilized to address the research question. This was the best fit for my research because the study was about Mexican American teachers. An ethnographic case study combines the culture and participants being studied within the unique setting of the fifth grade science classroom. In this chapter, I began by discussing the rationale for using a qualitative research design, followed by reasons for using ethnography and a case study as the theoretical framework. Next, I expounded on the setting, participants, data sources, data collection, and data analysis. The setting was Gold Elementary, an inner city, low performing school in a major city in Central Texas. The participants were three Mexican American teachers of Mexican American fifth grade science students. The data sources and data collected were pre and post interviews, lesson observations, reflective journals, and school documents. The data was analyzed using an inductive approach of organizing data into distinct categories while looking for patterns which were coded and recoded until the findings emerged. This was followed with the study's validity and reliability features of reflexivity, triangulation, adequate engagement in the data collection, and other considerations. The validity and reliability was achieved with reflexivity, using my twenty years of classroom experience; triangulation, which included the analysis of four sources of information; adequate engagement in the data collection by perusing the data a multiple of times; and other considerations such as transferability. I concluded with the research significance and limitations. The research significance is the contributions of insight into the Mexican American educational environment

of teachers and students of the same ethnicity. The limitations are the critique of ethnography as true science discovery.

### **Ethnographic Case Study**

To explore the research question mentioned in this section, I utilized a qualitative ethnographic case study as my research design. I will begin by describing qualitative research, then more specifically, ethnography, which focuses on describing culture. I will continue by detailing the importance of a case study in qualitative research and finally the description of an ethnographic case study.

### **Qualitative Research**

Qualitative research is a viable research method that can be utilized to get relevant information from the analysis of people and cultures. It uses words to describe the observation of patterns in the research setting. In other words, it is exploratory (Creswell, 2009). The complexities of people's behaviors are unpredictable allowing for a challenge in trying to comprehend human interactions. According to Merriam (2009), it is a research design “focused on discovery, insight, and understanding from the perspectives of those being studied” (p. 1). Researchers are aware of the complexities of qualitative research and use it to better understand human nature, societies, and cultures. Denzin and Lincoln (2005) explained that qualitative research is like trying to study a river as it is flowing. “Because social life is complex and layered, qualitative researchers examine social phenomena within this context and seek to account for multiple influences upon the meaning of social behavior” (Newhart, 2015, p. 6). The data is full of descriptive words used for people or places that cannot be described with numbers (Bogdan & Biklen, 2007) like in quantitative research. The use of qualitative traditions has the capacity of providing a richer understanding of the happenings of a typical classroom life. In

other words, qualitative research is used for the purpose of explaining, exploring, or describing details of social phenomenon (Leavy, 2017).

## **Ethnography**

Ethnography is a type of qualitative research that studies culture (Bogdan & Biklen, 2007, Denzin & Lincoln, 2005). Ethnography utilizes the researcher's observations of the participants in their natural setting to get their perspective (Leech & Onwuegbuzie, 2007; Leavy, 2017). It is a goal of ethnographers to describe the participants in the culture with so much detail that it results in "thick descriptions" of social life (Leavy, 2017, p. 134). Ethnography is a research design that "seeks to describe and systematically analyze personal experiences in order to understand cultural experiences" (Ellis et al., 2011, para.1). Ethnography lets meaning emerge from the participants by allowing them to describe their feelings or reactions of observed situations. Ethnography is a good fit for my research because I will conduct observations in the fifth grade science classrooms to observe two Mexican American teachers. A qualitative ethnographic research design is appropriate for this study because it will occur in the Mexican American teacher's classroom utilizing soft or rich description (Bogdan & Biklen, 2007) of the teachers, the classroom, and their interactions using the participant's own frame of reference. Observations will occur in the natural loci (Angrosino, 2005) or what is also termed in qualitative research as naturalistic (Bogdan & Biklen, 2007) because observations are conducted in the natural setting of the science classroom. The science classroom culture is the natural setting where the participants spend much of their school time. Along with culture, ethnography as a research design is appropriate because it utilizes the detailed description of participants and their day-to-day activities, which can be used for the purpose of understanding the participants in their own social setting (Creswell, 2007).

## **Case Study**

Case study is a type of qualitative research. Case studies are unique in that they provide an in-depth understanding of the phenomenon being studied. A case study is a detailed and bounded analysis of the complexity of individuals, events, or situations (Stake, 1995; Yin, 2003). In other words, a case study is an “intensive analysis and description of a single unit or system bounded by space and time” (Hancock & Algozzine, 2006, p. 9). The integration between the researcher’s previous experiences in the classroom along with the uniqueness of the case under study allows for a rich interpretation of the events occurring in real time. “Qualitative case study is characterized by researchers spending extended time on site, personally in contact with activities and operations of the case, reflecting and revising descriptions and meanings of what is going on” (Stake, 2005, p. 450). The case study I will be analyzing is elementary teachers’ critical understanding of culturally relevant science education focusing on Mexican American teachers of Mexican American students.

## **Ethnographic Case Study**

Ethnographic case study is a type of qualitative research. The qualitative research design, which I will be utilizing in this study, is an ethnographic case study. An ethnographic case study allows the incorporation of the views of the participants' culture with the unique setting of the fifth grade science classroom. “Ethnographic case study research is used to explore the observable and learned patterns of behavior, customs, and ways of life of a culture sharing group” (Hancock & Algozzine, 2006, p. 37). The goal of this ethnographic case study is to lay the foundation of conceptualizing a sociocultural Mexican American teacher’s perspective. Educators can utilize the case study approach to get a clearer understanding of events that commonly parallel all teaching communities. The telos that provides educators with a template



on which to comprehend the daily episodes that occur in the classroom with explanations for further commonality transcend the ethnographic case study.

An ethnographic case study is appropriate to use in this research because it describes a systematic way to study and analyze cultural experiences (Bogdan & Biklen, 2007; Ellis et al., 2011). There is limited research in the Mexican American students' interactions with teachers of a similar culture. This study examined Mexican American teachers in the science classroom interacting with Mexican American students. This case study is important because the Mexican American culture is what defines the teachers and students in my study. Mexican American students experience school very differently from those of their White peers due to their culture being very different from school culture and the culture of the dominant culture. The observations and perspectives of the Mexican American teacher when communicating with students gave insight to understanding the cultural connections.

Social scientists feel that researchers can better understand the phenomenon being studied if they experience it themselves and get input from the very people they study. According to Foley & Valenzuela (2005) ethnographers utilizing an insider position are better able to collect data and information than a researcher who is detached from the source of information. "Once an ethnographer abandons the positivist fallacy that research techniques can produce a detached, objective standpoint, it makes little sense to ignore more intuitive or subjective ways of knowing" (p. 218). Social scientists such as Ellis et al. (2011) recognized a need for better ways to conduct research and "realized that stories were complex, constitutive, meaningful phenomena that taught morals and ethics, introduced unique ways of thinking and feeling" (para. 2) and provided self-reflection of personal experiences. Every human action has meaning and to understand these actions we study different perspectives such as social facts, hermeneutics,

language, and narratives for a humanized study (Benton & Craib, 2011). In this study I will reflect and utilize my extensive experiences in the science classroom to get an insider's position from my own frame of reference to make meaning from observations being made. According to Bogdan & Biklen (2007), meaning is essential in ethnography due to the researcher's ability to understand how people interpret their own lives. Ethnography allows me the reflexivity process by observing interactions and constructing meaning (Bogdan & Biklen, 2007). I agree with Benton and Craib (2011) in arguing that due to the complexity of people, the use of the scientific method is an invalid form of research in social sciences. Ethnography is an appropriate design choice.

Furthermore, an ethnographic case study is a mode of research being used more and more in educational settings. A case study design will add to the data because of its unique nature. The uniqueness of the case comes about from the uniqueness of the "individual representative of a group (e.g., a school administrator), an organization or organizations, or a phenomenon (e.g., a particular event, situation, program, or activity) (Hancock & Algozzine, 2006, p. 15). This design is used to inform through reflections and lived experiences of the participants while making connections to school culture. For example, an ethnographic case study was used by Meier (2011) to study the impact school culture had on science education in an innovative magnet school. Findings from classroom observations revealed that science instruction was adversely influenced by attitudes of teachers more focused on other content areas. Likewise, an ethnographic case study by Rainio and Hilppo (2017) advanced multidisciplinary educational theory and practice when it studied children's agency. In addition, an ethnographic case study by Rasmussen and Andreasen (2016) studied the implicit knowledge of students transitioning to secondary schools and practicing bridge-building activities for deciding which track to take in

their educational careers. Ethnographic case studies are a powerful tool to use in educational research for finding evidence to support new ways of thinking through thick descriptions of individual cases that allow other educators to enrich their understanding of educational phenomena.

### **Research Setting**

In an ethnographic study, the setting is an integral part of the research. The setting for this qualitative ethnographic case study took place at Gold Elementary (pseudonym) which is located on the west side of a major city in Central Texas having a population of 2.3 million people. This elementary school is part of an accredited school district but the school itself has had some academic problems with state mandated test results. The Texas Education Agency rated the school “improvement required.” The requirements for the improvement of low-performing schools consist of interventions and a continuous monitoring of progress.

According to the National Center for Education Statistics (NCES, 2019), Gold Elementary has about 450 students but the enrollment is declining due to the opening of charter, private schools in the vicinity. The largest segment of the Gold student population is 98% Mexican American. A typical school in the area is 73.8% Hispanic, making Gold Elementary uniquely different in terms of ethnic distribution. Many Gold students are considered low socioeconomic students in which 95.7% participate in the National School Lunch Program (NSLP). To qualify for free lunch, income for a family must be under \$15,171, which is 130% below the poverty line. Although a high Mexican American population, of the total Gold student body, only 22.2% of the students are enrolled in bilingual and English language learning programs because many students are second and third generation Mexican Americans; their parents do not speak to them in Spanish at home or are “parent denials” which means that parent’s decide to

have their child in a monolingual classroom due to negative connotations associated with the bilingual program. It is a common belief among Mexican American families that if their child attends a monolingual classroom, they will learn the English language better and faster than studying both languages.

Gold first opened in the 1960's so the school building has a time honored, venerable looking facade. The classrooms are large, but not very aesthetically pleasing. According to Perez Huber (2010), decaying school facilities are a condition consistent with low-income students of working-class communities. The students are used to the old building and furniture because they have not experienced a higher quality school. For many students, Gold Elementary is the only school they have ever attended. The area serves a Mexican American population having a low socioeconomic status. The bilingual students at Gold Elementary that do participate in a dual language program transition to a monolingual classroom in the fifth grade. They are taught classes in Spanish, their home language; from the time they enter kindergarten. The school district requires them to pass the State of Texas Assessments of Academic Readiness (STAAR) test (TEA, 2019). Taking the science test in Spanish is an option but through experience, I found that it is more difficult for the students due to the Spanish language variation being different from the Spanish they are familiar with. Although the obstacles for passing the STAAR test are high, I am amazed by the resiliency of my Mexican American students in accomplishing academic success.

## **Participants**

### **Selection of Participants**

The unit of analysis consists of two basic types of sampling: probability and nonprobability sampling. "Probability sampling (of which simple random sampling is the most

familiar example) allows the investigator to generalize results of the study from the sample to the population from which it was drawn” (Merriam, 2009, p. 77). Non-probability sampling, also called purposeful sampling, allows the investigator to “discover, understand, and gain insight” (p. 77) from the sample participants. The goal of this study is not to generalize, but to learn from the lived experiences of the sample, therefore, the sampling most appropriate would be purposeful sampling. In purposeful sampling, the researcher selects participants based on predetermined criteria, or criteria that will add the most understanding to the study. I chose two criteria for this study. The first criteria were that the participants in this study be Mexican Americans of Mexican descent. The second criterion was that participants be fifth grade science teachers of Mexican American students. The sample size for this study was two science teachers and me. I had originally asked another science teacher, but she did not wish to participate in this study. The two participants were Ms. Aggie and Ms. Flores. Participants volunteered to be included in the study because they were drawn by their interest in Mexican American studies. Both participants turned out to be female which added to the feminist prospective. The following section describes the participants.

### **Ms. Aggie**

Ms. Aggie is a light brown haired, light complexioned tall young woman in her thirties. She looks taller than she really is at five feet six inches. Her soft spoken, elegant movements leave her as soon as she starts teaching. She does not look Mexican American although she is. She told me her grandmother on her father’s side was White. She was raised hearing Spanish but does not speak it very well. Her style of dress is casual yet elegant. Ms. Aggie has an intermediate experience teaching level. She has been teaching science for 6 years. She has a

master's degree in leadership but feels no desire to become a principal. She began teaching at Gold Elementary three years ago and has been there ever since.

### **Ms. Flores**

Ms. Flores is a black haired, dark complexioned short lady in her mid-thirties. Her personality is completely opposite of Ms. Aggie. She is energetic and feisty. She is so charismatic that the room lights up as she enters. Everyone around will stop to listen to her when she speaks. I am so impressed with her intelligence. She looks Mexican American and she says that she is the darkest one in her family. Ms. Flores claims that her Spanish vocabulary includes about ten thousand words, which is not very good, but she says she understands enough to get by. Ms. Flores dresses in the school uniform, which includes a blue school polo shirt and khaki pants with black shoes. This is not required of teachers but she feels she should dress like the students so they can feel a connection. Ms. Flores' education includes a bachelor's degree in biology with a minor in chemistry. She has taught at the university level at University of Texas at El Paso but moved down to the center of Texas when her brother told her there was an opening at Gold Elementary for a Science teacher. She is considered as having a veteran's experience teaching level of over a decade of teaching science. Ms. Flores has been teaching at Gold Elementary for eleven years.

### **Ms. Luna**

I have dark brown hair, light complexioned standing at five feet four inches tall in the late 50's. I am a hard worker and dedicated to the teaching profession. I am a good listener and care about my students. I have been told that I do not look Mexican American. It is thought that we have Irish blood. My mother is adopted but still knows all her relatives and they do all look White. I have a bilingual teaching certificate, but I am not fluent in Spanish.

## **Data Sources and Data Collected**

I collected data from Pre Interview and post-interviews, lesson observations, reflective journals, and school documents. It is important to note that in all qualitative research, the researcher is “the primary instrument for data collection and analysis” (Merriam, 2009, p. 15). I will discuss each of the data sources in the following sections.

### **Pre Interviews and Post Interviews**

The interview is the most common way to obtain data in qualitative research. There are three types of interviews, which differ by the information the researcher wishes to obtain. I will discuss the three types of interviews, which range from highly structured to semi structured to unstructured (Merriam, 2009). I will also discuss the type used in this qualitative study.

**The structured interview is formal.** It is also called the standard interview because the questions and order of questions are predetermined (Merriam, 2009). It can actually be considered “an oral form of the written survey” (p. 90) and is commonly used to obtain demographic information such as the teaching degree obtained, number of years teaching, grade and subjects taught (Merriam, 2009). This type of interview does not allow for the participants to give their perspective or point of view.

**The semi-structured interview is less formal.** This type of interview utilizes a combination of structured and unstructured questions, which include open ended questions that allow for more flexibility (Merriam, 2009). This type of interview permits the participant to give their unique perspective using descriptive data and a worldview on questions about the research topic (Bogdan & Biklen, 2007). “Participants are able to use their own language, provide long and detailed responses if they choose, and go in any direction they want in response to the question” (Leavy, 2017, p. 139). I asked semi structured questions during the pre and post

interviews for the purpose of clearing up any questions or to get a better understanding of what was observed during the lesson. The researcher finds out as much detail as possible to ascertain the participants perspective and how they developed that perspective (Bogdan & Biklen, 2007). This information is obtained best through semi structured questions.

**The unstructured interview is less formal.** This type of interview is more like a conversation and is sometimes called a guided conversation (Bogdan & Biklen, 2007), which can be utilized if the researcher is exploring the topic for insight and understanding. There are no formal questions in an unstructured interview. “One of the goals of the unstructured interview is, in fact, learning enough about a situation to formulate questions for subsequent interviews” (Merriam, 2009, p. 91). My interviews were mostly semi structured although I asked the participants to elaborate if a comment was made that interested me.

A common strategy in a qualitative study is the use of all three interviewing types. The structured questions provide the background information on the participants while the semi-structured questions allow for insights on the participant interpretation of a topic. The unstructured questions allow for a more free-flowing, exploratory interview. I asked structured questions during the Pre Interview to obtain demographic information about the participants and then continued with semi structured questions. During the post interview, I focused more on semi structured and unstructured questions.

### **Lesson Observations**

Another source of data were the lesson observations. The participants taught a science lesson on Force, Motion, and Energy. A research method utilized in ethnographic case studies is participatory observation. “Participatory observation requires the researcher to engage in the activities of those he or she is researching, and to record systematic observations” (Leavy, 2017,



p. 134). As a participant observer, I was able to observe the participants in their natural setting, the science classroom, teaching their own students to understand the interactions from the participants' perspectives. The observations were written as field notes which can be described as written accounts of what is thought, heard, seen, and experienced by the researcher during the data collection in a qualitative study (Bogdan & Biklen, 2007). "A researcher may also base his or her analysis on notes made in the field as an independent observer of, for example, a subculture or institution setting" (Madill & Gough, 2008, p. 257). I recorded field notes during the observation to remind myself of what I saw and how it related to my experiences when going through the reflexivity process. According to Bogdan and Biklen (2007), there are two kinds of field notes:

The first is descriptive-the concern is to provide a word-picture of the setting, people, actions, and conversations as observed. The other is reflective-the part that captures more of the observer's frame of mind, ideas, and concerns.

Narratives written in the field are valuable because they are written as the activity happens and are fresh in the researchers' thoughts. I wrote lesson observations using descriptive field notes along with reflective field notes, which were elaborated on during the transcribing.

### **Reflective Journals**

**Participant's journals.** Likewise, participants were asked to keep a reflective journal. The purpose of the reflective journal was to include information on a memory or thought that the participant felt was significant to the research or to understand their thought process. Participants were provided prompts to give them ideas on what to write about although; they were given the autonomy to write on any subject.

**Participant observer journal.** I too kept a reflective journal and used the prompts provided to the participants. Keeping a reflective journal on daily experiences in the classroom was an idea I started when I first entered the teaching profession. I thought it would be a good idea to write down interesting things students reacted to, said, or did. The format for writing in the journal was to write descriptively and provide the location, time, date, and people involved. I also included my thoughts and feelings about a particular situation, quotes from students, parents, or other teachers to remember conversations, comments, connections and reflections. “This calls for a high degree of reflexivity in the sense of self-reflexivity and reflection on the research situation and the research process” (Bergold & Thomas, 2012, p. 10). With reflexivity, I was able to write in my personal reflective journal about my own experiences in the science classroom. Thus, data collection focused on the observation and lived experiences of the researcher with the intention of providing insight into the generation and use of knowledge for the purpose of constructing meaning and informing practice.

### **School Documents**

Every organization produces documents specific to their functionality. Documents consist of internal documents, external documents, student records and personnel files (Bogdan & Biklen, 2007). These materials can be viewed as either very important or wasteful in nature. Bureaucratic organizations such as schools, are known to produce much in the form of written communications (Bogdan & Biklen, 2007). “A qualitative study of classroom instruction would lead to documents in the form of instructor’s lesson plans, student assignments, objects in the classroom, official grade reports and school records, teacher evaluations, and so on” (Merriam, 2009, p. 150). Qualitative researchers utilize these documents for the purpose of getting the perspective of the school and the school district. Internal documents, which flow from inside the

school system, reveal information about the chain of command, the school protocol, insight into school members, and give clues about the school culture. External documents are produced for the sole purpose of public use and are readily available. They can include material such as newsletters, news releases, brochures, and pamphlets (Bogdan & Biklen, 2007). Student records and personnel files are another type of school document. The information in school records and personnel files could be interpreted as being biased telling only a one sided story, that of the perspective of the people keeping the records.

The documents I collected for this study included student's class schedule, science lesson plans, teacher's notes, district science curriculum T.E.K.S. and plans, and email communications between participants. I followed systematic procedures to review and reflect on the participant's perspectives on their pedagogy.

### **Data Analysis**

After data was collected from pre and post-interviews, lesson observations, reflective journals, and school documents, the focus of the data analysis consisted of making sense of the field notes vis-à-vis my research question and the theoretical frameworks CRP and LatCrit. All data was analyzed using Creswell's (2007) five tenets, which are data managing, coding, describing, interpreting, and representing the findings. It is an inductive approach that begins with meticulously examining the data. Indeed, data collection and data analysis should occur concurrently (Baxter & Jack, 2008; Merriam, 2009). Because qualitative research is emergent, I kept an open mind and based follow-up questions on clarification of previously asked questions of participants. The data analysis was tied to my subjectivities.

Data management began with an analytic process that produced concise findings from a large quantity of data from different sources. It was usually based on trial and error. To begin

with, managing the data consisted of organizing it into distinct groups or folders for each participant, and then the files were further subdivided into subject matter by similar patterns. Patterns are commonalities found in the data (Wolcott, 1974). I made copies of transcripts and cut up the data into strips, which showed some similarities. I came up with twelve distinct categories. I continually perused the data which was written into summarized statements and looked for identifiable patterns. Once the raw data were organized, it could then be coded and re-coded. Codes are like ‘chunks’ of data that will be grouped and identified into smaller ‘chunks’ of data (Merriam, 2009; Voorhees, 2016). Merriam (2009) summarized coding as follows:

Coding is nothing more than assigning some sort of shorthand designation to various aspects of your data so that you can easily retrieve specific pieces of the data. The designations can be single words, letters, numbers, phrases, colors, or combinations of these (p. 173).

The purpose of coding the data was to make sense of it. I organized all the data into four topics, which consisted of: language, culture, curriculum, and family. I also color-coded the data to get a better visual of the different topics with similarities.

When analyzing data, there are several layers of coding in which patterns that resemble one another will be placed into groups (Leech & Onwuegbuzie, 2007). In other words, basic patterns will be ascertained from the codes. Describing and interpreting the data while reading it should also include adding notations or “comments, observations, and queries in the margins...next to bits of data that strike you as interesting, potentially relevant, or important to your study” (Merriam, 2009, p. 178). Annotating the data with personal insights, ideas, or connections is called ‘open coding’ and can contribute to the formulation of categories that could later be seen as recurring patterns (Merriam, 2009).

Emerging categories from the codes can possibly become subcategories. After the data is perused, coded and categorized, a revisit to the data originally coded “may undergo some revision...and actually continues through the writing up of your findings” (Merriam, 2009, p. 182). Bogdan and Biklen (2007) contend that data analysis can be a difficult and tedious process yet crucial to the ethnographic analysis. The final layer of codes, which will be used for the purpose of finding simplified basic themes, will ultimately represent the findings of the research.

Merriam (2009) points out that a transformation occurs in the data analysis from an inductive mode to a deductive mode. “At the beginning of your study your analysis strategy is totally inductive; you are looking at bits and pieces of data and from them deriving tentative categories” (p. 183) but towards the end of the study “you are looking for more evidence in support of your final set of categories” (p. 183). When there is no new information to code or categorize, the researcher is completely in deductive mode. In summary, finding the best way to explain the interpretation of the data is a process that is complex and tedious yet necessary.

Although like ethnography, in a case study, the data collected could present data sources that “present disparate, incompatible, even apparently contradictory information” (Merriam, 2009, p. 203). To overcome this challenge, the management of the data is very important. The organization of the data for easy access is placed into files called the case record. “Information is edited, redundancies are sorted out, parts are fitted together, and the case record is organized for ready access either chronologically and/or topically” (p. 203). Another problem that can occur in case study data analysis is that “the researcher must ensure that the data are converged in an attempt to understand the overall case, not the various parts of the case, or the contributing factors that influence the case” (Baxter & Jack, 2008, p. 555).

## **Validity and Reliability**

When conducting qualitative research, an important issue when considering data analysis is trustworthiness. “It is also important to consider the extent to which readers can trust the process and ultimately the research findings” (Leavy, 2017, p. 156). Time and energy spent on the research will be wasted if the research and the researcher cannot be trusted when evaluated by peer review. Leavy (2017) points out that the necessary criterion for trustworthiness comes from established assertions that a project “has quality and confidence” (p. 156). Merriam (2009) argues that the criteria for validity and reliability in a qualitative study do not fit the research design because they are not based on the same assumptions and do not fit the paradigm. “Credibility, transferability, dependability, and confirm ability, substitutes for internal validity, external validity, reliability, and objectivity [and] have become widely adopted in qualitative research” (Merriam, 2009, p. 211). To build confidence in qualitative research, four strategies are commonly used to elicit trustworthiness. The four strategies are reflexivity, triangulation, adequate engagement in data collection and other considerations.

### **Reflexivity**

As a science educator with twenty years of classroom experience, I have often reflected on my teaching pedagogy and its effect on students. The reflections I had were deep contemplations of my time in the classroom and how I could improve my pedagogy. In this study, I utilized reflexivity to continuously be in tune with emotions and biases (Leavy, 2017) to keep in check my role in the research. Although reflection and reflexivity seem similar, there is a distinction. Reflexivity is the continuous accounting of reflections, examinations, and explorations by the researcher on herself (Baxter & Jack, 2008). According to Leavy (2017), reflexivity occurs where praxis and values intersect and requires that researchers, during field

notes, include a continuous “gut check” on feelings, issues with ethics, and relationships developed. This was notated as anecdotes written in my journal and on the margins of data collected. The practice of reflexivity is a measure that can be taken by the researcher for the purpose of a continuous accounting of reflections, examinations, and explorations by the researcher (Kolb, 2012). “Personal reflexivity involves the researchers reflecting upon their beliefs, values, experiences, interests, political commitments, wider aims in life, and social identities [that] shape the research” (Borg, Karlsson, Kim & McCormack, 2012, p. 6).

Every ethnographer has a background that formed her way of thinking. Whether her past includes upbringing, religion, culture, race, age, traditions, society, or sex. Everyone is different. That makes every person a complex being, each different from one another. Even when groups of people are brought up in the same culture, religion, time, have the same race, age, or sex, no people are alike because of their interpretations of different experiences. “Human understanding is not mere representation—linguistic, mathematical, visual, or auditory; understanding is the exercise of proficiency” (Bekermann, 2006, p. 5). Ethnographer’s lenses, when one is cognizant of this, are better able to interpret the data collected and construct meaning. This is important during research because it is necessary to understand the power the researcher possesses and its impact on how the research develops.

Reflexivity allows for a juxtaposition of actions observed and interpreted for the sake of seeking comprehensibility about participants. Every situation and occurrence in qualitative research are interpreted subjectively and includes contributions interpreted by the researchers past personal experiences. It is important in doing qualitative research to understand one’s own thinking and personal background. It is like a heightened awareness of not only the observations and participants but also of oneself as the ethnographer.

The methodology used in my research will be participatory in nature. This is probably the best way for a researcher to better understand the participants being interviewed and the situation being studied. The immersion of the ethnographer into the social setting can have the effect of creating an intimacy that could possibly be necessary for the development of trust. “Participatory research requires a great willingness on the part of participants to disclose their personal views of the situation, their own opinions and experiences. In everyday life, such openness is displayed towards good and trusted friends, but hardly in institutional settings or towards strangers” (Bergold & Thomas, 2012, p. 1). Once trust is established, getting information becomes an easier task. It becomes a joint effort that involves both parties learning from one another. “Therefore, some representatives of the participatory research paradigm stress that, besides the mere participation of co-researchers in the inquiry, participatory research involves a joint process of knowledge-production that leads to new insights on the part of both scientists and practitioners” (Bergold, 2012, p. 1). The next segment will describe the setting, data sources, and data analysis. I will describe the reflexivity to be used in the research, the significance, limitations, and gaps in the literature.

### **Triangulation**

Another component that ensures trustworthiness in a qualitative study is triangulation. Triangulation is the term that means more sources of data lead to a better understanding of the phenomenon being studied (Baxter & Jack, 2008; Bogdan & Biklen, 2007). According to Stake (2005), triangulation is the analysis of more than one source of information. “Triangulation has been generally considered a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation” (p. 454). The rationale for using triangulation in reviewing the data collection is that data is more reliable when using more than



one source of information (Leavy, 2017). “It gains credibility by thoroughly triangulating the descriptions and interpretations, not just in a single step but continuously throughout the period of study” (Stake, 2005, p. 443-444).

Triangulation is used in qualitative research for the purpose of looking for any patterns that could link categories, concepts, and themes (Baxter & Jack, 2008; Kolb, 2012; Leavy, 2017). Triangulation ensures trustworthiness and “is a technique used to accurately increase fidelity of interpretation of data” (Kolb, 2012, p. 85). I used four different data collection sources for triangulation, which included pre interview and post-interviews, lesson observations, reflective journals, and school documents, to ensure trustworthiness of this ethnographic case study. Triangulation was applied in the formation of findings by taking data sources and finding a compatible pattern that existed between the pre or post interview data, journal reflection data and lesson observation. The alignment of similar patterns from different sources corroborated the findings.

### **Adequate Engagement in Data Collection**

Along with reflexivity and triangulation, for the qualitative study to be trustworthy, the data collection should be perused thoroughly. The amount of time spent on the data is unclear because it is subjective. “The best rule of thumb is that the data and emerging findings must feel saturated; that is, you begin to see or hear the same things over and over again, and no new information surfaces as you collect more data” (Merriam, 2009, p. 219). In other words, data saturation (Leavy, 2017) occurs when “the point of data collection where the information you get becomes redundant (Bogdan & Biklen, 1998, p. 62). I read and re-read the data a multiple of times to ensure a conceptualization of the data.

## **Other Considerations**

In contrast, generalizability in qualitative research, has more to do with the reader than it has to do with the researcher because it is the reader who will determine whether the study's findings apply to their situation. "Nevertheless, the researcher has an obligation to provide enough detailed description of the study's context to enable readers to compare the 'fit' with their situation" (Merriam, 2009, p. 226). Generalizability is concerned with the extent to which the findings of one study can be applied to other situations (Merriam, 2009). Although, according to Stakes (2005), qualitative research is not generalizable, people have the tendency to experience vicariously through the narrative and somehow draw from the descriptions being read. This is only possible if the researcher offers rich thick descriptions of the setting, participants, and findings (Merriam, 2009). Readers can put themselves in the narrative and imagine similar situations they have experienced. This extension of experience is quasi-generalization in nature and can be better described as transferability. According to Stake (2005), transferability could occur if knowledge acquired from the research is first contextualized and then transferred to a different setting and reflecting on the consequences of applying the knowledge in the new context. This transferability gives case studies validity.

## **Research Significance**

I feel this case study is salient to 21<sup>st</sup> century educational research because although education researchers have explored cultural conflicts that exist between White teachers and students of color, less is known about the science educational environment when a teacher of the same ethnicity teaches students of the same ethnicity. This study will contribute to research by bringing to light the interactions in a science classroom where no cultural conflicts exist between teachers and students from the same cultural background. Through this qualitative ethnographic

case study on Mexican American teachers of Mexican American students, I hope to contribute to current research because there exists a limited amount of information due to minimal focus on Mexican Americans in an education setting.

I would also hope that other educators can build on this research and continue evolving the work of scholars through exploration of the connection between the students' lived experiences and culturally relevant science pedagogy. I feel this research on Mexican American culture and science education is significant because with findings of this qualitative ethnographic case study, I hope to contribute to the epistemology of educators on the diverse cultural and linguistic assets that Mexican American students possess so as to challenge deficit model thinking prevalent in educational institutions where culturally relevant science pedagogy is missing in the classroom.

This study has scholarly significance for practitioners and researchers because through the literature review and my ethnographic reflections of classroom interactions, I hope to directly contribute to emerging research on teacher ideology and encourage other educators in science education to do their own reflections so they too can become aware of their own ideology. Teacher ideology greatly impacts student learning, so it is very important that teacher preparation programs include ideology awareness in their curriculum.

### **Limitations**

Although ethnography is a viable research method used by interpretivist researchers in education, it has been criticized for not being a true science (Benton & Craib, 2011). Critiques of ethnographies are made mostly by positivist researchers who believe that science knowledge could only be attained through experiences and the observation by our senses (Benton & Craib, 2011) and is dismissed as being "insufficiently rigorous, theoretical, and analytical" (Ellis et al.,

2011, para. 37). Critics also believe that ethnographies can be difficult to write since scientific writing utilizes formal writing. According to Voorhees (2016), most students learn to write in the third person as described in the following:

These students could not bring themselves to personalize their own stories largely because of the conditioning and training they had received which taught them from an early age that being an academic writer meant that one was to remain largely removed from what they were writing (p. 90).

It is difficult to learn to write in the first person because higher education focuses on formal writing. That is the way it is learned and that is the way it is practiced. It is almost like having to unlearn how to write ethnography.

Ellis et al. (2011) posits that ethnographers are also criticized for not doing enough field investigations, basing conclusions on too few cultural members, and spending insufficient time on the study. Ethnographers are accused of using biased data written by people who are self-absorbed (Ellis et al., 2011). Similarly, Denzin and Lincoln (2005), critics of qualitative research claim the following:

Any gaze is always filtered through the lenses of language, gender, social class, race, and ethnicity. There are no objective observations, only observations socially situated in the worlds of – and between – the observer and the observed. Subjects, or individuals, are seldom able to give full explanations of their actions or intentions; all they can offer are accounts, or stories, about what they have done and why (p. 21).

It is human nature to stereotype people by their language or looks. It is the norm to stare at people who we feel look different than us and society has perpetuated this behavior. This is probably why it is unexplainable. We are just conditioned to stare.

The understanding of the meaning in actions interpreted for the sake of seeking comprehensibility is what the social scientists strive for. Every situation and occurrence will be interpreted as concretely as possible, but we must realize that every person's reality is the truth. Another limitation in the use of case study research according to Stake (2005), some cases may not be good at representing a larger sample of the population making it questionable for generalization and thus requiring further development or exploration. This ethnographic case study investigates three Mexican American science teachers. A generalization cannot be made due to the limited number of participants, but the lived experiences of participants should not be denigrated because all lived experiences are significant. Instead of generalizability, a more accurate term would be transferability, but it is the readers responsibility to read the descriptions in the case study and apply it to their unique situation.

### **Chapter III Summary**

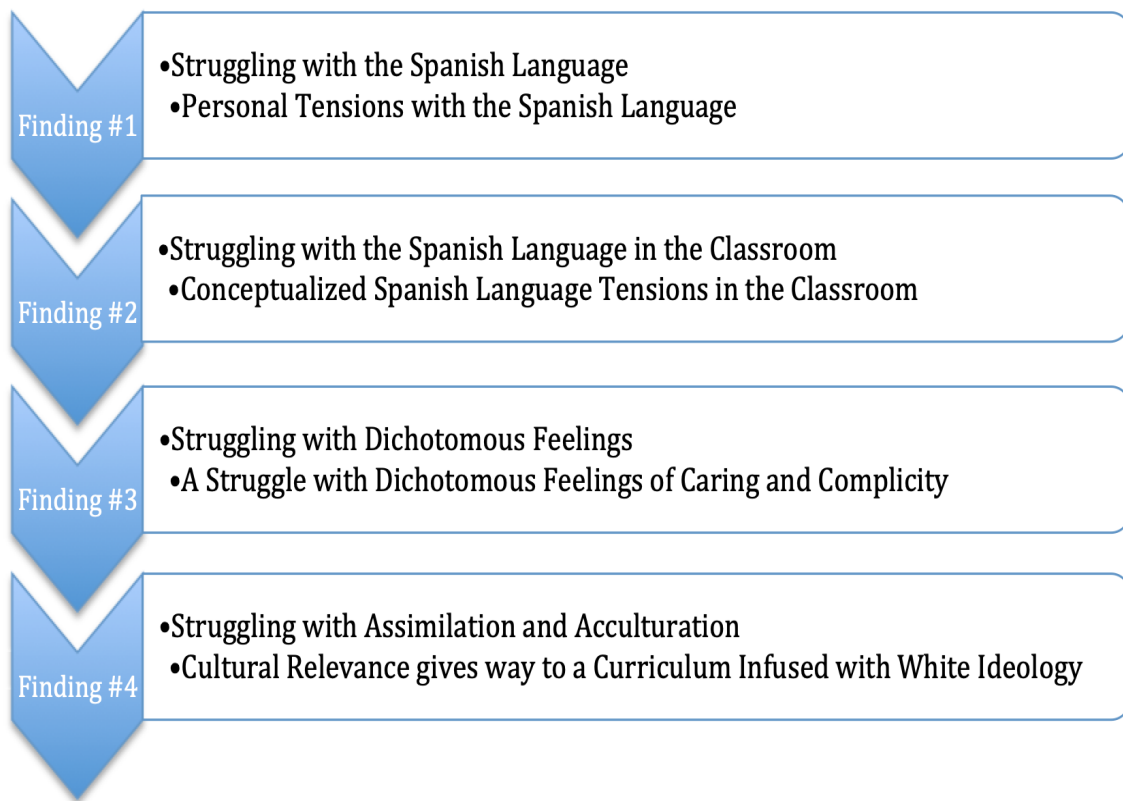
To summarize, a qualitative ethnographic case study was utilized to explore the research question, “How do Mexican American teachers of Mexican American students conceptualize culturally relevant science teaching when their school does not advocate it?” First, I described the rationale for using a qualitative research design. I then was more specific in detailing the rationale for using a combination of ethnography and a case study. Second, I discussed the research setting, the participants and how they were selected, the data sources and the data collection. Next, I elaborated on the data analysis methods that were used. Lastly, I addressed the issues of validity and reliability through the descriptions of reflexivity, triangulation, member

checks, adequate engagement in the data collection, and other considerations for this qualitative ethnographic case study.

## CHAPTER IV

### THE LIFE OF A MEXICAN AMERICAN TEACHER: STRUGGLES AND TENSIONS

In this chapter, the research question, “How do Mexican American teachers of Mexican American students conceptualize culturally relevant science teaching when their school does not advocate it?” was analyzed and used to describe patterns demonstrated across three Mexican American teacher’s classroom interactions with Mexican American students. The four findings that emerged were (a) struggling with the Spanish language: Personal tensions due to the Spanish language; (b) struggling with the Spanish language in the classroom: Spanish language tensions in the classroom; (c) struggling with dichotomous feelings: A struggle with dichotomous feelings of caring and complicity; and (d) struggling with assimilation and acculturation: Cultural relevance gives way to a curriculum infused with White ideology. These struggles were conceptualized through triangulation of pre and post interviews, reflective journals, and school documents. The structure used in the analyzation process of the data was unpacking the emerging findings by first writing about Ms. Aggie and then writing about Ms. Flores, the analysis through the frameworks of CRP and LatCrit, researcher’s reflexivity, and concluded with a summarization.



*Figure 2 Summarized Findings*

### **Finding #1: Personal Tensions due to the Spanish Language**

Mexican American teachers in this study struggled with the Spanish language. The first finding that emerged permitted me insight into Ms. Aggie and Ms. Flores' lived experiences with personal tensions due to the Spanish language. Language is an integral part of life. It is also an integral part of negotiating understanding and communication in the classroom setting. For Spanish English bilinguals, the languages we use tell a lot about us. In this section, I described first Ms. Aggie and then Ms. Flores' comments and experiences struggling with the Spanish language, followed by analysis and interpretations with connections to the literature review and the framework, leading to researchers' reflexivity, and concluding with a summarization of the



finding. The evidence found in the data came through pre interview, post interview and reflection journals.

### **Ms. Aggie's Personal Tensions**

I will first discern an understanding of Ms. Aggie's position, during the Pre Interview about her thoughts on speaking the Spanish language as shown in the transcript below.

Researcher: Do you speak Spanish at home? Is there a time when you speak Spanish?

Ms. A: No; I can understand more than I can speak, so if I catch the students saying things, they should not say, then I tell them hey we don't say that because they were shocked that I understood what they were saying.

(Pre Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie understands Spanish better than she can speak it and surprised students when they realized that she understood what they were saying in Spanish and were in disbelief when they heard her telling them that it was inappropriate to say a certain thing. As a follow-up question, I wanted to understand why she did not speak more Spanish and this was her reply:

I never had a desire to speak Spanish as a child. My mother only spoke to me in English. I did grow up hearing some words spoken in Spanish and I overheard my grandparents speaking in Spanish, that is why I can understand some. I also took two years of Spanish in high school.

(Post Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie chose to speak the English language over the Spanish language as a child. Her mother spoke to her in English. Ms. Aggie picked up some Spanish being around family who spoke in Spanish and then spoke in Spanish when she took Spanish classes in high school. To

get insight into what she thought of the Spanish language today, I asked her the following question:

Researcher: How do you feel about speaking in Spanish now? Do you feel the same as you did when you were growing up?

Ms. A: I want to speak Spanish so badly. I took Spanish in college and became an exchange student in Costa Rica to speak better in Spanish. It did not work. I still can't speak it, but I can understand a lot better.

(Post Interview, Ms. Aggie, June 2020, p. 3)

Ms. Aggie comments that she would like to speak better Spanish. She took college classes and became an exchange student in Costa Rica to become proficient but feels that she has not improved.

Next, I asked Ms. Aggie if she had attended schools in America and what language she spoke at school. She stated, "I've gone to school here in the United States and have only attended grades that were taught in English" (Pre Interview, Ms. Aggie, January 2020, p. 1). "I took two years of Spanish in high school because it was required but in all my years in school, I never spoke Spanish" (Post Interview, Ms. Aggie, January 2020, p. 1).

Besides existing personal tensions about speaking Spanish, there were also tensions between students that Ms. Aggie had to contend with. In her reflective journal entry, Ms. Aggie wrote about an altercation her students had with other students:

Today, after picking up the students from P. E. Alondra (pseudonym) was very upset. I noticed she was walking with her hands crossed so I asked what was wrong. She said, "Ms. Aggie, they are calling us 'Spanish speakers.'" I asked, "Who?" "Some 5<sup>th</sup> graders from the other class that speak English", she said. I

tried to comfort her by telling her there was nothing wrong with being called a Spanish Speaker and in fact, she was smarter than they were because she knew everything in two languages. Deep down, I know that these comments are meant to hurt them. To make them feel bad and it's working. (Reflective Journal, Ms. Aggie, January 2020, p. 1)

Ms. Aggie's students were being made fun of and Ms. Aggie tried to comfort them. This incident affected Ms. Aggie as evidenced in her written reflections. I wondered how it was resolved and this was her response:

Researcher: What happened with the incident with Alondra?

Ms. A: After talking to Alondra that day, I didn't hear about it again. I was glad that she came and talked to me because I had not been aware that this was happening. Well, I couldn't stop thinking about it so I talked to the principal and he suggested I talk to the coach. The coach wanted the school counselor to be involved so they could both be on the same page. The three of us got together and came up with key points to stress when speaking to the fifth graders. This was presented to the students during PE classes and through weekly meetings held by the counselor. (Post Interview, Ms. Aggie, July 2020, p. 3)

Ms. Aggie did not hear about this incident again from Alondra. She spoke to the principal, the coach, and the counselor about this so they could come up with a way to remedy the situation.

### **Ms. Flores' Personal Tensions**

I will now discern an understanding of Ms. Flores' position about her thoughts on speaking Spanish. Ms. Flores' response was as follows:

Researcher: Do you speak Spanish at home? Is there a time when you speak Spanish?

Ms. F: English, I can speak a little bit of Spanish. I wouldn't say I'm fluent, like I can't speak 10,000 words. I'm not there yet. I sometimes speak Spanish. (Pre Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores does not speak Spanish at home, so she is not fluent in Spanish. She comments about speaking 10,000 words. I did not understand what she meant so to get clarification, I asked her to tell me the meaning of this:

Researcher: What does that mean?

Ms. F: I read an article that said if you know 10,000 words of a language you are considered like proficient in that language. So, I am not proficient in Spanish. (Post Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores realized that English was not her dominant language. Although limited, she can speak Spanish. She read an article about Spanish proficiency requiring 10,000 words and feels she does not meet the criterion so considers herself as not being proficient. I wondered why Ms. Flores did not speak better Spanish so during the post interview I asked her to help me understand why she was not proficient in Spanish. She explained:

I grew up speaking in English because I was one of the youngest ones and me and my older siblings spoke English. My parents also spoke English at home, so it was only when I went to visit my grandmother in Mexico that I heard anyone speaking in Spanish. My Spanish is not very good.

(Post Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores experienced little exposure to the Spanish language due to her living and working in the Northern part of the United States as a child and attending schools that only had English as the language of instruction. She also explained that her parents spoke to her in English at home and seldom heard Spanish except when visiting her grandmother in Mexico. I wondered if she had ever attended classes in school in which they spoke Spanish:

When I was little, like we were migrant workers who traveled north. I went to school in places like South Dakota and Wisconsin. I don't remember ever speaking Spanish at school and since I knew how to speak in English, this was never an issue. (Post Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores was a migrant worker who attended schools in the northern part of the United States and in these places, she did not remember speaking in Spanish.

To get a clear insight into how Ms. Flores felt about speaking Spanish today, I asked her the following question:

Researcher: How do you feel about speaking Spanish now? Do you feel the same as you did growing up?

Ms. F: Well, Spanish is a beautiful language that is like a great asset to possess. Being able to communicate in two languages like the majority of the people in this world are amazing. I am trying to practice more and more to become fluent. (Post Interview, Ms. Flores, June 2020, p. 3)

Like Ms. Aggie, Ms. Flores mentioned some students experienced microaggressions within her reflection journal.

I heard about the incident where Alondra said students were like calling each other Spanish Speakers and I can't believe it. Why can't these kids just

support each other? They are all going through rough experiences and I am just so thankful that the name calling isn't worse like calling each other 'wetback'. I once talked to my students about the derogatory terms used for Mexican Americans because I found out they had never heard of them. I told them, "If anyone ever calls you wetback, beaner, spic or greaser, they are insulting you". Many are so innocent that they are not aware of discrimination. (Reflective Journal, Ms. Flores, January 2020, p. 1)

Ms. Flores heard about the derogatory term used by students at Gold Elementary. She could not understand why students did not support each other. She reflected on a conversation she had with her students about discriminatory words used against Mexican Americans.

### **Analyzing Personal Tensions between Spanish and English**

**The dominant English language.** LatCrit as a framework, allows us to understand the experiences of Mexican Americans through a lens of language (Morita-Mullaney, 2018). This notion is advanced in a study by Winstead and Wang (2017), in which participants claimed they lost their Spanish language in elementary school due to the deficit discourses they experienced.

Ms. Aggie is English dominant, yet she still was able to retain some Spanish. She retained enough Spanish to understand her Mexican American students when they spoke in Spanish. She is quoted as saying, "Hey, we don't say that" (Pre Interview, Ms. Aggie, January 2020, p. 1), when she hears students speaking in Spanish. Smugly commenting, "I can understand more than I can speak" (Pre Interview, Ms. Aggie, January 2020, p. 1). Ms. Aggie was not encouraged to speak in Spanish by her mother suggesting that this further pushed her towards speaking English and yet retaining some Spanish due to listening to family. Ms. Aggie only attended schools that were taught in English, explaining her limited Spanish proficiency.

Migrant workers move around a lot, so it was understandable that Ms. Flores experienced schools in the Northern part of the United States that were mainly English dominant. Consequently, Ms. Flores spoke English more than she spoke Spanish while growing up thereby making it inevitable that she be more proficient in English yet still was able to understand Spanish due to being around family members who spoke Spanish. I did not understand what she meant by “I can’t speak 10,000 words” (Pre Interview, Ms. Flores, January 2020, p. 1) so during the post interview I asked her to explain what she meant by that statement. Her response was that she had read what it would take to be proficient in a foreign language. Ms. Flores’ self-assessment on her own proficiency suggests that she is aware of her limitations on speaking the Spanish language. Likewise, Ms. Aggie and Ms. Flores’ narratives suggest they too lost their language to the dominant language of English. One interpretation of the statements made by Ms. Aggie and Ms. Flores who both grew up speaking in English the majority of the time, could be due to the hegemony of language because “monolingual policies have contributed to language loss” in schools (Winstead & Wang, 2017, p. 17). They grew up thinking that speaking in English was normal.

In Winstead and Wang (2017), a language shaming tactic bilingual teacher learned when they were younger was that speaking Spanish delayed their English language development. When they became teachers, they promoted dominant English language rhetoric. Ms. Aggie and Ms. Flores also promoted dominant English language rhetoric. It is the dominant language of U.S. born Americans exclusively educated in the United States. Our education system consists of an environment with a dominant English monolingual culture (Worthy et al., 2003). The use of LatCrit enables us to examine the dichotomy that exists and is perpetuated. The dichotomy consists of whether to promote and value the Spanish language because of our Mexican

American heritage or to perpetuate the English language as the dominant language because of our colonization. These statements support the finding that Ms. Aggie and Ms. Flores' both experience a rigid dichotomy between favoring English over Spanish due to the hegemony of the language.

**The dominant language incites racist nativism.** A LatCrit lens provides an understanding of the discrimination that affects Mexican American students in the intersection of racism and nativism (Perez Huber, 2010). Ms. Aggie's students were ridiculed because of their ability to speak the Spanish language (Winstead & Wang, 2017). In a study by Ayón (2016) reasons participants experienced discrimination included "children's nativity or immigration status being questioned, threats that immigration officials would be called to take parents away, and derogatory comments about accents or skin tone" (p. 457). The experiences with microaggressions (Solórzano, Ceja, & Yosso, 2000) have been exposed through a LatCrit lens. Being called a 'Spanish Speaker' implies being un-American thus differentiating between a native and non-native, although one can be a Spanish speaker and American. Ayón and Philbin (2017) wrote about the interpersonal discrimination being experienced in the classrooms. Verbal abuse in the form of microinsults within groups resulted in low self-esteem. Students of color learned that to fit into the school culture, they had to speak the English language correctly (Worthy et al., 2003) or face ridicule. This is a common occurrence in schools by Spanish speaking students of color across America (Ayón & Philbin, 2017; Winstead & Wang, 2017; Ayón, 2016; Worthy et al., 2003).

LatCrit allows for the framing of racist nativism as a "racist ideology rooted in notions of white supremacy" because of the power struggles endured in schools between the marginalized students of color even from their own ethnicity (Perez Huber, 2010, p. 79) through perceptions of



differences where none existed. This was the case at Gold Elementary where students experienced within group discrimination (Ayón & Philbin, 2017). Students were 98% Mexican American yet found differences and aimed to marginalize. Through a LatCrit lens, the tensions experienced due to language marginalization in the classroom theorized aspects of their language proficiencies and deficiencies (Arreguin-Anderson, Salinas-Gonzalez, Alanis, 2018). It could be interpreted as insignificant and unimportant but to a Mexican American student, it is a serious matter. Prejudices toward the Spanish language are ubiquitous in educational settings (Ayón & Philbin, 2017).

Ms. Aggie's students were called Spanish Speakers as a derogatory term causing Ms. Aggie to stress over it. Comments in the post interview could suggest that she could not stop thinking about it because she cared about her students and reacted. Being called a Spanish speaker is not derogatory in any way, but what is most salient in situations like these are the feelings of the students who have been marginalized. Their perception was that they were called Spanish speakers as an insult. The intent was to marginalize, and it worked. Errors in pronunciation can lead to being ridiculed which escalate into a more serious school incident. Although Ms. Aggie tried to alleviate the situation by telling Alondra that there was nothing wrong with speaking two languages, it suggests that Alondra picked up on the slanderous attempt and became quite upset. These microaggressions occur even in a school that has a 98% Mexican American student population.

### **Researcher Reflexivity**

The use of reflexivity allowed me to make a connection to Ms. Aggie and Ms. Flores' responses. I could not help but consider my own feelings about speaking in Spanish. I feel more comfortable speaking in English. I have spoken English more than I have ever spoken in

Spanish just like Ms. Aggie and Ms. Flores. When I do speak in Spanish, I sometimes forget how to say a word in Spanish, so I say it in English. Building on Sanchez, Garcia, and Solorza (2017), this is the ability to select features of a linguistic repertoire that I possess. I am so embarrassed when speaking Spanish to someone who is fluent in Spanish, yet I feel proud when I can understand someone who can only speak Spanish. Likewise, Winstead and Wang (2017) describe how students in their study felt pride in their home environment about speaking in Spanish where it was valued, yet felt shame in their school environment about speaking in Spanish where it was not welcomed. It can be interpreted that Ms. Aggie and Ms. Flores feel the same way. If given the choice, they both would rather speak in English but when put in a position where they must speak in Spanish, they willingly do. This is due to their language subtraction, which the three of us experienced, attending a hegemonic White school.

Utilizing reflexivity, my parents understood the influences of society and how they affect people who speak a different language. My parents never questioned me on why I answered their Spanish questions in English. They did not influence my development of the Spanish language either positively or negatively. It was understood that English was supposed to be learned and spoken, likewise, Ms. Aggie and Ms. Flores' parents and family did not encourage them to speak the Spanish language at home. This notion is advanced in Guerrero's (2003) study in which he found that participants, while growing up, struggled with their Spanish development because they consistently replied to any questions spoken in Spanish using the English language.

At this point, reflexivity allows for the exploration of a similar experience in my professional career. The following is a journal response:

I experienced other's laughing at me for saying a word in English and it is coming out of my mouth wrong. It was embarrassing and for many years I feared

speaking in front of White people and others because I never knew when certain words were spoken incorrectly. Probably the word that is commonly spoken incorrectly by Mexican Americans is the word *church*. It comes out sounding like *shursh*. For many years, when I said it incorrectly in front of students, I felt irritated at myself and the students for laughing. “Excuse me, the Mexican in me is coming out”. I found that I felt better after saying this to whoever heard me. I felt that my students would understand by hearing me acknowledge my flaws in a positive accepting manner.

(Reflective Journal, Ms. Luna, March 2020, p. 1)

This journal entry is indicative of the fears experienced by other Mexican Americans due to speaking a language that is not their first language. It could be interpreted that Alondra, the student written about in Ms. Aggie’s reflective journal, was not upset by being called a Spanish Speaker, but because of the implications of being a Spanish Speaker. Being fearful of not sounding American (Ayón & Philbin, 2017) like we think everyone else sounds causes a silencing. This notion is advanced in Chavez’ (2012) autoethnography in which she got in trouble at school because she refused to speak when called on to say the number *fifty* because she was afraid it would come out as *feet-tee*.

I am now more aware of my ability to speak a mixture of both English and Spanish, or what I call speaking Tex-Mex. I can carry on a non-stop conversation in both English and Spanish using sentences that make sense to whomever I am speaking with. This is called translanguaging in the literature but locally we just call it Tex-Mex.

Living day in and day out in a school that perpetuates English only rhetoric causes feelings of insecurity about the Mexican American culture. I grew up in this environment and

that is all I know. It took twelve years of public school to slowly assimilate my identity into the American thoughts and perceptions that would become who I am today. I am a lower-class citizen. Deep down I know I'm not, but that is what I feel sometimes. When I speak to students, I speak to them in English because that is what I know and am used to. Without realizing it, I too am instilling in students that English is better than Spanish. Spanish is only spoken when at home and no others are around. It is common for Mexican Americans to say, "Speak in English so they won't think you're talking about them (meaning White people)." I am dominated by White supremacy. That is how I grew up and that is who I am today.

### **Summary**

In summary, I observed a pattern of struggles experienced with the English and Spanish languages by Ms. Aggie, Ms. Flores, and myself. An analysis of the responses revealed the personal tensions experienced by the participants negotiating the English and Spanish languages. Both Ms. Aggie and Ms. Flores are English dominant. They have spoken English since they were very young. They are considered bilingual although they both admit that they are not fluent and many times struggle to speak fluently in Spanish. This struggle was also seen between students when one group called another group 'Spanish Speakers'. Through a LatCrit lens, the tensions that arose could have been interpreted as hegemonic English language acculturation acquired at school (Worthy et al., 2003). Although Ms. Aggie, Ms. Flores and I inherited a Mexican American descendency which some would assume we speak fluent Spanish, it could be interpreted as each of us having assimilated to the English language used by the dominant culture when we were growing up. The struggle serves as an awakening to the conceptualization of the tensions experienced by Mexican Americans like Ms. Aggie, Ms. Flores and me when faced with issues of speaking exclusively in English.

## **Finding #2: Conceptualized Spanish Language Tensions in the Classroom**

Mexican American teachers in this study struggled with the Spanish language in the classroom. The second finding that emerged allowed me to explore the ways Ms. Aggie and Ms. Flores conceptualized Spanish language tensions in the classroom. Besides the personal tensions experienced due to the preference of speaking in English by both Ms. Aggie and Ms. Flores, in this section, I first explored the way Ms. Aggie and then Ms. Flores conceptualized Spanish language tensions in the classroom and how they negotiated with students speaking Spanish. This was followed by analysis and interpretations with the literature review and the framework, leading to researcher's reflexivity and culminating with a summarization of the finding that emerged. Ms. Aggie and Ms. Flores supported this conceptualization across pre Interview, post interview, lesson observations, and reflection journals.

### **Ms. Aggie's Tension in the Classroom**

During the Pre Interview, Ms. Aggie commented about a time when she overheard her students speaking in Spanish and said, "If I catch the students saying things they shouldn't say (in Spanish), then I tell them, 'hey, we don't say that'" (Pre Interview, Ms. Aggie, January 2020, p. 1). When asked what Ms. Aggie thought about the dominant language that she felt should be spoken at school, she had this to say:

I think they need to practice their English, because the more they practice the better they will be at it, the science test is in English the questions are in English and they must be able to understand what those questions are asking them so they can get as many correct as they can. I do not let students take the science test in Spanish because the Spanish dialect used is different from the dialect they are used to.

(Pre Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie's response indicates that she prefers her students speak in English at school. Her reasoning is that they need to practice the English language so they can better understand the science test questions that will be in English because she will not allow them to take the test in Spanish. To get Ms. Aggie to elaborate, I asked her the following question:

Researcher: How do you feel if you hear your students speaking in Spanish during a science lesson?

Ms. A: I try to remind them that this is an English class, and they need to be practicing their English and I'm really happy that they know Spanish but they really need to practice their English because I know the moment, they leave my class they are outside with their friends or doing whatever; they are going to speak Spanish so I need them to practice English while they can or while they must.

(Pre Interview, Ms. Aggie, January 2020, p. 2)

Ms. Aggie feels that students need to practice English and reminds them about it. She states that she feels happy that they know Spanish but reiterates the importance of practicing in the classroom because she explains that once they leave the classroom, they will go back to speaking in Spanish. In addition, in a post interview she had this to say:

Well, I believe that students should either speak all English or all Spanish. How can they become proficient in English if they are going to fall back on Spanish? It is all about practicing and making mistakes so they can learn through their mistakes. I hate it when they do not even try.

(Post Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie's would rather students not mix the languages and explains that students need to practice their English to become proficient. When asked about her feelings on translanguaging going on in the classroom by her students, she said she would prefer "all English or all Spanish" (Post Interview, Ms. Aggie, January 2020, p. 1).

During the science lesson, I observed Ms. Aggie asking a student the question, "What's a force, what example can be given of a force?" (Lesson Observation, Ms. Aggie, January 2020, pg. 1). The student she called on was a curly haired boy named Juan (pseudonym). He could not answer so Ms. Aggie told him to say it in Spanish and then try to repeat it in English. Juan still did not answer. There was an awkward pause. A dark-skinned girl named Maria whispered the answer, "to pull at something" (Lesson Observation, Ms. Aggie, January 2020, p. 1). Juan repeated what Maria told him. Ms. Aggie continued with the lesson. She did not check to see if Juan did understand the question or if he just did not know how to answer the question in English. This was her response to my question during the post interview:

First let me start by saying that I feel that it is ok for students to use Spanish to learn the science content, but they must be able to say it in English. I know they are struggling with the language, but they will be taking the science STAAR test in English and they must begin practicing as much as possible.

(Post Interview, Ms. Aggie, January 2020, p. 1)

During the post interview, Ms. Aggie commented that she felt students should be able to speak in Spanish during the science lesson if they also were able to say it in English. She understood that students struggled with the language, but they were still required to take the standardized test in English and by practicing, they would be able to get better.

To find out Ms. Aggie's perceptions about her Mexican American students' home knowledge, I asked the question:

Researcher: Do you feel your students bring valuable knowledge from home, culture, and family to school?

Ms. A: Yes, I do, but many times I do not know how to use it in my lesson plans.

(Pre Interview, Ms. Aggie, January 2020, p. 2)

Ms. Aggie acknowledged the value of her students' knowledge of language and home culture learned at home yet responds that she often does not know how to use the information in her pedagogy opting to use school learning at school.

### **Ms. Flores' Tension in the Classroom**

On the other hand, during the pre interview, Ms. Flores commented that when a student spoke to her in Spanish she would respond in English. She said, "If they speak to me in Spanish I answer in English. I feel that English should be spoken in school" (Pre Interview, Ms. Flores, January 2020, p. 2). This made me think about the students in my class. Did they feel comfortable speaking in Spanish? I asked Ms. Flores during the pre interview:

Researcher: Do your students feel comfortable speaking in Spanish in class?

Do they feel that it's ok to speak in Spanish in school?

Ms. F: They speak Spanish whenever they want. If we're having a class discussion I say try saying it in English. If they are in the hall like you know if they are not in an academic setting, yea they talk Spanish. You can hear it as you walk down the hall. Even the admin will talk to them in Spanish. "Hi, how are you?" You can hear they'll go back and forth between English and Spanish. You'll hear them going in and out of Spanish and English, and



Spanglish, and it's like a mix. And you'll hear the local language which is a mix between both languages, kind of like a mixed slang of both languages.

(Pre Interview, Ms. Flores, January 2020, p. 2)

Ms. Flores thought that her students felt comfortable speaking in Spanish both in the classroom and in the school. She commented that they spoke Spanish when answering a question in class and she told them to try saying it in English. She had heard students speaking in Spanish or translanguaging in the halls even with administrators. Similarly, during the post interview when asked how she felt about translanguaging, the use of both languages together, her response was:

I encourage my students to say the word in Spanish if they don't know how to say it in English. My students sound so cute when they are talking to me and like they say the word in Spanish and continue as if nothing weird happened. (Post Interview, Ms. Flores, January 2020, p. 1)

In Ms. Flores' response, she encouraged the use of Spanish for her students to make themselves understood. She also commented that she liked that students did not even notice that they were saying Spanish words mixed in the English sentences. The following was asked during the pre interview:

Researcher: Do you feel that English should be spoken at school the majority of the time?

Ms. F: I would say, like I think their language is beautiful and, in my opinion, the last thing I want to do is isolate someone from their culture and tell them not to speak in Spanish. Spanish is a beautiful language but let's make sure they are practicing in English. So, I am completely fine with them speaking in Spanish

like in like recess or in places where academic vocabulary isn't very heavy. I'm O.K. with them speaking Spanish to each other when they don't understand like sometimes if I can't talk to them, I get someone like can you try and break it down a little bit for them and they'll go back and forth in Spanish until they understand. So, to answer your question, yes but it depends. I try to meet in the middle and although they can speak in Spanish, they still must write it in English and as long as they're trying, I'll work with them and help them sound out words.

(Pre Interview, Ms. Flores, January 2020, p. 2)

Ms. Aggie thought that although she believed that the Spanish language was beautiful and that she would not want to isolate students from their culture, she believes that practicing to speak in English is necessary at school but not necessarily during their personal time like at recess or when they are helping each other understand. She believed that English should be the language that is spoken at school most of the time with exceptions being necessary when they do not understand. Likewise, in a journal entry, Ms. Flores wrote about her thoughts on the language she considered essential:

When I think about the language students should be using in school, I think it's a 'no brainer'. I feel that students if they are in school should be practicing their English because the exams that they take that they're tested on are in English and I need to make sure they know the academic vocabulary and they get the practice by using it in class or when they're with their friends talking to each other. (Reflective Journal, Ms. Flores, March 2020, p. 2)

The journal response identifies with the pre and post-interview responses on her feelings that her Mexican American students should be speaking in English for the purpose of practicing the English language for passing exams written using the science academic language of English.

Regarding Ms. Flores' perceptions about her student's home knowledge, in the pre interview she was noted as saying:

Researcher: Do you feel your students bring valuable knowledge from home, culture, family, or school?

Ms. F: Oh yea, oh yea, they (students) make my homeroom really homey.

They'll say, Ms. F, we could do this, and they always give me ideas on like decorating a room or like on celebrating each other, which is nice.

They'll bring like memories and share it with the class.

(Pre Interview, Ms. Flores, January 2020, p. 3)

Ms. Flores does not discuss how this information is used in her lessons but does acknowledge and value the information as important by engaging with student dialogue.

### **Spanish vs. English in the Classroom**

**The struggle for hegemonic English language assimilation.** Via LatCrit in the framework, there exists a disparity that is common in schools in which teachers like Ms. Aggie, Ms. Flores, and me, not only encourage but also enforce the assimilation of the hegemony of the English language. Issues with the Spanish language include the vicious cycle of the promotion of English as the dominant language and the informal "no Spanish in the classroom" policies promoted by teachers. Bartolomé (2006) argues for the "need to theorize about this phenomenon using a model that recognizes our country's legacy of internal colonization in how it treats students of color, and the significant yet unacknowledged role that racist and assimilationist

ideologies play in supporting this English-only movement” (p. 28). I interpret the narratives from the pre interview as Ms. Aggie having reluctance in letting students speak in Spanish in the classroom. The statement “I think they need to practice their English” (Pre Interview, Ms. Aggie, January 2020, p. 1) indicated that she felt strongly about this since she repeated this statement two more times when she said in the pre interview, “they really need to practice their English” and “so I need them to practice English while they can”(Pre Interview, Ms. Aggie, January 2020, p. 1).

Ms. Aggie’s comments are noteworthy because they show a pattern of consistency. She was adamant about enforcing the English-only rhetoric of students practicing speaking the English language. She gave several justifications such as the view that practice will improve her student’s fluency and that they would get better science test scores. Ms. Aggie’s notion was believing that students should speak either all English or all Spanish. The data suggested that she believed in the approach of a strict separation of languages. Ms. Aggie’s pre and post interviews suggest that her mind was made up about an ‘English only’ attitude and she reiterated her position several times believing the dominant language, English, should be spoken at school.

Conversely, I interpreted Ms. Flores’ pre interview responses as experiencing mixed feelings about how comfortable she felt with students speaking Spanish in class, yet she went back and forth between trying to convince students that English was what should be spoken leading by example when she said “I answer in English” (Pre Interview, Ms. Flores, January 2020, p. 2) and “I say try saying it in English” (Pre Interview, Ms. Flores, January 2020, p. 2) to letting them know she felt it was acceptable when she heard students speaking in Spanish in the hall and she did not correct them. Although rhetoric such as “let’s make sure they are practicing their English” and “they still have to write it in English” (Pre Interview, Ms. Flores, January

2020, p. 2) revealed a struggle with a constant ebb and flow on speaking Spanish and English and could be interpreted as tensions felt between the assimilation into the hegemonic language and her fidelity to the Mexican American heritage. It could also be interpreted that she thought if the administrators at the school spoke to students in Spanish in the hall, it was acceptable for students to speak in Spanish if they were not in an educational setting.

Responses in the pre interview, post interview, and reflective journal suggested Ms. Aggie followed an ‘English-only’ movement which enlisted language marginalization (Winstead & Wang, 2017). On the other hand, although Ms. Flores was more flexible in allowing Spanish, she too repeatedly told students at Gold Elementary to speak English. The rhetoric by Ms. Aggie and Ms. Flores suggested the enforcement of English and could be interpreted as subtractive schooling in which Valenzuela (1997) argued happened when students of color, like Mexican Americans, were subjected to daily negative messages that undermined their culture and language. According to Bartolomé (2006), the colonial legacy of the United States became a hegemonic English-only ideology, which persists today in schools. Ms. Aggie, Ms. Flores and I, learning from the dominant culture, reproduced and encourage the dominant language in the classroom and struggled with hegemonic English language assimilation.

**The struggle with defiance of hegemonic language norms.** An interpretation of Ms. Aggie and Ms. Flores’ reluctance to let students speak in Spanish could possibly be that they did not understand that speaking in both English and Spanish could help Mexican American students. A study by Cole (2019) found that when teachers allowed students to use their home language, the English language was acquired faster in academic content areas. I interpreted this misconception in the following narrative, “I do not let students take the science test in Spanish because the Spanish dialect used is different from the dialect they are used to” (Pre Interview,

Ms. Aggie, January 2020, p. 1). It can be suggested that Ms. Aggie does not want to teach students in Spanish or even use translanguaging with the science content because she did not understand that the Spanish language could help students acquire the academic content. Her attitude of having students speak in either all English or all Spanish is not logical since she knows her personal preference of English will influence her instructional pedagogy. This informal ‘no Spanish in the classroom’ is further evidenced in Ms. Aggie’s pre interview comment, “I try to remind them that this is an English class and they need to be practicing their English” (Pre Interview, Ms. Aggie, January 2020, p. 2). It could be suggested that an emphasis on practicing in English because it was an English class was not accurate. It was a science class in which English could be spoken and if an integration of English and Spanish through similarities in the academic language such as in cognates were utilized, it is possible that teachers would not be limiting the students learning repertoire (Daniel et al., 2017).

The struggle Ms. Flores was negotiating when she responded with a positive narrative about the Spanish language being a beautiful language and then added, “let’s make sure they are practicing in English” (Reflective Journal, Ms. Flores, January 2020, p. 2). This was continually heard in the pre interview narratives by Ms. Flores about why her students had to speak in English even though they may not know how to answer a question in English as Ms. Flores commented, “I have a couple of students that do not know English at all. I try to speak in English just because their college entrance exams, STAAR exams, and all the exams are in English” (Pre Interview, Ms. Flores, January 2020, p. 2). Similarly, a sentiment “it’s a ‘no brainer’” (Reflective Journal, Ms. Flores, March 2020, p. 2) suggested a strong and consistent repetition of the data that she believed English should be the dominant academic language. This

could be interpreted as Ms. Flores not understanding that speaking in Spanish helps students learn faster (Cole, 2019).

**Teachers cannot Stop Students from Speaking in Spanish.** Another interpretation of Ms. Aggie and Ms. Flores wanting students to speak English exclusively, could be due to their admittedly limited fluency in Spanish. This notion is advanced in Daniel et al. (2017) study of translanguaging in which they found that teachers were reluctant to teach in both English and Spanish when “teacher’s report having limited proficiencies in students’ home languages” (p. 1) so consequently used a combination of languages, in order for them to communicate their meaning using the language available to them. This notion is advanced in the Sanchez et al. (2017) article on translanguaging which informs the legitimacy of languages in which the “speakers ‘do’ language with their own repertoire of linguistic features (p. 2).

Although Ms. Aggie and Ms. Flores’ were able to influence students into speaking in English in academic settings, narratives further suggest that they were powerless in stopping their Mexican American students from speaking in Spanish out of the classroom when in casual situations. Cole (2019) contends even in English-only classrooms, the teacher could “restrict the language of instruction but not the language students may use themselves” (p. 246). Ms. Aggie and Ms. Flores’ narratives discussed their students speaking in Spanish when with friends outside “like recess or in places where academic vocabulary isn’t very heavy or in the halls” (Pre Interview, Ms. Flores, January 2020, p. 2). The use of LatCrit enables us to understand that English only assimilation happens with some resistance. The students are displaying their identity that is being stifled by Ms. Aggie and Ms. Flores, yet they may not even be aware of the hegemony they are perpetuating. Becoming aware of the discriminations existent in society and perpetuated in schools begins with the teachers accepting students for who they are and not

trying to change their identity. I contend that although not explicit, Ms. Aggie and Ms. Flores do appreciate and value the Spanish language, and may covertly communicate to students their approval of the importance of speaking the Spanish language but could be interpreted by their dialogue not overtly displaying their admiration of the beauty of the Spanish language and how happy they are that students speak two languages. It can be suggested that this could allow for students to have a voice to acknowledge their agency and become more willing to engage in speaking English. Agency is the power of reflection to learn and change for the better (Freire & Valdez, 2017). In the pre interview, post interview, lesson observation, and reflection journal, Ms. Aggie and Ms. Flores consistently required students to speak in English and only use Spanish sparingly thereby subjecting their Mexican American students to a subtraction of their language through a process of systematic assimilation and acculturation thus creating tensions. This struggle was perpetuated in the classroom by Mexican American teachers who were already assimilated to the hegemony of an educational system rooted in White supremacy.

**Colonization power of accepted White standards.** When interpreting data through a LatCrit lens, informal ‘no Spanish in the classroom’ narratives promote a prejudice of the Spanish language that leads to the idea of the English language hegemony. Students learn very quickly that the Spanish language is a language that is not appreciated and utilized in academic study in school. According to Bartolomé (2006) when languages other than English are forbidden in schools, white supremacist ideologies and the remnants of colonialism create a subordinated and domesticated state of being experienced by students of color. This was suggested when Ms. Aggie stated, “this is English class and they need to be practicing their English” (Pre Interview, January 2020, p. 2), she could not resist what she knew as the White standard. A LatCrit lens allows us to recognize when our language and culture do not comply



with the expectations of speaking English in the dominant culture. This is what Bartolomé (2006) called an assimilation of our heritage to “lose our language and culture to become imperfect facsimiles and, ultimately, unacceptable copies of white Americans” (p. 26). Building from Anzaldua, Bartolomé (2006) argued that colonization is so embedded in our psyches that we have just accepted it internally. Speaking like a White person is the accomplishment of assimilation.

Ms. Flores’ statement “they make fun of me because it (Spanish) sounds so White” (Pre Interview, Ms. Flores, January 2020, p.1), could be interpreted as a put down or conversely more of a compliment. It could also be interpreted as students reversing the hegemony of Ms. Flores affirming their perceptions of the value of their own language. There is strength in numbers so possibly Ms. Flores was outnumbered by her own students and infringing on their space. When united as a group, the marginalized can join and persevere over the established hegemony of the school. In their space, they rule. Ms. Flores and her students had a good relationship, but their relationship was still dominated by authority and subservience. A LatCrit lens exposes the awareness of the reproduction of colonization. It is suggested that Ms. Flores would like to attempt to recapture her lost language when she remarks, “When I hear my students speaking in Spanish, I wish I could join them” (Reflective Journal, Ms. Flores, March 2020, p. 2). It is possible that Ms. Flores realizes that she lost an asset when she lost her language.

It could be suggested from Pre Interview responses that Ms. Flores could not stop students from speaking in Spanish. One interpretation suggests that Ms. Flores has given up trying to insist that they speak in English because she feels she cannot stop students from speaking in Spanish in the halls. Conversely, another interpretation is that Ms. Flores really does not mind students speaking in Spanish. The response “try saying it in English” (Pre Interview,

Ms. Flores, January 2020, p. 2) could suggest that it is permissible to speak in Spanish if they try to say it in English.

**Students' knowledge from home.** Documented in the literature, Mexican American students and other students of color, learn from informal places like the home, outside of the classroom, and the community (Gonzalez, 1995; Kinney, 2015; Moll, Amanti, Neff & Gonzalez, 1992), yet many times, the knowledge teachers have about their students is only stereotypes. “There are many teachers that do not know about their students or families that could be immediately helpful in the classroom” (Moll et al., 1992, p. 132). Ms. Aggie said she knew students brought knowledge from home, “but many times I don’t know how to use it in my lesson plans” (Pre Interview, Ms. Aggie, January 2020, p. 2). This statement is significant because it suggests that Ms. Aggie struggles with how to use the knowledge she gathers from students to incorporate into her pedagogy. One way to resist teaching about CRP is to claim incompetence without trying to learn ways to integrate it (Gay, 2013). Ms. Aggie is unsure of how to use the information (Freire & Valdez, 2017). Ms. Aggie struggles with incorporating the student’s home knowledge in pedagogy. Connections are not being made between the family life of Mexican American students and the curriculum.

Another interpretation of this statement by Ms. Aggie is that, due to the hegemonic nature of systemic racism and the belief that home knowledge is better kept at home, she ostensibly values home knowledge but cannot or will not apply that knowledge in science lessons. Ms. Aggie claims that she values the home knowledge and acknowledges the importance of it yet does not put enough value in it to utilize in lesson instruction.

Letting Mexican American students share their memories is indicative of Ms. Flores showing an interest in the students’ lives. The statement “They bring memories and share it with

the class” (Pre Interview, Ms. Flores, January 2020, p. 3) could be interpreted as Ms. Flores using this during a lesson or it could be that students share this knowledge between lessons. Ms. Flores used the information she learned about students in lessons and acknowledged the value it held.

Responses made by Ms. Aggie and Ms. Flores when asked if they felt students brought valuable knowledge from home, culture, and family to school, indicated they had positive attitudes about their students' culture. While Ms. Aggie struggled with implementing knowledge about students in lessons. Informed by LatCrit, experiential knowledge allows Mexican American students to use what they learn out of school in the learning process. This experiential knowledge is a catalyst in CRP that precipitates unique understanding. The first step is acknowledging that Mexican American students bring home knowledge to school. Ms. Aggie and Ms. Flores both acknowledged that they understand that students bring valuable knowledge from home, culture, and family to school yet the Mexican American culture can be interpreted as having caused Ms. Aggie and Ms. Flores tension about how to use the students' knowledge brought from home into the science lessons. The second step is to be able to connect it to school knowledge and ultimately to science content knowledge.

### **Researcher Reflexivity**

“Until I can take pride in my language, I cannot take pride in myself” (Anzaldua, 1987, p. 59). This quote by Anzaldua has a profound meaning that took a long time for me to understand. A reflexive introspection based on my professional experiences allude to a time when I required all my students to speak in English. Why did I do this? I have realized my mistake in requiring students to speak exclusively in English. It took many years, but I finally learned that speaking

in Spanish and English helps students, such as Mexican Americans, that speak Spanish, learn the English language faster.

Besides this, I always answer students in English when they speak to me in Spanish. In fact, I can remember having whole conversations with students who speak to me in Spanish and I respond in English. I speak in English without even thinking about it. They know what I am saying but in retrospect, I feel this and yet, this is wrong. As recent as May 2020, I talked to a student in English and he spoke to me in Spanish. I was even aware that it was happening, and I did not stop. In fact, I thought to myself, “Why are you answering in English?” I just kept on. I do not have any excuse as to why I spoke in English. I am sure the student did not mind our conversation because we both understood each other. Ms. Aggie and Ms. Flores, as noted in the data collected, replicated this action. They reply to students in English. I have heard other teachers talking to students in English while the student talks to them in Spanish, so I feel this is a ubiquitous occurrence at our school. I reflected the possibility that I was resisting the Spanish language because my beliefs were so strongly rooted in a hegemonic White monolingual ideology and considered English the dominant language.

The use of reflexivity allowed me to make a connection to Ms. Aggie and Ms. Flores. I concur with both participants although they each have different reasons for wanting their students to be fluent in English. Both reasons were valid. To begin with, Ms. Aggie’s reason for wanting students to speak fluent English can be interpreted that she feels the urgency to teach students English for passing standardized tests. The very same standardized tests that have flaws. These flaws are the same flaws of an education system that promotes whiteness and a dominant language over the language of Mexican American emerging English learners and other students of color. Reliance on standardized tests have exponentially engulfed our racialized education

system. We have the racist American scientific community of the 1920's (Blanton, 2000) to thank for the prevailing sentiment that disparity exists in favor of students whose first language is the hegemonic English of the dominant in power.

I faced the same struggles that Ms. Aggie went through. I wanted my students to speak fluently in English. Standardized tests were designed with White people in mind as established by the patriarchy in power (Schubert, 1993). It continues to be promoted in the curriculum with whiteness being the beneficiary. The whiteness in the curriculum is so well established that teachers like Ms. Aggie, Ms. Flores and I cannot help but assimilate to the hegemony that is very well rooted in our education system. I sometimes feel like a robot that has been programmed to believe that standardized tests are just a draconian idea that flourished into a norm in society.

Ms. Aggie and I both felt the stress put on teachers who feel their jobs are on the line if they are not successful in getting their students to pass the standardized tests required for advancement to the next grade level. The No Child Left Behind Act of 2001 made teachers responsible for the academic success of all their students. This has made the teaching profession very stressful because it does not consider that my Mexican American students are not starting on a level playing field compared to White students. It becomes a 'no win' situation because if students pass the science standardized test, they have assimilated to the White curriculum. A curriculum laced with dominant epistemological racial biases and ideals of Western tradition in science education (Schubert, 1993) influenced by affluent White men and hegemonic White western civilization (Scheurich & Young, 1997). If they do not pass the science standardized test, they have lived up to the stereotype threat in which they were expected to fail because of deficits in learning, yet little is said about the denigration of epistemologies of other cultures and races which tends to negatively affect Mexican American and other students of color.

Likewise, Ms. Flores' reason for wanting her students to speak fluent English was for their success after they finished school. There is a stigma surrounding anyone who does not speak English correctly. The English language hegemony ubiquitous in our school systems makes it very difficult to survive as a confident student and the hidden messages teachers send to students is that English is the dominant language that everyone who is American should strive to perfect. They are looked down upon and considered uneducated and it is accompanied by a certain disdain for anyone with an accent. I have heard that companies will not hire someone who does not speak good English. I have never experienced that so I am not sure, but I would imagine that this is true. I feel an obligation to protect my Mexican American students from this if I can. This also happens because of the hegemony associated with the English language.

Ms. Flores and I both feel the importance of our students' prospects, suggested in this statement, "it opens up more opportunities for them in the future." Language proficiency is so important in the job market. Based on my professional experience as a supervisor of a large company, I realized there existed a stereotype that was believed by employers who had biased feelings about people who were not fluent in English. It can be noted from responses that teachers had added stress put on by them when they had established connections with their students.

## **Summary**

In summary, this section tells of the conceptualization of Spanish language tensions in the classroom and the negotiations with students speaking Spanish in the science classrooms by Ms. Aggie and Ms. Flores. Although Ms. Aggie and Ms. Flores were both explicit in their views about letting students speak in Spanish when necessary, they implicitly did not want students speaking in Spanish. This 'no Spanish' policy was corroborated by the triangulation of the data.

Their justification was that requiring students to speak the dominant English language would help with fluency and for standardized test preparation. This was a direct enforcement of the assimilation of the hegemony of the English language and the struggle with complying and defying the dominant culture in the science classroom. Ms. Aggie and Ms. Flores were consumed in tensions that mounted in the pressures of the standardized test environment. The White supremacist ideologies embedded in educational institutions perpetuate the colonial internalization by Ms. Aggie and Ms. Flores when they perpetuate the language hegemony. The analyzation of the dialogue provided by Ms. Aggie and Ms. Flores can be interpreted as indicating that a struggle on how to connect the science pedagogy to the culture of Mexican Americans is always on the minds of both Ms. Aggie and Ms. Flores even though at times their wants are not fulfilled because of the struggle they endure.

### **Finding #3: A Struggle with Dichotomous Feelings of Caring and Complicity**

Mexican American teachers in this study struggled with dichotomous feelings. The third finding that emerged was the experience of a struggle by Ms. Aggie and Ms. Flores with dichotomous feelings of caring and complicity. I considered Ms. Aggie and Ms. Flores to be reputable for possessing characteristics such as being knowledgeable, passionate, and caring teachers. I wondered if Ms. Aggie and Ms. Flores wanted their students speaking only in English because of their good intentions as caring educators or because of complicity to the hegemony of the dominant culture's whiteness. In this section, I explored the data and first found ways Ms. Aggie and then Ms. Flores' dialogue supported their struggle with dichotomous feelings of caring and complicity through connections to the literature review and the framework, then through researcher reflexivity, and concluding with a summarization of the finding. This was accomplished across pre and post interviews, lesson observations and reflective journals.

## **Ms. Aggie's Struggle**

I observed that speaking in Spanish during the class observation was causing tension for Ms. Aggie. I wanted to understand the reasons for this tension caused by students speaking Spanish during the lesson. The following is what I observed:

During the lesson on force and motion, I would describe Ms. Aggie as a competent caring individual who takes her job seriously. She seemed enthusiastic about the knowledge she was presenting during the lesson. After giving students instructions on note taking, she walked around the room to make sure students were actively writing in their journals. She stopped at several students' desks to ask questions and stopped to ask one student, "That's great but can you say that in English?" If I were a student, by her actions, I would perceive that Ms. Aggie cared about me and what I was learning. (Lesson Observation, Ms. Aggie, January 2020, p. 2)

In my lesson observation I saw that Ms. Aggie was attentive to her students. She walked around the classroom near students and projected a calm and caring attitude. She was checking to make sure students were following instructions and checking for understanding. She asked a student to repeat what they had just told her in English. The notes on the margins of my written lesson observation reminded me to ask Ms. Aggie about what she said to the student. She commented the following, "I know they are struggling with the language but they will be taking the science STAAR test in English and they must begin practicing as much as possible" (Post Interview, Ms. Aggie, January 2020, p. 1).

These comments aligned with responses from the Pre Interview given by Ms. Aggie for why it was important for students to speak English:



I think they need to practice their English, because the more they practice the better they will be at it, the science test is in English the questions are in English and they must be able to understand what those questions are asking them so they can get as many correct as they can. I do not let students take the Science test in Spanish because the Spanish dialect used is different from the dialect they are used to. (Pre Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie's response suggests that she is concerned about the questions on the science-standardized test. She reasons that if students can read and understand the questions, they will do better on it.

When I asked Ms. Aggie in the Pre Interview how she felt if she heard students speaking in Spanish during a science lesson, she responded:

I try to remind them that this is an English class, and they need to be practicing their English and I'm really happy that they know Spanish but they really need to practice their English because I know the moment, they leave my class they are outside with their friends or doing whatever; they're going to speak Spanish so I need them to practice English while they can or while they must. (Pre Interview, Ms. Aggie, January 2020, p. 2)

Ms. Aggie's response to the interview question reaffirms her conviction that students in her class are required to speak the English language even though she feels being able to speak in Spanish makes her happy. She claims that as soon as they leave the classroom, her students will revert to speaking in Spanish. Ms. Aggie had this to say in her reflective journal:

I've been reflecting a lot about students speaking in Spanish. It is the language that they feel comfortable with, yet I wonder if I'm sending out the

wrong messages about my feelings of the Spanish language. Every time I speak to someone in Spanish, they reply in English.

(Reflection Journal, Ms. Aggie, March 2020, p. 2)

Ms. Aggie writes in her reflective journal about the possibility that students do not feel they can speak in Spanish because when she tries to get them to speak in Spanish, they reply in English.

Ms. Aggie feels that she gives students the perception that they should not be speaking in Spanish. I asked her opinion on mixing the languages also known as translanguaging:

Researcher: How do you feel about students mixing the languages?

Ms. A: Well, I believe that students should either speak all English or all Spanish. How can they become proficient in English if they are going to fall back on Spanish? It's all about practicing and making mistakes so they can learn through their mistakes. I hate it when they don't even try.

(Post Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie makes it very clear that she does not believe in mixing the English and Spanish languages because she feels they are able to become proficient in English if they practice and learn from the mistakes that they make.

### **Ms. Flores' Struggle**

During Ms. Flores' class observation, I observed that Ms. Flores interacted in both languages with students while stressing the English language causing tension. To understand this tension the following was observed:

During the lesson on force and motion, Ms. Flores charged up the room with enthusiastic energy. She demonstrated the meaning of the vocabulary words on the PowerPoint with excitement. She asked a student the question "What would

you say a force is like?” Since there was no response, she asked again in Spanish, “¿Como que dirias que una fuerza es?” The student answered using both English and Spanish mixed together. (Lesson Observation, Ms. Flores, January 2020, p. 2)

Ms. Flores was observed delivering the lesson with passion using a soccer ball to demonstrate the vocabulary word definitions. She asked a student a question in English and then in Spanish. The student answered using translanguaging, a combination of English and Spanish languages. As a follow up question, I asked Ms. Flores about translanguaging during the post interview:

Researcher: How do you feel about translanguaging?

Ms. F: I encourage my students to say the word in Spanish if they don’t know how to say it in English. My students sound so cute when they are talking to me and like they say the word in Spanish and continue as if nothing weird happened. (Post Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores supports students when they are unsure how to answer in English. She even gives a positive opinion about translanguaging when she comments, “my students sound so cute”. (Post Interview, Ms. Flores, January 2020, p. 1) Contrary to responses made during the post interview, during the pre-interview Ms. Flores had this to say when asked what language she felt should be the dominant language spoken at school during science instruction:

I would say English. It should make sense that they are mastering the English language only because it opens more opportunities for them in the future. Yea which is kind of messed up because I think we’re a terrible country at languages because we only focus on one. Whereas like in Finland, they speak and learn many languages in school. (Pre Interview, Ms. Flores, January 2020, p. 2)

Ms. Flores is adamant about the importance of students speaking in English during science instruction and gives justification about their future opportunities. She continues by commenting on the injustice in America whereas in other countries such as Finland, bilingualism is encouraged. To get a better understanding of this tension, Ms. Flores writes in her reflection journal the following:

When I hear my students speaking in Spanish, I wish I could join them. I do try and they make fun of me because it sounds so White, like where did you learn to speak because you need to like take a refresher course of something. These kids are so funny. They accept me with all my weaknesses. They understand that it's not my fault that I grew up in an area that didn't speak Spanish correctly. I would much rather listen to them talking instead of me joining in on their conversations. They are rough around the edges, but they are special. I really enjoy their company.

(Reflective Journal, Ms. Flores, March 2020, p. 2)

This reflective journal response reveals a yearning by Ms. Flores to be able to speak the Spanish language like her students. The students make fun of Ms. Flores when she tries to speak Spanish and tells her she sounds White and that she needs to learn to speak better. They accept her even though she is not as fluent in Spanish. Ms. Flores enjoys listening to them speak to each other and being around them.

### **The Struggle of Dichotomous Feelings**

LatCrit exposes institutional discrimination and how it is experienced in the classroom (Ayón & Philbin, 2017). Institutional discrimination occurs in schools when teachers do not value or minimize the students home language or when 'no Spanish' policies are enforced. In

this section, I discuss Ms. Aggie and Ms. Flores' experiences and struggles with dichotomous feelings of caring and complicity. Next, using a LatCrit lens, I analyzed Ms. Aggie and Ms. Flores' experiences. Aspects of the struggles being genuine in their care and concern for their students because they both had good intentions while demonstrating a hegemony of language prevalent in the science lesson showing a complicity with the dominant culture.

**Good intentions.** During the science lesson, Ms. Aggie showed genuine interest in students as noted in this comment, "Ms. Aggie stopped at several students' desks to ask questions" (Lesson Observation, Ms. Aggie, January 2020, p. 1). Concern was also observed in Ms. Aggie's comment, "the more they practice the better they will be at it" (Pre Interview, Ms. Aggie, January 2020, p. 1). Both observations could be interpreted as her wanting her students to be successful because she loves and cares about them and only wants the best for them. According to Bartolomé (2008), being a loving and caring teacher to students is enough for them to be academically successful. Ms. Flores also demonstrated a loving and caring attitude in the following comment about the belief that the English language "opens up more opportunities for them in the future" (Pre Interview, Ms. Flores, January 2020, p. 2). Ms. Flores' responses could be interpreted as being concerned about her student's future success in society by being proficient in the English language.

The insistence on students speaking English by Ms. Aggie and Ms. Flores could be interpreted as a teacher being concerned for the future well-being of her students or as knowing that being proficient in English will lead to success in American education and society. Ms. Aggie and Ms. Flores' comments suggest both have good intentions as caring professionals that consider their students wellbeing as paramount. Through a LatCrit lens, this caring attitude could be viewed as the manifestation of interpersonal discrimination (Ayon & Philbin, 2017).

Ms. Aggie and Ms. Flores may unintentionally be negatively affecting their students by restricting their use of all available language practices for the purpose of making meaning.

**Complicity with whiteness.** Ms. Aggie reasons that if students can read and understand the questions in English, they will do better on the science-standardized test. Ms. Aggie's comment "they will be taking the science STAAR test in English and they must begin practicing as much as possible" (Post Interview, Ms. Aggie, January 2020, p. 1), could be interpreted as Ms. Aggie felt the hegemony of prioritizing the dominant language to help her students with passing the science-standardized test and becoming an enforcer of the White curriculum. The stress Ms. Aggie is experiencing comes through in her responses. It is suggested that she experiences an internal struggle by acknowledging that she is happy students speak the Spanish language as seen in her comment "I'm really happy that they know Spanish" (Pre Interview, Ms. Aggie, January 2020, p. 2), yet promoting English as being the most salient language in school thereby being complicit in assimilating students to whiteness.

Ms. Flores comments that English is the dominant language that should be spoken in school with the goal of mastering it is evident in this quote, "I would definitely say English" (Pre Interview, Ms. Flores, January 2020, p. 2) and also in the following, "It should make sense that they are mastering the English language" (Pre Interview, Ms. Flores, January 2020, p. 2). LatCrit allows the framing of institutional racism as the hegemonic influence of complicity to whiteness, manifested in a disregard for the value of language in the classroom. Drawing on the work of Bartolomé (2006), the English-only movement is the phenomenon of assimilationist ideology that is a remnant in our country's legacy of internal colonization.

Ms. Aggie and Ms. Flores' dialogue can be interpreted as both suggesting a struggling assimilationist belief in the dominant language. They are not alone in the complicity as "most

educators believe that students from subordinated groups-both foreign- and U.S.-born minorities- must assimilate into the dominant culture and be schooled solely in English” (Bartolomé, 2010, p. 509).

**Translanguaging.** Ms. Aggie does not believe in translanguaging while Ms. Flores continues to struggle with the dichotomy on whether to insist students speak the dominant language or allow students to use Spanish to supplement the English learning. This was evident when she comments that she allows Spanish when needed. “I encourage my students to say the word in Spanish” (Post Interview, Ms. Flores, January 2020, p. 1). Translanguaging is common for Mexican American and other students of color to use when a word is forgotten in one language and can easily be substituted in a sentence using a second language. According to Cole (2019), research shows the use of the home language outperforms those limited to English-only approaches. If Ms. Flores allows translanguaging in the science classroom, it could be suggested that this allowance of Spanish speaking is forged with resistance (Garcia, 2019).

Within the same response, Ms. Flores realizes the inequity of her belief by saying “yea, which is kind of messed up” (Pre Interview, Ms. Flores, January 2020, p. 2) after saying that English should be the dominant language. The struggle experienced by Ms. Aggie and Ms. Flores exists due to the knowledge that English is the language of power (Garcia, 2019), yet Spanish is the heritage of their Mexican American students (Ayón, 2016), with the dominant language winning out. The continual push for the dominant language through a LatCrit lens exposes the complicity that veils over good intentions.

**Challenges to Eurocentric ideology.** Hegemony in the classroom is revealed by Ms. Aggie’s concern when she states, “Every time I speak to someone in Spanish, they reply in English” (Reflection Journal, Ms. Aggie, March 2020, p. 2). It can be interpreted as students

feeling overpowered by the whiteness rhetoric heard by Ms. Aggie. This reflection suggests that Ms. Aggie feels she sends the wrong message to students because they perceived her as an English speaker. It can be interpreted that she struggles internally with her feelings about speaking in Spanish when she commented, “I want to speak Spanish so bad” (Post Interview, Ms. Aggie, June 2020, p. 3). The relationship with her students is different from that of Ms. Flores’. She also reflects on a concern about an experience of gentle bantering when her students hear her speak in Spanish. She demonstrates an appreciation for the Spanish language in this reflection, “I wish I could join them” (Reflective Journal, Ms. Flores, March 2020, p. 2) admitting that she feels a desire to be proficient in Spanish like her students. A dichotomy between feelings of remorse for losing their Spanish language (Worthy et al., 2003) and feelings of internalized whiteness in which English is the superior language. Ms. Aggie and Ms. Flores do not feel comfortable speaking in Spanish because it is not their dominant language, yet they feel the repercussions of having had their Spanish language subtracted from their language repertoire.

Ms. Flores’ statement “they make fun of me because it sounds so White” (Reflective Journal, Ms. Flores, March 2020, p. 2) suggests that here Mexican American students show contempt for anyone who speaks like a *gringo* (White person). Mexican Americans and other people of color are in a unique situation because light skinned Mexican Americans allow for the possibility of passing as White. I contend that being told that she sounds White, is more of a compliment to Ms. Flores than a put down, yet the students may be telling her the truth though jest. A LatCrit lens allows us to get subtle glimpses of an empowered youth when they become aware that they possess a language that is valuable. Ms. Flores experiences the minoritized world her students live through when told to speak the dominant language.



## **Researcher Reflexivity**

The combination of teaching experiences and reflexive dialogue with colleagues has made me realize that the teaching profession used to be more respected. Nowadays it seems to be just test and data driven. The standardized curriculum, pedagogy, and tests consume a teacher's thoughts and actions. Pedagogy that includes the students' culture is seen few and far between. Pressures to comply with the district curriculum are not only scrutinized but also controlled. Everything we do as science teachers has one end in mind and that is for students to pass the science-standardized test. So, if a teacher stresses English only, it would not be surprising if it was due to complicity with whiteness that is used as a control power.

Ms. Aggie worries about the science STAAR test. I understand her worries because I am stressed out about it also. Ms. Flores also worries about her students passing. I support the notion that Ms. Aggie and Ms. Flores both care for their students. We all want them to pass the science test because in Texas, success is measured by the ability of students to pass standardized tests and teachers are accountable for that happening. If a teacher has a low number of students passing standardized tests, it could be considered as an indication that the teacher is not a very good teacher. I do not agree with teachers being held accountable for standardized test results. I do feel that there are teachers who should not be teaching but their performance in the classroom should be the administrator's responsibility.

To prove my point, I conducted an experiment on myself. A few years back, I was the science teacher at a school which was composed of 96% Mexican Americans; about 50% affluent students and the other 50% who were low socioeconomic status students. For several years, my students were at the top of the district charts. One year my students were at 99% passing. This was an amazing accomplishment. How did I do this? Honestly, it was pure divine

intervention. That year many students who were not projected to pass the science test moved out of the district. In my defense, my students were in the 90's for many years. I was very respected as a science teacher. I thought to myself, is it that I am good at teaching science or is it that the students I teach are in a better position to learn? To find out, I moved to a school that had only 40% passing on the science STAAR test. This was going to be a challenge and I questioned my decision to leave an affluent school district to work at one that had a bad reputation and was on the brink of being closed by TEA. To make a long story short, it was not comparable to the position I held previously but I did prove to myself that it was not that I was a good science teacher, it was that my students were positioned in a situation which had many variables working against them. Many students had a poor home life, had emotional challenges, and many were not on grade level due to the language disparity.

Ms. Aggie and Ms. Flores both care about their students and want what is best for them. We are working in a school with limited resources and one that promotes standardization. Micromanagement is prevalent due to threats of having the school closed because of accountability. Turnover is high because the pressure is high. We are also part of an education system that stresses creativity and critical thinking yet standardized testing. Cultural and school connectivity is not promoted in the curriculum because the curriculum is rooted in whiteness. Teachers feel the tension in school meetings and have no choice but to comply with teaching test taking skills and the dominant language.

Besides the pressures of a standardized test, I also experienced regret in not being more proficient in Spanish like Ms. Flores. Ms. Flores' response, "I wish I could join them" (Reflective Journal, Ms. Flores, March 2020, p. 2) when she hears her students speaking in Spanish, can also be attributed to feelings I have about this. I can even remember the first time I

truly felt remorse about missing out on speaking proficient Spanish. I was living in Madrid, Spain and I met a girl who looked white and spoke perfect English. She told me she attended the University of Seville, Spain. I was so impressed. She then began to speak in perfect Spanish, and I was in awe. She was biliterate in both English and Spanish and she did not have an accent in either language. Up to this point, I did not know anyone who could speak so well in both languages. I asked her how she was able to speak both languages so well. She told me that her father was American, and her mother was Spaniard and she had lived in both countries. I felt despair because I knew I could never learn to speak fluently in Spanish. I had an appreciation for people who could speak several languages because it is a real accomplishment and should be valued.

### **Summary**

In summary, the statements analyzed in this section corroborate the patterns seen and experienced by Ms. Aggie and Ms. Flores. Through a LatCrit and CRP framework, it could be suggested that educators struggle to teach the English language with fluency for the purpose of improving the prospects of their future and comes from the heart. The Spanish language is salient for making up our Mexican American identity and this should never be denigrated. Ms. Aggie and Ms. Flores only want the best for their students and may not be aware of the denigration of the Spanish language. Bartolomé (2010) advocates for authentic *carino* (care), which can only happen when teachers integrate students' home language and values their culture in the academic curriculum. When teachers lack the awareness of their own beliefs, they “unknowingly perpetuate deficit-based views of poor and non-White students” (Bartolome, 2010, p. 510) and “unknowingly reproduce the existing assimilationist social order” (p. 510). In other words, “the aim is for these students to succeed within the expectations of the school

without having to subordinate their own cultures and languages” (Bartolome, 2010, p. 512).

Statements by Ms. Aggie and Ms. Flores supports the finding that a struggle with dichotomous feelings could exist. It could be suggested that good intentions as caring educators along with a hegemony of complicity when teaching becomes permeated with goals just getting students to pass standardized tests resulting in perpetuating the complicity to hegemony of the dominant culture’s whiteness. It could be suggested that Ms. Aggie and Ms. Flores do have good intentions and because of being assimilated are also complicit with the hegemony of the schools whitened curriculum.

#### **Finding #4: Cultural Relevance Gives way to a Curriculum Infused with White Ideology**

Mexican American teachers in this study struggled with assimilation. In the fourth finding that emerged, I found that cultural relevance gives way to a curriculum infused with white ideology. Students come to school with the knowledge learned from the family, community, religion, traditions, and culture but is seldom utilized in teacher’s pedagogy (Gonzalez, 1995; Kinney, 2015; Moll et al., 1992). In this section, I observed patterns of a struggle experienced by Ms. Aggie and Ms. Flores in which cultural relevance gave way to a curriculum infused with White ideology. I began this section with an explanation of the science district TEKS, a description of first Ms. Aggie and then Ms. Flores’ views on how best to instruct using cultural relevance in a science lesson. This was followed by analysis, interpretations and connections to the framework and the literature review. I continued with researchers' reflexivity and concluded with a summarization. This was accomplished through pre and post interviews, lesson observations, reflective journals, and school documents.

## **The Force and Motion Lesson Description**

The science lesson observed was on Force and Motion. The school documents I reviewed were the district lesson plans. The Lesson Plan included the Reporting Category Strand: Matter and Energy with force and motion as supporting Texas Essential Knowledge and Skills (TEKS) 5.6D with the student expectation: Design an experiment that tests the effects of force on an object and TEKS 3.6B Demonstrate and observe how position and motion can be changed by pushing and pulling objects to show work being done such as swings, balls, pulley, and wagons (School Documents, January 2020, p. 1). The original plan was for teachers to utilize four days to complete this section but due to a scheduling of a Science benchmark, it was cut down to two days per the principal during the weekly grade level meeting.

## **Ms. Aggie's Lesson Observation**

During the lesson observation, Ms. Aggie began with a PowerPoint presentation. The following are lesson observation notes I wrote:

The students are seated in cooperative groups of four. There are five groups in total. Ms. Aggie is standing at the side of the PowerPoint. She began her lesson with an introduction of the objective and homework assignment that was written on the whiteboard. *Objective: A force can cause a change in motion.*

*Homework: Answer the questions in the video handout.* All students wrote the objective and homework in their planners. Ms. Aggie began with the questions, "What is a force?" and "What is an example of a force?" she walked around freely throughout the classroom never once sitting at her desk. She showed students a picture of some soccer players kicking a soccer ball to show an example of force during the PowerPoint presentation.

(Lesson Observation, Ms. Aggie, January 2020, p. 1)

Ms. Aggie begins her lesson by asking a question about force. She shows students a picture of some soccer players kicking a soccer ball. During the pre interview, I asked Ms. Aggie the following question:

Researcher: Do you ever hear students talking about their culture or traditions at school?

Ms. A: I overheard two students talking about their soccer traditions. One student said his family all gathered at their grandmother's house to watch when their favorite Mexican soccer team was playing. It was a big party, and all the family would gather to celebrate the winning team. The other student said he really didn't like soccer, but his father did, so he watched it with his brothers and sisters who all liked it because his father was such a big fan.

(Pre Interview, Ms. Aggie, January 2020, p. 2)

Ms. Aggie used soccer in her lesson on Force and motion. She overheard two students talking about soccer traditions in their families. Both students said it was a family affair where they all got together to watch the soccer games. When I asked Ms. Aggie if she included discussions on the Mexican American culture in her lesson plans, Ms. Aggie commented, "If it comes up in the class discussion, I will elaborate but if not, I probably won't have time" (Post Interview, Ms. Aggie, January 2020, p. 2).

To get a better understanding of how Ms. Aggie felt about other science content on the district curriculum, I asked her the following:

Researcher: Can you describe your thoughts on the district curriculum?

Ms. A: It's a mile wide and an inch deep. There are just so many times that I wish I could have more time so that I can teach it better. This unit on Force is a great example. In my opinion this should be a one-week unit, yet the district has it scheduled for 4 days and even that was cut short due to benchmark testing. First, we are told how important teaching Science is, and then we are told to just get it done. As a teacher, I feel that this is unacceptable yet as an employee of the district, it is what it is. (Post Interview, Ms. Aggie, January 2020, p. 2)

Ms. Aggie elaborated more on the district curriculum. She first discusses her wish for more time to teach, then gets specific with the lesson on Force and Motion being cut down from being taught in five days, to four days to two days (School Document, January 2020, p. 1) due to the STAAR testing benchmark. I asked about preparing for the science lesson. This was her response:

There just isn't enough time to teach everything I want to teach. I am often overwhelmed that I rush through lessons and when I plan to discuss the Mexican American culture with my students, I find that I've run out of time. (Post Interview, Ms. Aggie, January 2020, p. 1)

Ms. Aggie's response is that time is a factor when teaching and she runs out of time and does not get to discuss a cultural connection to the lesson. She also felt that time was an issue when she stated, "There is little time left for class projects and creativity" (Reflective Journal, Ms. Aggie, March 2020, p. 2).

Although many incidents occurred during the lesson, one that was significant occurred during a video about roller coasters. Lesson observation notes are as follows:

Students watched a video showing kids at an amusement park. They are

shown getting onto a roller coaster. The video is teaching about kinetic and potential energy. Some students are writing notes on their homework assignment handout. A student asked Ms. Aggie, “Why are all the kids in the video White?” Ms. Aggie did not respond to the question but did say, “Please focus on the lesson.” (Lesson Observation, Ms. Aggie, January 2020, p. 2)

During the lesson observation, a student made a comment about all the kids being White in the video they watched. The student was correct. All the kids in the video were White. Ms. Aggie did not acknowledge the students' question and instead told the student to pay attention to the video.

I was very interested in finding out why Ms. Aggie did not answer the students' question. I made notes on the margins to ask Ms. Aggie during the post interview.

She responded in the following way:

Researcher: During the video, a student asked a question. Do you remember what the student said? I do not remember you answering it. Could you answer it now?

Ms. A: The question about why all the kids were White? I have a rule that I don't answer any questions during a video. When the video finished, I had planned on answering but then I forgot. My answer would have been because the video was filmed in Idaho and that state has a majority White population. I don't really like talking about race during class because I don't have time for long discussions. I'm just about science instruction.

(Post Interview, Ms. Aggie, January 2020, p. 2)



Ms. Aggie's response to the question, "Why are all the kids White?" was that she did not answer any students' question during the videos but planned on answering it when the video was over but simply forgot. Her explanation was that the video showing the children riding the roller coaster was filmed in Idaho which is a state with a large White population. She also said that she did not like talking about race during class because of time constraints and that she just focused on science instruction.

### **Ms. Flores' Lesson Observation**

During the lesson observation, Ms. Flores began the lesson by kicking a soccer ball around before she began the PowerPoint presentation. The following are lesson observation notes I wrote:

The students are seated in desks forming two U-shapes, one U-shape inside the other. Ms. Aggie is standing at a podium on the left side of the PowerPoint. She began her lesson by throwing a soccer ball around to some students and kicked it a few times. The students were excited to see the teacher kicking a soccer ball around. The class was buzzing with activity as students talked to each other about what they saw. She stopped and said, "While you are writing the objective and homework assignment for the day, I want you to think about why I kicked a soccer ball in class." The objective and homework assignment written on the whiteboard were as follows: *Objective: A force causes a change in motion.* *Homework: Video Questions.* All students wrote the objective and homework in their planners. She began with the question, "What would you say a force is like?" (Lesson Observation, Ms. Flores, January 2020, p. 1)

Ms. Flores hooked the students' interest by using a soccer ball in her lesson instruction. The students were observed as being engaged and excited. The PowerPoint showed four pictures of Mexican soccer teams or dark-skinned soccer players. During the pre interview I asked Ms. Flores the following questions, "Do your students ever talk about soccer?". She responded, "In Texas, they all talk about soccer teams. They go crazy over it. Many are in soccer leagues and play after school" (Pre Interview, Ms. Flores, January 2020, p. 4). I asked her a follow-up questions during the post interview:

Researcher: What was your reason for using a soccer ball to demonstrate force and motion?

Ms. F: You know, at the beginning of the year I took a survey to find out the students' favorite sport which was soccer...I thought of using a soccer ball because my students are really into soccer and they always talk about soccer and they wear soccer jerseys on free dress days.

(Post Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores used a soccer ball because she had students complete a survey to find out about their sports preference.

Ms. Flores connected the soccer demonstration and pictures of soccer players to the science lesson. When asked if she had ever connected a science lesson to the Mexican American culture she said, "I really don't bring culture into science much I guess" (Pre Interview, Ms. Flores, January 2020, p. 3).

To get a feel for what Ms. Flores thought about the curriculum, I asked her the following question, "Can you describe the district curriculum as you see it?" She responded, "The

curriculum is alright. Like I'm really used to it so I don't have any complaints about it. The content in the time-line is the best it can be considering the number of topics we have to cover"

(Pre Interview, Ms. Flores, January 2020, p. 4). To get more clarity, I asked her:

Researcher: What are your thoughts of the district curriculum

Ms. F: Well, it's like they (administrators) feel it's super important at the beginning of the year, and then it's not that important after December and that's not right. We are told to help the Reading and Math teachers with STAAR test taking skills. I feel like it's so important so like students will be prepared for high school. It's like a stepping-stone for things to come, I mean, they are being taught a foundation and without a good foundation, they will not succeed. It's like Science is not given as much emphasis as the other subjects and that it's taught as a last resort. (Post Interview, Ms. Flores, January 2020, p. 1)

Ms. Flores questions the importance of science by administrators because she claims they felt it was more important at the beginning of the year than in December. She also felt that science was important for her students to prepare for high school but was not given the emphasis compared to other subjects.

Although there were no inquiring comments during the video like in Ms. Aggie's lesson observation, during the post interview, I told Ms. Flores about what a student said about the video on the roller coaster:

Researcher: One of Ms. Aggie's students asked why all the kids in the roller coaster were White. Did you hear about that? What do you think about it?

Ms. F: I didn't even notice, like I think I personally would have explained that the media is not really fair when representing all races.

Researcher: Do you ever talk to your students about race?

Ms. F: Oh yes, like, sometimes we get into these discussions about life and reality. They are very interested to hear my stories and my experiences.

(Post Interview, Ms. Flores, June 2020, p. 3).

Unlike Ms. Aggie, Ms. Flores did not speak about time constraints during the pre interview, so I asked her during the post interview the following question:

Researcher: Do you have enough time to get all lessons taught?

Ms. F: I do not think I have enough time, ever, like there is just too much content to cover and in the middle of a lesson, if I get to a teachable moment that I want to elaborate on, I do but I feel a nagging yearn to continue with the lesson, but I think it's so important to go with the students discussions over what I have to teach and I am willing to take my chances on not completing the lesson.

(Post Interview, Ms. Flores, January 2020, p. 2)

Ms. Flores felt that she did not have enough time to cover all the lessons but felt it was important that if a student asked a question, she would answer it even at the cost of not completing the lesson although she felt the stress of needing to go on with the lesson. She continued reflecting on time constraints and wrote about it in her reflective journal:

If I had one wish as a teacher, I would wish for more time. That is the one thing that I am always short on. Like if I have the perfect lesson that I've worked on and like a student asks a super question, I feel frustrated because I am for sure going to stop whatever to discuss it with the student but I feel an urge to go on -

go on, just none stop. (Reflection Journal, Ms. Flores, March 2020, p. 1)

Ms. Flores feels that if she had one wish, it would be to have more time because she is always short on time. She describes a scenario of having developed the perfect lesson and a student asks a question and she knows it is possible that she will have to either rush to finish the lesson or not finish it at all.

### **The Curriculum Infused with Whiteness Overshadows Cultural Relevance**

**Soccer and the Mexican American culture.** Culturally relevant pedagogy has been shown to successfully help students make connections between the home and school using their prior knowledge (Borrero et al., 2018; Mason, 2017; Sleeter, 2012). Through a lens of CRP, Ms. Aggie and Ms. Flores utilized the sport of *futbol* (soccer) to build a bridge between what the students were familiar with and a lesson on Force and Motion (Vazquez Dominguez, Alleksaht-Snider & Buxton, 2018). The use of sports to engage students is a strategy that is appealing because it takes the students interest and passion into account to combine with the science content thereby connecting the culture to instruction. Mexican American culture is strongly rooted to the sport of soccer. In a study by Vazquez Dominguez, Alleksaht-Snider, & Buxton (2018) they found that soccer could be used as a cultural tool to integrate with science instruction for supporting Latino students. Ms. Aggie and Ms. Flores both utilized pictures and videos of soccer players to include as part of their lesson on Force and Motion to make it relevant to their students' lives. Both Ms. Aggie and Ms. Flores tried to connect a part of their students' culture to the science content authentically (Borrero et al., 2018). Ms. Aggie commented, “One student said his family all gathered at their grandmother's house to watch when their favorite Mexican soccer team was playing” (Pre Interview, Ms. Aggie, January 2020, p. 2).

Likewise, Ms. Flores brought in a soccer ball and demonstrated some kicks to hook students. She said, “You know, at the beginning of the year I took a survey to find out the students favorite sport. It was soccer” (Post Interview, Ms. Flores, January 2020, p. 1). It can be suggested that Ms. Flores incorporated the students Mexican American culture into her lessons or at the very least was aware of the connection to science that could be made available yet does not feel confident when she claims, “I really don’t bring culture into science much I guess” (Pre Interview, Ms. Flores, January 2020, p. 3). This could be interpreted as Ms. Flores has assimilated to a White ideology that dominates her inclination to bring in Mexican American culture to lessons in science. It could also be interpreted as Ms. Flores struggled with the whiteness in the curriculum that is promoted by the school district.

**Race shows up unexpectedly in the science lesson.** During the lesson observation, a student asked, “Why are all the kids on the video White?” (Lesson Observation, Ms. Aggie, January 2020, p. 2). It could be interpreted as a failed attempt at a lesson with CRP overshadowed by Whiteness. It could be suggested that Ms. Aggie did not even notice the video with only White kids because she did not comment on it. Ms. Flores commented, “I didn't even notice” (Post Interview, Ms. Flores, June 2020, p. 3). In all honesty, I did not notice that the kids in the video were all White when I reviewed the video. This could be interpreted as Ms. Aggie; Ms. Flores and I are all assimilated into the White culture. Although this comment may not have been significant for Ms. Aggie, Ms. Flores, and me, it was significant enough to be noticed and commented on by Ms. Aggie’s student.

**Speaking about race is an uncomfortable topic.** Ms. Aggie did not respond to the students' questions. This was her justification, “I don’t really like talking about race during class because I don’t have time for long discussions” (Post Interview, Ms. Aggie, January 2020, p. 2).

Through a CRP lens, this justification for not wanting to speak about race due to time constraints is a challenge that is well documented (Melnick & Meister, 2008; Sleeter, 2012). This could be interpreted as Ms. Aggie not understanding the importance of flexibility in teaching (Borrero et al., 2018). Following the lead of a student's question can be turned into authentic learning opportunities which can be considered much more valuable due to the benefits of engagement in the learning by all students. The answer Ms. Aggie could have given the student was, “the video was filmed in Idaho which is a state with a high White population” (Post Interview, Ms. Aggie, January 2020, p. 2) but she did not respond to the question which could be interpreted as Ms. Aggie’s major concern was completing the lesson and not going into a long drawn out discussion about race. Conversely, Ms. Flores’ comment was, “like I think I personally would have explained that the media is not really fair when representing all races” (Post Interview, Ms. Flores, June 2020, p. 3).

**Time constraints are a challenge to CRP.** Both Ms. Aggie and Ms. Flores had concerns about time constraints during the lesson. Ms. Aggie had this to say, “There is little time left for class projects and creativity” (Reflective Journal, Ms. Aggie, March 2020, p. 2). Ms. Flores had this to say, “if I get to a teachable moment that I want to elaborate on, I do but I feel a nagging yearn to continue with the lesson” (Post Interview, Ms. Flores, January 2020, p. 2). In a study by Freire and Valdez (2017), dual language teacher’s main problem when “implementing CRP was the time factor, although in different forms (p. 60) such as during teaching, using technology, or implementing projects. Ms. Flores wrote in her reflection journal that time was something she was always short on. “If I had one wish as a teacher, I would wish for more time” (Reflection Journal, Ms. Flores, March 2020, p. 1). Ms. Aggie and Ms. Flores’s concerns about time are mainly about finishing the lesson. Lesson completion as a priority is on the minds of

teachers because of pressures from the school district to complete content timelines (Jordan, 2005). Concerns over the hegemony of the curriculum, by means of standardized tests, are a major usurper of time for teachers serving low socioeconomic populations overshadowed by the hegemonic educational systems in place. The whiteness of the curriculum overshadows attempts at CRP resulting in the assimilation to the white ideology.

**Science gets overlooked in the hierarchy of education.** Ms. Aggie and Ms. Flores contend that science instruction is often looked over when contemplating the time spent on each subject. I concur with Ms. Aggie and Ms. Flores as it is my professional experience that science instruction by lower grades is often put on the back burner due to third grade teachers and others under so much pressure to help students pass the Reading and Math STAAR test which is first administered in third grade. Science and Social Studies are forgotten about after December so that teachers can concentrate on test preparation for standardized tests in Reading and Math. The patriarchy in power has designated a hierarchy of subject importance. Subjects like science inquiry are often denigrated over subjects like Reading and Math. Both Ms. Aggie and Ms. Flores felt the hegemony in the curriculum and the helplessness of having any control over it. “As a teacher, I feel that this is unacceptable yet as an employee of the district, it is what it is” (Post Interview, Ms. Aggie, January 2020, p. 2). Ms. Flores also felt the same as evidenced in this comment, “It’s like Science is not given as much emphasis as the other subjects and that it’s taught as a last resort” (Post Interview, Ms. Flores, January 2020, p. 1). In conforming to the hegemony, they are assimilating to a white ideology of the importance and power of the whiteness of the standardized tests.



## **Researcher Reflexivity**

Reflexivity allows me to compare myself and my instruction to Ms. Aggie and Ms. Flores'. Although I am a very educated teacher who has spent years perfecting my pedagogy, I feel I am being shaped into a mold of a programmed robot. I see this in Ms. Aggie and Ms. Flores also. Everything I have learned about the best practices in teaching science in order for marginalized students to learn the curriculum is slowly being erased. With every year that passes, I am becoming a standardized teacher. What I mean by this is that I am now teaching content facts exactly like every other science teacher. I say that we are struggling with assimilation and acculturation, but I contend that we do not even realize that it is happening. The hegemony is so ingrained in our being that as President Trump says, "It is what it is". CRP is the most logical way to teach yet even after so many years of Ladson-Billings' research and the research of many other scholars, it is nowhere closer to being included in teacher's pedagogy. The curriculum, established by white patriarchy, is the norm. The White ideology is the norm. Even as educated as I am in the best practices in the classroom for science instruction, my thinking always goes back to teaching so that students pass the standardized science test. Ms. Aggie and Ms. Flores were observed in actions and words, their main objective and motivation being the success of their students based on passing that one test.

The days of taking my students outside to observe erosion in the schoolyard are gone. I now settle for showing erosion videos and pictures of vocabulary words because I feel that the science-standardized test is a vocabulary test. I once counted all the vocabulary words students would need to learn for science in one year. It was 435 science words. Besides academic vocabulary, I must expose my students to as many English words as possible for them to be familiar with them in case they are used on the test. This mindset has hegemonic influence. The

norm is for teachers to prioritize the passing of standardized tests by all students, no matter if they have the background knowledge of a different culture. Many of my students shut down as soon as they read sentences with words they are unfamiliar with. I feel guilty for using up so much time during the force and motion lesson to talk about Mexican American astronauts because I face the struggle of the dichotomy: train students to pass a standardized test or encourage the love of learning by inspiring them through role models of the same ethnicity. Something else that must be considered when planning or preparing lessons is the in school/out of school experiences that students encounter daily. The science content when associated with the experiences of the students is better internalized. Teachers who take advantage of these existing learning opportunities will realize a greater success rate when testing students. I also feel guilty about feeling guilty because I know what needs to be done but sometimes I do not. I know that teaching my Mexican American students through culturally relevant pedagogy is the best way to teach them, yet in the back of my mind, I wonder if I'm hurting their chances of passing the science test and my future career as a successful science teacher.

The district pressures teachers into adhering to the district-mandated curriculum and time-line by including the micromanagement of teachers. The constraining effect of mandatory practices in teaching literacy often exposes the dichotomy that exists in schools. The push for adherence to rigid district time-lines and a quality science lesson plan by the administration to ambivalence about the importance of teaching science curriculum compared to Math and Reading.

The difference in perspectives was evident in how teachers decide what is more important, finishing a lesson on time or creating an environment where student's curiosity is acknowledged and valued. Scholars of CRP will argue that school knowledge should be more

than just about learning facts to pass a state mandated test, it should be for the purpose of helping students understand the world around them while giving them the courage to see the social order as it really exists. Teaching about cultural competence and critical consciousness are integral parts of school curriculum. These important components of education affect the ability for students to become critical thinkers in a world that requires an informed citizenship.

### **Summary**

In summary, this section pertained to the observation of the science lesson on Force and Motion. I continued with the analysis of the struggle to make cultural connections by Ms. Aggie and Ms. Flores. The cultural connection was made using a soccer ball which was authentic because soccer is an integral part of the Mexican culture. Ms. Aggie and Ms. Flores showed students a PowerPoint to review essential vocabulary words. Ms. Aggie and Ms. Flores showed students pictures and a video of the soccer ball being kicked while Ms. Flores also demonstrated the vocabulary words using a soccer ball. The struggle observed was implied in responses by both participants in which their confidence was not positive. Both teachers had heard their students talking about soccer, so they were familiar with the students' interest in soccer. A question came up about the video students watched. Why are all kids in the video White? All the teachers missed noticing this while the student caught it. The student's question was not answered.

The lesson using the soccer ball was as close to culture as Ms. Aggie and Ms. Flores could get. CRP is difficult to use in the science classroom. The standards are better formulated to the whiteness of the dominant group. This was evident to a student who noticed that all the kids in the roller coaster video were White. Ironically, none of the Mexican American teachers caught this. Social justice for the marginalized cannot be achieved if the majority controls the

curriculum which is a better fit for the White middle class students. They can identify with the kids on the roller coaster. The Mexican American students were not able to identify with the curriculum because of a disconnect from home to school. Ms. Aggie and Ms. Flores both understood this when they each attempted to connect with the students through soccer. It could be suggested that the complexity of connecting the content to the culture is the reason why CRP sounds good in theory, but it has not been successful. Whiteness prevails in an environment where the curriculum is advanced and advocated by the influence of the hegemonic structures in place that promote standardization in education. White supremacist ideologies embedded in educational institutions are not formulated for making cultural connections to students of color, they are strictly for the purpose of getting a majority of students to pass a standardized test, one that is made specifically for the White majority in society. Although, the finding that cultural relevance gives way to a curriculum infused with White ideology may be specific to my case study, it could be suggested that other students of color experience the same shallowness in the curriculum that does not allow for a true connection to their culture thereby having to assimilate to the only White ideology available that is being used by the teacher. All the while, the teacher is also struggling with the whiteness of the curriculum that is promoted in school districts.

## CHAPTER V

### DISCUSSION, LIMITATIONS, AND CONCLUSION

#### **Recapitulation**

This study was conducted through a qualitative ethnographic case study research design. I felt that a qualitative study was the best option for my research because I wanted to give a full and rich description of the insights, I gathered from the observations of Mexican American teachers in a science classroom culture. Ethnography provided an avenue to analyze the personal experiences of Mexican American teachers in order to understand their cultural experiences (Ellis et al., 2011) and I used a case study because I specifically wanted to conceptualize Ms. Aggie and Ms. Flores' perspectives on teaching Mexican American students. The research question guiding this qualitative ethnographic case study was: "How do Mexican American teachers of Mexican American students conceptualize culturally relevant science teaching when their school does not advocate it?" The question was addressed by the gathering of data from four sources: pre and post interviews, lesson observations, reflective journals, and school documents. The data was perused and analyzed according to the theoretical framework and research question. Culturally relevant pedagogy and LatCrit were the theoretical frameworks of this study. Drawing from pre and post interviews, reflective journals and school documents, four findings emerged. The findings were that the participants experienced 1) personal tensions with the Spanish language, 2) conceptualized Spanish language tensions in the classroom, 3) a struggle with dichotomous feelings of caring and complicity, and experienced 4) cultural relevance giving way to a curriculum infused with White ideology.

Learning environments in our educational institutions have marginalized students of color in our country since education began. The problem stems from a disproportionate number of White teachers and an increasingly large number of students of color. Much research has been done on problems between White teachers and students of color due to cultural conflicts yet there has been less research on teachers and students with the same cultural background. It is assumed that when teachers and students are of similar cultural backgrounds, teachers are better able to understand and connect pedagogy to their home experiences and make science lessons culturally relevant.

My positionality had relevance to this study because I was able, through reflexivity, comprehend the internal struggles experienced by Ms. Aggie and Ms. Flores because I am also Mexican American. I can understand the experiences they are going through because I also teach Mexican American students. I have assimilated to the ways of whiteness in America along with the ways of the Mexican American culture growing up in the United States as a Mexican American. In other words, I have an intersecting identity of two languages and two cultures. My insecurities about having to speak English correctly overpowered my Spanish speaking ability. I internalized the dominant rhetoric learned in school while I assimilated and acculturated into mainstream White society. For many years, I was guilty of telling Mexican American students to only speak in English. I was taught that in America, we only speak English while at school. I learned at a young age that English was for academics and Spanish was for use in informal settings. I continued to promulgate this belief as a teacher even though I had no malicious intent. I posit that there are many more teachers in America in the same situation as I.

In this chapter, I discussed the findings within the context of the literature review followed by limitations and then a conclusion that included implications for practice.

## **A Country Pushing for Uniformity through Standardization**

We have become a nation of standardization and accountability in which the White patriarchy in power has reorganized education. A marginalization of anyone not White has been woven into the fabric of our nation in which racism is ubiquitous. There exists hegemony of White epistemology in our schools causing a disparity among students of color. The movement to assimilate and acculturate all people living in the United States to whiteness could be seen in the form of the hegemony of the English dominant language and a subtraction of all non-white cultures. The patriarchy in power who developed, supported, and perpetuated standardized tests contend that student success could possibly be efficiently measured through test results. The hegemonic belief is that these tests help identify students' strengths and weaknesses. Likewise, another major point is that standardized tests help students prepare for college entrance exams and could guide teachers on the development of improved educational materials, and pedagogy. The problem stems from students not being able to connect with the science content and the white curriculum resulting in influencing a disparity because of bias in favor of the White middle class students. The disparity between the testing scores of White students and other non-White students is further widened. If students did not do well on the standardized tests, it could be blamed on teachers or entire school districts for not helping students become successful in their education disregarding any problems with the test.

Critics of standardized tests claim that tests are culturally biased because they are developed with the norm being White middle-class children. The students of color are affected negatively if they are unable to meet the passing criteria established by the patriarchy in power. These tests are also said to be illegitimate because one day of testing does not measure a student's knowledge or the educational quality of their teachers. Students possess abilities,

strengths and intelligences that cannot be measured by one test. Another major concern is the quality of the test questions and how well they are written. Students not from the dominant culture may not be able to make a connection due to their cultural experiences being different from their White peers. If students are not able to make these cultural connections to the test questions, they will not be able to answer them correctly ultimately causing them to fail and risk being labeled throughout their school careers. This has the effect of a stigmatization leading to educational and social inequalities and possibly stereotype threat. Stereotype threat is living up to negative expectations of students of color doing not as good as their White peers. When students fail a standardized test, it is possible that they may internalize thinking they will never be able to pass a standardized test again.

### **Western Hegemonic Discourse on Curriculum**

Conceptualizing curriculum as it underwent transformations throughout history (Bybee & Pruitt, 2017) allowed for an interrogation of the way Mexican American teachers experience the curriculum. Curriculum has transformed from its humble beginnings by evolving to what we have today. Schooling has not changed dramatically in recent history. The same curriculum that affluent white men (Schubert, 1993) put into place is still intact. Who decides what will be taught in science? Why is teaching about the life cycle of insects or the composition of the sun important? The selection of specific content is disclosed to educators through the curriculum derived from Western science. Curriculum comes from theory and then put into practice in the classroom by teacher's pedagogy (Breunig, 2005). "What intellectual information and experiences students have access to, what they are denied access to, and what distortions of information they encounter can serve as powerful funders of our racial ideology" (Ladson-Billings, 2018, p. 97). Hegemony of information that either elevates achievement or silences the



accomplishments of others is a common occurrence in the curriculum available to American students.

Curriculum theory informs practice in science. The practice in science manifests through experimentation or hands-on activities. Students make connections to what they are familiar with when they work on experiments or conduct hands-on activities. Thus, in this case study, familiarity was the Mexican American culture, history, traditions, religion, and language. An important element of science is students experiencing the phenomenon and then reflecting on it through culturally relevant pedagogy. Drawing from Freire (1970), educational praxis includes both action, experimentation, and hands on activities to accomplish the education process. In this case study, the action being studied was force and motion on a soccer ball and reflection being the connection to their Mexican American soccer culture.

Hegemony exists in our educational system because although the teacher decides what mode of instruction she will employ, she also is required to follow the prescribed curriculum and through micromanagement, the teacher is continually checked. This is the same curriculum that was handed down from affluent white men. The curriculum is believed to serve the dominant culture (Breunig, 2005) and the dominant culture is inherently inequitable.

### **First #1: Personal Tensions due to the Spanish Language**

In the first finding, Ms. Aggie and Ms. Flores experienced personal tensions due to the Spanish language. This was evident through a triangulation of pre and post interviews, and reflection journals. The struggle consisted of a comfort in speaking English yet acknowledging that Spanish was a beautiful language. Research on bilingual students who start school speaking Spanish slowly start to lose their Spanish and replace it with English (Winstead & Wang, 2017). Through a LatCrit framework, it was evident that students experience hegemony of the dominant

language and begin to assimilate to the White dominant culture. An exposure to language shaming tactics and ridicule cause bilinguals to concentrate on getting proficient in English and discontinuing to become fluent in the Spanish language. Ms. Aggie, Ms. Flores, and I are English dominant, and can all agree that our Spanish proficiency has been lost. This could be interpreted as Ms. Aggie, Ms. Flores and I having the Spanish language subtracted by our American education system that does not believe in bilingualism.

Like Ms. Aggie and Ms. Flowers, I did not speak Spanish at home. I am embarrassed to admit that I do not speak Spanish very well myself. Spanish has been subtracted from my life through our education system. I finally realized that it was not my fault that I do not speak better Spanish. Valenzuela (1997) called this *de-Mexicanization* and this happened to many students of color after entering school. Participants experienced the dichotomy of whether to value the Spanish language because it is part of our Mexican heritage or value the English language because of hegemonic dominance through colonization. Society played a vital role in the development of the linguistic identity of Ms. Aggie and Ms. Flores. It was composed of the hegemonic White academic language and a divergent dialect of Spanish meaning that although we are Mexican Americans, we were raised speaking English rather than Spanish. In regards to the research question, participants conceptualized cultural relevance in science as knowing the Spanish language was important yet not important enough to overshadow the internalized hegemonic English language that prevailed in dominant whiteness.

### **Finding #2: Conceptualized Spanish Language Tensions in the Classroom**

The next finding was based on patterns in the empirical data in which Ms. Aggie and Ms. Flores experienced Spanish language tensions in the classroom. Not only did they struggle with tensions about speaking Spanish personally, but this struggle also transcended into the science

classroom. Ms. Aggie and Ms. Flores repeatedly told students to speak in English. The marginalization by teachers and other students who hear repeated comments and messages about speaking in English instead of Spanish can be interpreted as a hegemonic dominant language climate in which students are immersed in. The rhetoric being heard by students was that the English language was favored over their home language. The literature on ‘no Spanish’ in the classrooms (Ayón & Philbin, 2017) illustrate dominant traditions that can be interpreted as Ms. Aggie and Ms. Flores having internalized the dominant language and then perpetuating it in the classroom. Ms. Aggie and Ms. Flores both conceptualized their views about expecting English only in the classroom saying fluency would improve their students' language speaking abilities, thus helping them become proficient in English and eventually helping them on standardized tests, in their future school careers and in the future job market prospects.

### **Finding #3: A Struggle with Dichotomous Feelings of Caring and Complicity**

In the third finding, it could be interpreted from the data collected that both Ms. Aggie and Ms. Flores genuinely cared about their students. They insisted that students learn to speak in English by practicing. Ms. Aggie said that although she was happy that her students knew how to speak in Spanish, they should practice their English and Ms. Flores said that it made more sense for her students to speak in English because it would help them in the future. It could be suggested that when Mexican American students consistently hear rhetoric and explicit vocalization by teachers that they practice their English, it could be construed as a denigration and devaluation of the Spanish language. Ms. Aggie and Ms. Flores’ concern included the need for Mexican American students to become fluent in the dominant language so they could pass a standardized science test. This caring attitude could possibly also be influenced by the hegemony of complicity to an education system that has been assimilated to reproduce the

dominant cultures' whiteness. It is often assumed that White teachers have negative assumptions and biases of their students of color. In this study, it could be suggested that this is also the case with Mexican American teachers because they have been subjected to the internalization of the hegemonic White school curriculum. It is suggested that their biases may not even be recognizable to these teachers. This is why awareness of the perpetuation of the complicity for student success is important so that the student's language and culture are valued and encouraged instead of viewed as subordinate in academia. The research question about the conceptualization of cultural relevance gave insight to the denial of culture in lieu of justifications on why the dominant language was preferable.

#### **Finding #4: Cultural Relevance Gives way to White Ideology**

This study investigated the conceptualization of culture as part of Mexican American teachers' pedagogy. Culture, when integrated with a teacher's pedagogy, can create a complex relationship. Ms. Aggie and Ms. Flores were observed experiencing struggles with the Spanish language and integrating culture into the science lessons. The lesson began when Ms. Aggie and Ms. Flores both introduced the lesson with a soccer ball to get the students interested. The students were observed to have their interest sparked. Soccer is considered an integral part of the Mexican American life. Students were heard speaking about soccer and Ms. Flores took a survey which revealed that soccer was a favorite sport of her students. Although the teachers tried to connect to the student's culture, they did not feel confident. They used a video about a roller coaster with only White children riding it. One student noticed and questioned the teacher about it. The curriculum and resources available to teachers favors the White middle class students who are better able to make connections. The Mexican American students did not identify with the curriculum because many had not written a roller coaster before. There was no

prior knowledge of riding a roller coaster thereby creating a disconnect. The struggle was also observed when Ms. Aggie did not respond to the student's question. It could be said that the curriculum was influenced by hegemonic structures that promote standardization. White supremacist ideology is ubiquitous and yet not even noticeable in a hegemonic educational system. When the students noticed the inequities in the video, cultural relevance gave way to the attempts Ms. Aggie and Ms. Flores made for a cultural connection to the soccer ball and science lesson. When no cultural connection is made, students are left with having to assimilate to the dominant culture ideology available

### **Limitations**

Ethnography is a viable research method used by interpretivist researchers in education, yet it has been criticized for not being a true science. It is becoming a plausible option for research, but it is still heavily criticized. Some reasons that scholars discredit ethnography is due to the thought that there would exist researcher bias since the researchers are the instruments of data collection. The teacher's point of view, although relevant, is subject to the interpretation of the researcher who is a participant observer. Placing the burden of interpretation on the researcher could possibly be considered as contributing to bias. Another limitation is that ethnographies require a rich description, which is difficult to write. The researcher must be able to describe the setting and participants in detail in order to allow the reader the ability to transfer their own unique situation to the research. The researcher's ability to describe accurately with fidelity the setting, participants, interactions, and interpretations could affect the findings.

Another limitation is that ethnography is not thought to be generalizable. The small sample size of the number of schools studied and the number of participants could be viewed as the data being insufficient and not significant to be generalizable. Although the data collected

was only from three participants, who may seem like a small sample, it provided clear and evident data and interpretation of the findings to reach consistent themes of interactive interactions with students identifying idiosyncratic ideology. The belief in ‘English only’ rhetoric heard in this study could possibly be transferred to the thought on correct English as being the hegemonic language in schools. This can possibly send messages to students of color that their way of speaking is not correct and belittle their personal experiences. It is important for teachers to recognize this, so they do not perpetuate it.

This paper provided valuable insight into the beliefs and barriers three Mexican American teachers faced who may possibly be contributing to assimilation of the whiteness in their classrooms and unknowingly perpetuate this hegemony. The continuation of the colonial ideologies present in our schools associated with marginalization of students because of their ‘otherness’ may not be generalizable but could provide transferability that could help other educators to critically evaluate and dialogue their own practices.

This study’s limitations are also in view of the teachers’ limited experiences with being in a position of only instructing Mexican American students that are the majority in one Texas classroom in a school district that is Mexican American dominant. This is not the norm in the United States. Many teachers are challenged with the complexities of having to teach a multiple of different cultures and ethnicities.

## **Implications**

### **First Implication**

I learned a lot about myself by doing this research. For example, I was selected for Teacher of the Month at our school because the science test scores were some of the highest in the district. Everyone wondered why I was not excited. I could not help but think that I have

conformed to the hegemony in our education system. The patriarchy in power has won. My Mexican American students were becoming proficient at taking a standardized test. I am successful in assimilating my Mexican American students to whiteness. The depression I felt was instrumental in my self-scrutiny. Ten or even five years ago, I would have been elated with my success as a science teacher but being critically conscious of the assimilated whiteness I am perpetuating, has changed my perceptions of my vocation. What is the academic success of my students, really? I understand that the true measure of success cannot be adequately measured by standardized tests and yet this science standardized test is my motivation for success. What I have learned through critical awareness is that I am part of an education system that strategically assimilates all who enter its halls into what the patriarchy in power has determined all American children should represent. I am complicit in the reproduction of automatons that our American society has deemed important and the saddest part of this is that I have come to accept it. The *all mighty dollar* that controls our daily lives is the main source of my complicity to the hegemony of whiteness in public schools. Implications of this study suggest that there could be other educators who experience this same ambivalence when conceptualizing culturally relevant science teaching. I am sure that there are other teachers who understand the importance of connecting students' cultures but instead teach the mandated curriculum with fidelity because of the hegemony by the patriarchy in power. My whole perception of science education has changed. I have experienced a paradigm shift. It's like a fog has been cleared so that I can see reality.

The implications for practice are that teachers in this study conceptualized their students' culture as an acknowledgement of its existence yet a barrier to the assimilation progress that would lead to success in American education. The hegemony of whiteness in the curriculum was

what these teachers and I adhered to and accepted as valid. New teachers to the profession would be more successful if they went into the classroom being aware of the existence of complex situations they will be facing when teaching students of color.

## **Second Implication**

I learned that although I am a Mexican American, I harbored prejudices against other Mexican Americans. This was clearer to me when I reflected on my feelings about working at Gold Elementary. I was nervous about teaching at an inner-city school. There are negative connotations associated with living in a dominant Mexican American community and the school that serves this marginalized community. The pay for teachers is considered high but only because it is difficult to keep teachers working at an inner-city school. Self-scrutiny made it very clear that I too had a deficit model thinking that I did not even realize. Implications of this insight are that it could be suggested that prejudices like the ones I felt are ubiquitous and that overcoming these biases will be a constant barrier that affects the students ability to receive a quality education by experienced teachers. The implications I found were that not only White teachers, but Mexican American teachers have negative assumptions and biases about Mexican American students. I have heard teachers in the break room talking about their students. I have heard teachers whispering during meetings and saying negative things about their students. I too, after much scrutiny, realized that my negative assumptions and beliefs were learned while growing up and attending schools in which this rhetoric was often heard.

I remember when I used to think that speaking in Spanish at school was wrong. Within the hegemony of English, the role of bilingual education is often to subtract the Spanish language in hastening the goal of learning English. My students, after just one year, began to lose their Spanish language. They would tell me, “I just don’t remember the Spanish words anymore”.



The first step to preventing this from continuing is for a teacher to conceptualize being aware that they were adding to the language disparity of their students.

I experienced the dichotomy of feeling proud when I could understand and speak to someone who only spoke Spanish and feeling embarrassed at not speaking Spanish very well when speaking to a person fluent in Spanish. I felt guilty about not being able to speak better Spanish especially since I have a Spanish last name. Spanish has been subtracted from my life through our education system. I finally realized that it was not my fault that I did not speak better Spanish. Valenzuela (1997) called this de-Mexicanization and this happened to many students of color after entering school. Ms. Aggie, Ms. Flores, and I have participated in subtracting the Spanish language from our students without malice or intent. Society played a vital role in the development of the linguistic identity of the participants and me. This identity was composed of the hegemonic White academic language and a divergent dialect of Spanish meaning that although we are Mexican Americans, we are raised speaking English rather than Spanish and when necessary, mix both languages to make up our own language we call Tex-Mex.

The implications for practice are for teacher preparation programs to include teacher awareness of the seemingly innocent words they might use to prevent students from speaking their home language to mitigate feelings of being unappreciated for who they are. I am now more aware that some students try to hide their Spanish speaking ability because of shaming tactics they perceive as prevalent in the school environment.

### **Third Implication**

I learned that 'English only' rhetoric perpetuated by the participants and I could possibly be telling students to internalize the hegemonic language in school. Implications could suggest to

students of color that their way of speaking is not valued and considered incorrect thus belittling their personal school experiences. It is important for teachers to recognize this, so they do not perpetuate it. The implications are that Mexican Americans struggle with mixed feelings about the Spanish language. Both participants admitted that they thought the Spanish language was a beautiful language but they insisted that students speak in English so that they could get fluent and help them in the future but most importantly, so they could pass a standardized science test.

The research question I set out to investigate was to get insight on the conceptualization of cultural relevance in science by Mexican American teachers and whether the school advocated it. From observations, I was unable to substantiate cultural connections to the science lesson on Force and Motion. I learned that even though I know that including the student's culture in pedagogy, it can be difficult to implement due to challenges and barriers that teachers face. In this study, participants tried to connect the lesson on Force and Motion to the Mexican American culture of soccer. Although it could be argued that soccer is not part of the Mexican American culture, many Mexican Americans consider it a passion. At Gold Elementary, students are often heard talking about the many Mexican soccer teams such as America, Atlas, Santos Laguna and Las Chivas. The participants tried to connect the student's interest with the science content. Ms. Aggie and Ms. Flores' made an attempt at using CRP in the lesson but both admitted that they did not feel their expectations were met and found it difficult to implement. CRP was prevented rather than promoted in the classrooms I observed. Participants encouraged students to speak in English so they could get fluent in the language. My interpretations of the observations of two Mexican American teachers' conceptualization of culturally relevant science teaching gave insight into the struggles we all experienced in trying to teach the hegemonic curriculum with fidelity yet wanting to value the heritage of our students.

As far as the advocacy by school administration, I contend that school administrators were indifferent and did not advocate teachers and students speaking the Spanish or English language as long as the district timeline was adhered to and the curriculum was taught so that all students could pass the standardized test, no matter the cultural background or language they spoke. Teachers were never told that they had to require their students to speak only the English language at school yet due to hegemony this was implicitly common knowledge and consensus. Implications with the findings can be interpreted as evidence that it should not be assumed that teachers of Mexican American descent will contribute to decolonization of the school because it could be suggested that they have been assimilated to the Eurocentric American dominant culture.

The implications from the findings were that Spanish is a language that is not appreciated in the academic setting and is better left at home. There are no explicit 'no Spanish' policies in schools, but the prevalent common understanding is due to hegemony of the English language and the whiteness in the curriculum. I feel this research on Mexican American teachers of Mexican American students gives insight into the beliefs by teachers concerning the preference for students speaking the English language at school.

A teacher being aware that they are adding to the language disparity of their students is the first step to preventing this from continuing. Teachers need to realize that students come to school with a plethora of knowledge, a knowledge that was learned from their culture, language, family, and traditions. The student's Mexican American culture should not be slighted. It should be included in teachers' pedagogy because it is a valuable resource that should be utilized. CRP and caring about students can make a significant difference in the success of students of color. Awareness of their capabilities of learning to use CRP could counter negative

assumptions and biases. Even though Mexican American teachers could be considered assimilated and acculturated into the hegemonic ideology, they are still Mexican American and will always have an advantage over White teachers because they have an intimate cross cultural knowledge that is valuable in making connections with Mexican American students. CPR and LatCrit provided a lens through which to view and understand the conceptualization of the struggles experienced by Ms. Aggie and Ms. Flores observed in a science classroom. Through this qualitative ethnographic case study, I hope to add to current research and expose the shortcomings of the inclusion of culture in the science curriculum being perpetuated in educational institutions where marginalized students are the majority of the school population.

### **Conclusion**

Findings of this ethnographic case study expose the struggles being experienced due to the hegemonic English language by both teachers and students. An example of this struggle was the guilt I felt when I included NASA Mexican American astronauts in my lesson but did not finish going over all the vocabulary words I had planned on covering. It is difficult to implement CRP especially with whiteness in the curriculum, but it could be suggested that with training, teachers could feel more confident in integrating culture and science. It is salient for teacher preparation programs to take a closer look at their programs to see if the needs of students of color are being addressed. I hope to contribute to the epistemology of educators on the diverse assets both culturally and linguistically that Mexican American students possess and in challenging patriarchy in educational institutions where culturally relevant pedagogy is missing due to the hegemony of the dominant culture.

Through this ethnographic case study, I hope to add to current research on Mexican American teachers and their personal struggles. CRP is not being implemented and the findings

in this study expose the shortcomings of the inclusion of culture in the science curriculum being perpetuated in educational institutions where marginalized students are the majority of the school population. I feel this research on Mexican American teachers of Mexican American students gives insight into the teacher's preference in students speaking the English language. I would hope that this research can be further developed with a larger number of participants over a longer period. It would be interesting to find out if other teachers are also aware of being assimilated into the White dominant culture besides the participants in this study. I am also curious to know if deficit model thinking could be observed in other cultures where teachers and students have the same cultural backgrounds.

Ms. Aggie and Ms. Flores' perceptions of school culture, and pedagogy along with my observations and reflexivity add to the value of this case study. Implications with the findings can be interpreted as evidence that it should not be assumed that teachers of Mexican American descent will contribute to decolonization of the school because it could be suggested that they have been assimilated to the Eurocentric American dominant culture.

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## APPENDIX

## APPENDIX A

### INTERVIEW PROTOCOLS

#### Participant Teacher Pre Interview Questions

The following questions are asked to get background information.

1. What college did you attend?
2. What is your degree in?
3. What schools have you taught at and how long have you been at Gold Elementary? What grades and what subjects have you taught?
4. How long have you been teaching? How do you feel about the teaching?

The following questions are about thoughts on the Spanish language, culture, traditions, ethnicity, curriculum, and the administration at the Gold Elementary.

#### Language:

1. Do you speak Spanish at home? Is there a time when you speak Spanish?
2. What language do you feel should be the dominant language spoken in school during science instruction and why do you think it is important?
3. How do you feel if you hear your students speaking in Spanish during the science lesson?
4. Do you speak to students in Spanish if you hear them speaking in Spanish or do you answer them in Spanish or English?
5. Do you feel that English should be spoken at school the majority of the time?

6. What schools have you attended and what language did you speak in school?
7. Do you feel comfortable speaking in Spanish in class?
8. Do you feel it is okay to speak in Spanish at school?

Culture/Traditions/Ethnicity:

9. Do you ever hear students talking about their culture or traditions at school? Can you give me an example?
10. What do you feel about the Mexican American culture?
11. Do you feel your students bring valuable knowledge from home, culture, and family to school?
12. Do you connect the science lesson to the Mexican American culture?

Curriculum/Administration:

13. Does the district curriculum allow for flexibility in teaching?
14. Can you describe the district curriculum as you see it?
15. Does the administration at your school allow flexibility in your lesson presentation?
16. Have you ever gone without following the district timeline?

## BIOGRAPHICAL SKETCH

Dr. Nora Alicia Luna received her Doctor of Education degree from the University of Texas – Rio Grande Valley in Curriculum and Instruction in Science Education in December 2020. Her educational background includes attending the University of Texas at Austin for three years before receiving a Bachelor of Science degree in Accounting from Troy State University in 1985, a Bachelor of Arts degree in Business Management from The University of Maryland in 1985, and a Master of Education in Elementary Education degree from The University of Texas – Pan American in May 2010.

Professional experience for Dr. Luna includes being employed by General Motors Acceptance Corporation (GMAC) for 14 years holding positions from Accounting Representative, Credit Supervisor, Customer Relations Supervisor, Asset Analyst, and Acquisitions Analyst before making a career change to education. Dr. Luna taught sixth grade science as a bilingual teacher at Mission CISD from 2000-2002, fifth grade science and math at Sharyland ISD from 2002-2015, fifth grade Reading, Math, and Science at Edgewood ISD from 2015-2018, and sixth and seventh grade Math and Science at Idea Burke College Prep from 2019-2020.

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