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# Narrowing the Opportunity Gap: Developing Culturally Sustaining Pedagogy for Culturally and Linguistically Diverse Students

Niles Engerman

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NARROWING THE OPPORTUNITY GAP:  
DEVELOPING CULTURALLY AND  
LINGUISTICALLY DIVERSE STUDENTS

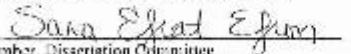
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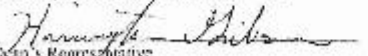
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Running Head: NARROWING THE OPPORTUNITY GAP FOR CLDs

Narrowing the Opportunity Gap: Developing Culturally Sustaining Pedagogy for Culturally and  
Linguistically Diverse Students

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November 2018

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### **Abstract**

Breeze and Laborda (2016) report that a culturally sustaining pedagogy (CSP) addresses the integration of students into a new culture. Akkari and Loomis (1998) purports that bilingual education is socially and historically situated, while van Lier (2004) posits that diverse linguistic groups will have an ominous future if the educational system ignores their linguistic needs. The design of CSP demands a paradigmatic shift to meet the needs of culturally and linguistically diverse students (CLDs). Culturally sustaining pedagogy cultivates and sustains linguistic, literate, and cultural pluralism as part of schooling for positive social transformation (Paris & Alim, 2017). Ignoring curriculum reformation through the lens of CSP will ultimately cannibalize the education systems as well as the majority of its students—students of color. The question remains through what lens can educators deeply commit to implementing CSP, and how can schools sustain it? Culturally sustaining pedagogy exists wherever education buoys the *lifeways* of communities that have been and continue to be maligned and *erased* through schooling (Paris & Alim, 2017). A paradigmatic shift is necessary in order to remediate the educational system that is essentially cannibalizing itself through effacing its posterity through pedagogy that ignores its constituents. Advocating in favor of CSP, this defense will examine the historical elements of bilingual education in the United States, linguistic ecology, the salient components of complex systems theory and Martin Heidegger’s notions of *Dasein*. Threading the frameworks through the lens of identity-building, this defense culminates with suggestions on how to narrow the opportunity gap, bridging theory into practice.

## CHAPTER 1: Introduction

### Personal Context

The deep cause of my desire to anchor my dissertation that supports culturally sustaining pedagogy (CSP) occurred throughout my kindergarten to second grade years. Having a stutter, I attended speech therapy with a friend who fled Cambodia with his family. Being White and Jewish in a predominantly Jewish suburb, I was indoctrinated into the immigrant experience from the first day of kindergarten. In addition to the *othering* that naturally occurred when being removed from class in order to attend speech therapy sessions, I was also judged by my third-grade teacher. Even after exiting speech therapy I had never experienced a teacher so misinformed as to judge me for how I sounded rather than how I thought.

The day that my third-grade teacher tested me for reading groups is a day I will always remember. The teacher cut me off after I had only read a paragraph, casting me into the *Weavers Group*. This was the name of the group that my English as a Second Language (ESL) cohorts were trammelled to for the entire school year. I do not remember when in the school year I decided to advocate for being placed in the highest reading group, along with the support of my parents. Through anger, tears, desire, and ability, I was able to get placed into that group, where academically I felt at home, but socially still othered. This time the *othering* occurred by my teacher and peers. My teacher appeared to feel compelled to move my classmates and I out of the group, assuming that we did not belong there. Albeit, my mother was a veteran high school teacher, working a block away. There I was, a Jewish nine-year-old in Highland Park, Illinois, feeling as othered as the other culturally and linguistically diverse students (CLDs) in the class. That moment in time highlights the journey towards my modern-day experience.

As a thirteen-year veteran teacher, I have worked in five schools while encountering many delivery models for bilingual education. My first teaching assignment as a junior high Spanish teacher was the backbone for this research. I would listen to teachers lecturing students to not speak Spanish while in the hallways, as well as recognizing that the ESL group was segregated from the mainstream monolingual students; I felt a growing resistance to the norms of that building which instilled a sense of insecurity in me. Initially, I was concerned that I was resistant to standard curriculum because I did not feel comfortable or was too stubborn to follow curriculum that someone else had created. However, as my career, education, and research progressed, I realized my resistance stemmed from the need to develop culturally sustaining pedagogy as explained by Django Paris (2012) that, “seeks to perpetuate and foster—to sustain—linguistic, literate, and cultural pluralism as part of the democratic project of schooling” (p. 93).

Thirteen years and five schools later I have finally found my purpose. As a junior high Spanish teacher, I witnessed the school’s segregation of ESL students. It was through this act that I began to question why I felt a resistance to the building culture. I started working as a self-contained, sixth grade bilingual teacher, where I was a part of many data-based discussions grounded in best practices for English language learners (ELLs). However, these practices were never actualized through the curriculum as the district provided us with curriculum that was often too difficult for our students and we had little discretion as to how we differentiated them. I then moved west to a school where I worked as a push-in/pull-out bilingual and ESL resource teacher. This was the third model I had witnessed and the second I had practiced, and still I found myself resistant to how I was being told to teach. The district used the popular Transitional Bilingual Education Model (Early Exit) where CLDs receive instruction in their home languages

until the second grade where they are then transitioned in to a monolingual setting. Third grade teachers would voice their frustrations to me, as their students who were labeled as bilingual were continuing to fall behind. After this experience, I taught Spanish for two years at a charter school before they adopted an ELL program during my third year. The charter school replaced a language program that I had developed with a teacher-assistant facilitating Rosetta Stone language learning program. I believe that this was a total violation of the value of language learning. With feelings of resistance at an all-time high, I aggressively pursued my current sixth grade dual language job in a large, Chicago northwest suburban school district. It is through this school district that I have finally found the closest iteration to culturally sustaining pedagogy to date.

At the apex of culturally sustaining pedagogy lies the notion of our humanity; the temporal nature of our identities resonating heavily with this defense. As a parent of a two-and-a-half-year-old, I have reflected on how fatherhood has changed me. When I look at my son, I also see myself and my father bundled into what Martin Heidegger would define as time; the unity of the past, present, and future (Heidegger, 1996). The notion of time fosters a discussion as to how I work with my culturally and linguistically diverse students in order to build culturally sustaining pedagogy. My students' identities run deeper than their surface features, but rather act as an amalgam of the past, present, and future of the many individuals who have informed them of who they are, in conjunction with the variety of contexts that have either directly or indirectly influenced their identity development.

This defense demonstrates my desire to develop a lens through which educators can implement culturally sustaining pedagogy. Whether intentional or not, schools with culturally and linguistically diverse students are at the mercy of the curricularization of racism through

inculcating the values of White superiority among its staff and students (Paris, 2018). Therefore, the purpose of this defense is to disencumber notions put forth through linguistic ecology, complex systems theory, and Martin Heidegger, in order to advocate for a paradigmatic shift through which educators can build culturally sustaining pedagogy (CSP). I chose to develop this argument through a topics-based format, as this format allows for the unloading of the major lenses allowing all educational institutions to support CSP through teacher pre-service programs and professional development. This is the most viable format to argue through the chosen lenses, as a topics-based format provided a forum to highlight a variety of literature that supported my argument for multicultural education reform. Additionally, this will also provide future opportunities to develop further studies through any of the individual lenses posited through the research.

A large part of this defense anchors itself on teacher preparation programs, linking theory to the implementation of culturally sustaining pedagogy. The importance of teacher preparation programs as a means through which teacher candidates develop the ability to productively oppose, is at the apex of distinguishing tones of resistance and notes of social advocacy.

The first chapter establishes the history of education in the United States, in addition to creating a context for modern-day bilingual education through seminal cases and current bilingual education models. The following chapters discuss major tenets of linguistic ecology, complex systems theory, and Martin Heidegger, in order to establish scopes that influence professional development and pre-service teacher preparation programs when creating sustainable CSP.

Amid the variety of theories explored in this research, the notion of flexibility has several components at its core; culturally and linguistically diverse students require flexible educators who are trained to work with, rather than against cultural momentum. Parsons and Vaughn (2016) explained how effective teachers often adapt their instruction based on the ebb and flow of the lesson, which is considered the gold standard. Parsons and Vaughn's (2016) research clashes with what I have witnessed in schools, as there is oftentimes scarcity of such flexibility, stemming from teachers being ill-prepared to work with CLDs.

Since America is beyond the civil rights movement and has various laws legislating education policy for ELLs, the country still witnesses grave issues with curriculum design and implementation for CLDs. A major issue with curriculum is the paradigm through which teachers inform their relationships with their students. This defense reframes the definition of flexibility with students acting as an arithmetic mean through the lens of CSP. Additionally, while orienting its criticisms and theories around the conversion of linear models (models that operate through simple cause and effect) to more complex lenses (when cause and effect exist beyond simple cause and effect relationships), an attempt to develop culturally competent educators and students will occur.

Shifting from linear paradigms to those which honor complexities, can aid educators in moving from a deficit thinking model to a 'lens that honors students' culture through CSP. While districts become more diverse amid the backdrop of high-stakes testing, the outlook of bilingual education is grim if the system remains at a curricular stalemate. Discharging the variety of theories and philosophers that demonstrate complex systems, will assist in establishing a platform through which pre-service programs, continuing education, and professional

development can implement culturally sustaining pedagogy and supporting educators when confronting their biases to reach diverse student groups at a deeper level.

Akkari and Loomis (1998) highlight the link between bilingual programs and societies in which they evolved, as they argue that such programs inherently maintain bias in favor of the majority culture. This form of deep-rooted culture bias permeates the impetus behind this research, as this paper will argue that at the apex of CSP is the development of the individual.

### **Problem Statement and Purpose of the Study**

According to the Teacher Graduate Assessment Project (Illinois State Board of Education, 2005), a survey comprised of first-year teachers who graduated from the twelve public colleges in Illinois, stated they had not been adequately prepared to work with CLDs. Moreover, fewer than 60% of those surveyed expressed confidence in their ability to plan instruction for ELLs (Illinois State Board of Education, 2005). The aforementioned is an alarming statistic as one would think that because of the general demographics in Illinois, institutions of higher learning would better-prepare their undergraduates to teach effectively within the CLD population. Furthermore, Reilly and Gangi (2013) stated that one of the salient issues with the Common Core State Standards (CCSS) is the circumvention of issues of equity through standardization. The stripping of the dynamicity of curriculum and culture affects CLDs' sociocultural and linguistical development, causing a diminished effect, neither given the opportunity to develop the majority, nor supporting the differing cultures and languages.

Gangi (2010) posits that the CCSS ELA standards' text exemplars the privileged class, as fewer than seven percent of the exemplars represent working class people and the poor. This data

suggests that students are forced to sacrifice and/or suppress their identity development in order to conform to the authority of standardization.

Therefore, the problem posited in this dissertation focuses on how institutions of higher learning, including school districts, bridge the gap between teacher preparation and the implementation of culturally sustaining pedagogy in the modern-day classroom. According to the American Immigration Council (2017), one in seven residents of Illinois and 20 percent of all business owners in the Chicago metropolitan area, are immigrants. These demographics, along with the staggering number of Illinois teachers who leave their teacher preparation programs feeling unprepared, highlight the need for the salient research questions and purpose of this study. The purpose of this study is to explore the gap between teacher preparation and the implementation of culturally sustaining pedagogy in the modern-day classroom through a variety of theoretical lenses. These theoretical lenses include linguistic ecology, complex systems theory, and Martin Heidegger's Notions of *Dasein* and time. This study acknowledges that there are many theories that could otherwise be utilized to explore the gap between teacher preparation and the implementation of culturally sustaining pedagogy; however, I have chosen to focus on the aforementioned three, as they better represented all constituents within the educational community including parents, district-level administration, and boards of education.

### **Research Questions**

This research aims at answering the following questions:

**RQ1:** How do educational institutions develop sustaining practices for culturally sustaining pedagogy?



**RQ2:** How can education bridge theory to practice regarding culturally sustaining pedagogy?

### **Significance of the Study**

Beyond the achievement gap lies a cultural disparity that is much more difficult to pinpoint than distinguishing test scores between CLDs and their monolingual, general education peers. The significance of this study is to provide educators with theories they can employ when making a paradigmatic shift honoring CLDs' dynamicity to inform culturally sustaining pedagogy. A dynamic approach to curriculum is especially important when reforming culturally sustaining pedagogy, as education has historically been bound to linear paradigms. Alim and Paris (2017) explain that culturally sustaining pedagogy demands that we "reimagine schools as sites where diverse, heterogeneous practices are not only valued but sustained. ...CSP demands a critical, emancipatory vision of schooling that reframes the object of our critique from our children to oppressive regimes" (p.3).

Linear paradigms cannot keep up with the ever-changing, dynamic nature of culturally and linguistically diverse students. Linguistic ecology, complex systems theory, and Martin Heidegger provide the mediums through which the education community can honor the complexity of delivering CSP. While limited in scope to three major theories, I believe linguistic ecology, complex systems theory, and Martin Heidegger's notions of *Dasein*, can provide constituents within the education community powerful lenses through which to inform culturally sustaining pedagogy. This will aid in shifting the responsibility to educational leaders to emancipate CLDs through maximizing their ability to access equal opportunity through emancipatory lenses.

## Format and Organization of the Remaining Chapters

**Topic-based format.** This structural pattern of dissertations uses themes or topics to structure the chapters. A dissertation that follows this pattern does not contain a separate and independent chapter for the literature review but rather the content of the literature review is interspersed throughout the chapters. Distinct chapters for methods and results are usually not included in this format. Typically, the dissertation or thesis begins with an introduction chapter, followed by topic-based chapters, and ends with a general discussion and conclusion chapter (Dulley-Evons, 1999). The topic-based pattern is mostly used in non-empirical research, such as theoretical, theological, and philosophical studies (Carter, Kelly, & Brailsford, 2012).

An example of topic-based pattern can be seen in the dissertation written by Jason Francel (2015) titled *The War on Education: A Prisoner's Dilemma*. Table 1 provides a brief description of each chapter of his dissertation.

Table 1. *An Example of a Topic-Based Pattern*

*Chapter 1: The Disabled Knower.* Francel introduces the dissertation topic through an auto ethnography that immerses his experience as a teacher and a doctoral student.

*Chapter 2: A Hermeneutic Discourse from the Aesthetics of Democracy.* In this chapter, hermeneutic and aesthetics discourse is used to see a more horizontal form of knowledge.

*Chapter 3: Essentially Democratic: The Death of Progressivism in Education.* Through the readings of progressive and essentialist writers, Francel examines whether there has been truly democratic progress in education.

*Chapter 4: The Prison.* In this chapter, Francel describes the classroom as the walls that imprison the learners from logically constructed progressions of language that inform our understanding of the world.

*Chapter 5: Out of Sight Out of Mind.* The writer considers how our educational language imprisons the learner who is captivated by a system that falsely casts images of progress. (Francel, 2015)

I have chosen to use a topic-based format in order to address the philosophical problem of how institutions of higher learning, including school districts, can bridge the gap between teacher preparation and the implementation of culturally sustaining pedagogy in the modern-day classroom. The topics-based format will discuss and recommend three appropriate lenses through which to inform CSP. This dissertation defines and highlights seminal court cases and bilingual education models, viewed through the lenses of linguistic ecology, complex systems theory, and Heideggerian ideals. The final chapter discusses pre-service and practicing teacher preparation, while offering suggestions on how to effectively bridge the gap between teacher preparation and classroom practices through the differing paradigms.

Chapter two provides a brief history of education in the United States, from the colonial era through to the present-day. Chapter 2 will also examine seminal court cases that surround bilingual education and how they have affected the implementation of bilingual education programs as well as CSP. Chapter three examines linguistic ecology, observing student behavior through the lens of van Lier's and Bronfenbrenner's' notions of linguistic ecology. Anchored to complex systems theory, Chapter 4 defends the development of cultural awareness through notions of nonlinear interdependence (seemingly random, yet connected points) through pillars of complex systems, including bifurcation theory, recursion, and fractal theory, leaning heavily on the work of Jayne Fleener and Bill Doll. Drawing parallels between complex systems theory and the notions of identity development, Chapter 5 discusses Martin Heidegger's Notions of *Dasein* and Time. This research concludes with Chapter 6, offering one of many possible answers to the research questions. This final chapter explores the viability of pre-service teacher preparation programs, including professional development, to determine if and how teachers can promote CSP. Additionally, it is discussed that by offering these strategies that can be accessed

immediately in the classroom, it can increase a stronger development of CSP through dynamic paradigms that honor a CLDs' multiculturalism.

## CHAPTER 2: Bilingual Education: History, Cases, and Models

### A Brief History

As the culturally and linguistically diverse student (CLD) population continues to grow, it is important to recognize how the need to speak English or consequential bilingualism (de Jong, 2011) has compelled school districts to adapt bilingual program models to meet the linguistic needs of diverse immigrant groups. This section provides a historical context of American education, seminal court cases and their impact on current practice, as well as defining a variety of bilingual and English as a Second Language (ESL) education models that serve culturally linguistically diverse students.

**The Ramist map and colonial ideals.** The Ramist map defines the linear nature of the original intent of the word *curriculum* (Doll, 2008). Based on the 16th century philosopher Petrus Ramus's ideologies, the Ramist map reflects a systematic approach to knowledge and practical application. Ramus's principles were intricately linked to Protestantism and Calvinism, reflecting a preparationist paradigm that highlighted a path to salvation (Parker, 1973). According to Doll (2008), the map reflects a systematic way of looking at knowledge, paralleling Soudien's (2013) beliefs of how European valorization affected linguistic hegemony. San Pedro (2017) argued that culturally responsive pedagogy calls for *crucial refusal*, in that it must reject inert conceptions of cultures and languages as entities that are anchored to the past.

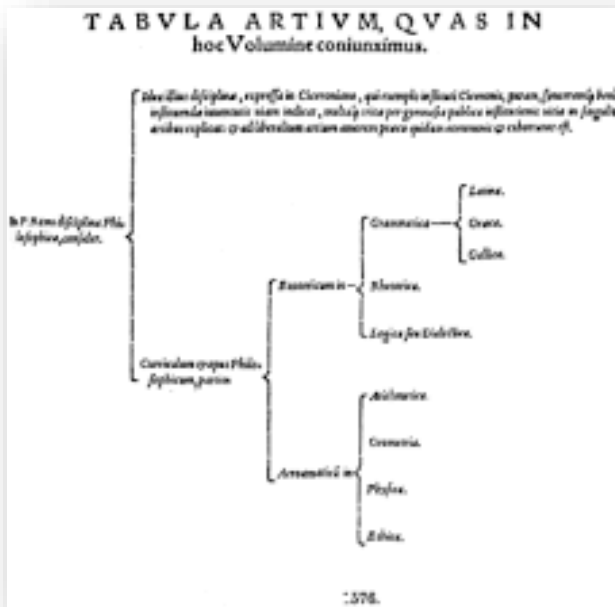


Figure 1. *Ramist Map*. Reprinted from Triche, S. & McKnight, D (2004). *The Quest for Method: The Legacy of Peter Ramus*. *Journal of the History of Education Society*, (33)1, 39-54.

The Ramist map highlights the curricular needs of the time including reflected cultural practices of the era. While theoretically appropriate in the era for which it was created, the Ramist map offers a myopic scope through which to implement culturally sustaining pedagogy (CSP). In order to improve curriculum implementation, Doll (2008) posits that educators eschew the linear, simplistic, and pietistic views of the early founders of the American educational system and move toward more dynamic paradigms through which CSP can be implemented.

The dangers of paradigms such as the Ramist map can be seen through Soudien's (2013) work, that found societies with colonial history having privileged forms of knowing and the disenfranchisement of others. Soudien's (2013) notions of colonialism are germane to the history

of the United States and its attitudes toward bilingualism, as notions of knowing are consistent to notions of linguistic status. Ramism and the valorization of European ideals affect CLDs, as they are afflicted and affected by “the construction of the idea of Europe, and by extension the West, in historically pristine, self-contained, virginally and racially pure terms,” (Soudien, 2013, p. 152). These terms can be seen through the hegemonic inculcation of colonial social norms, culminating in what Django Paris (2017) pinpoints, as the ‘curricularization of racism’. Although modern-day educators will most likely never refer to the Ramis map, it is important to understand the roots of education in the United States and how these roots still feed modern-day curriculum.

**Franklin Bobbitt and the social efficiency theory.** More recent theories such as Franklin Bobbitt’s (1918) social efficiency theory have impacted how education reflects society’s ideals. Bobbitt (1918) oriented his theories around job analysis, delineating how human experiences could be parceled into major fields in order to support the economic backdrop of the early 1900s. Understanding Bobbitt’s (1918) notions of social efficiency theory is crucial to understanding how linear, pragmatic lenses were utilized to inform curricular decisions in the modern era.

Franklin Bobbitt’s (1918) theories are known as the pillars of the social efficiency theory and are reflected in his five steps in curriculum development: (a) analysis of human experience, (b) job analysis, (c) deriving objectives, (d) selecting objectives, and (e) planning in detail. The analysis of human experience deals with separating the broad range of human experiences into major fields. Job analysis involves breaking down fields into their more specific activities, while deriving objectives aims at developing the objectives of education from statements of the abilities required to perform the activities. Selecting objectives involves deciding from the list of

objectives those which are to serve as the basis for planning pupil activities. The final step, planning in detail, is to examine the kinds of activities, experiences, and opportunities involved in attaining the said objectives. The five steps in curriculum development bears a striking resemblance to modern-day curriculum design and implementation. Language informs and reflects how people relate to the world, and how one relates to the world is fluid; a five-step system runs contrary to the turbulent nature of socio-linguistic development binding the relationships between CLDs and their teachers.

**Tyler Rationale.** While Ramism might have been the deep cause informing social efficiency theory, one can see how Bobbitt's (1918) work led to current educational paradigms that are rooted in the Tyler Rationale (Doll, 2008). One of the salient modern-day issues behind the Tyler Rationale is its focus on goals, which are affixed to cultural norms. Understanding that goals, culture, and language are interconnected, cultural infusion into our schools requires a new approach to curriculum orientation, namely one that is connected to our bilingual students' affective nature, versus that of academic achievement. Orientation to education has the power to re-contextualize the linear nature of educational goal-setting. Tripp (1991) posits that the Tyler Rationale identifies that planning should highlight goals, determine activities that address each goal, sequencing the activities, and evaluating the results to ensure alignment with the goals. According to Tripp (1991), another way to regard these criteria is as a *means-ends* model of curriculum planning. A *means-ends* model reflects a linear cause and effect notion of teaching and learning, in that if the goal has not been met, learning has not occurred. The type of paradigm exemplified through the Tyler Rationale is one that will have profound effects on the morale of CLDs who have not been acculturated to American sociocultural norms. A *means-ends* model of curriculum planning will decrease a student's desire to take risks as well as foment a



culture of pass or fail in the classroom, ultimately affecting a student's ability to work with failure rather than accentuating their strengths.

### **Final Thoughts on Historical Context**

Teachers tend to solidify their observations of variables in students' behavior through a temporal lens that is used to promote curricular decisions. Van Lier (2004) warns that viewing temporality as linear reflects a *means-ends* model to plan curriculum, while excluding authentic learning and is context reductive. The aforementioned gap is where teachers' dispositions toward students' attitudes and understanding of temporality play a factor in the overall culture of learning in a classroom. Supporting van Lier, Charles Pierce, and Gregory Bateson, believe that human thinking moves across, sideways, diagonally, and even skips over from node to node or idea to idea (Doll, 2008).

The danger of theories based on linear paradigms is that they dictate a curriculum that has its own discursive practice, affecting how bilingual students might struggle to find an authentic voice (van Lier, 2004). A preparationist-oriented curriculum rooted in theories like Bobbitt's (1918) social efficiency theory and the Ramist map, might have once had its place because curriculum can be viewed as temporal. Perhaps the Ramist map reflected the need for religious freedom, while Bobbitt's (1918) notions of curriculum were a reaction toward post World War I industrialization and immigration, including American ethnocentrism and isolationist policies that were developed after the war. Modern-day curriculum, in its push to be culturally sustaining, must embrace notions of temporality and the current ethno-scape, but it needs to do more to service students in a fast changing demographically diverse school community.

## **Bilingual Cases and Policy**

Lau v. Nichols (1974) reflected civil rights violations of a group of Chinese American students, where the court ruled that all children must have equal access to the curriculum in their home language. According to Moran (2005), Lau v. Nichols demonstrated initial promise in that the Federal Government could police possible wrongdoing even when a discriminatory purpose was difficult to prove. The law's viability has been challenged over the past three decades, as CLDs still face issues with assessments that stunt their ability to express their content knowledge (Gablasova, 2014). The ambiguity of Lau v. Nichols continued in the case of Alexander v. Sandoval (2001). In this instance, the court upheld that Congress did not use clear and unambiguous language to establish a private right to sue based on disparate impact regulations (Moran, 2005). This indicates that diverse groups would not win cases for civil rights violations if intentional acts of discrimination could not be proven (Moran, 2005).

Working in the capacity of a bilingual educator for 11 years and having experienced several different models of implementation, I believe that laws governing bilingual education in the United States have effectively promoted ambiguous, asymmetrical implementations of bilingual education programs across the country. The ambiguous nature of laws governing bilingual education, have forced school districts to adopt a single model of curriculum development; if a school district can justify its program model of choice, it also has the power to implement it. Parsons and Vaughn (2016) echo the sentiment that effective teachers often adapt their instruction based on the ebb and flow of the lesson.

School districts oftentimes have power over their bilingual program model of choice, providing they follow the ruling of Lau v. Nichols (1974). The flexibility and ambiguity in Lau v. Nichols (1974) could be positive, as the United States is geographically large, with power

vested in the states. The flexibility engendered through this court case would support the notion that states, and individual school districts could operate as decentralized republics. *Lau v. Nichols* (1974) forced school districts to provide their diverse student populations access to the curriculum in their home language (Moran, 2005); however, details as to how this could be implemented were unclear. The superficial flexibility is only positive if schools operate from the vantage point of managing their given program model to implement CSP. The problem statement of my study details that amid the many program models there is a dearth of CSP; culturally sustaining pedagogy cultivates and sustains linguistic, literate, and cultural pluralism as part of schooling for positive social transformation (Paris & Alim, 2017). *Lau v. Nichols* (1974) did not insure the linguistic, literate, and cultural pluralistic ideals.

Legal foundations have supported the use of bilingual program models that are linear, as districts oftentimes view their programs as a one-size-fits-all model. This is reflected by how the Equal Educational Opportunities Act (EEOA) (1974) covers discriminatory practices as the level at which educational policy is made may not be covered (Moran, 2005). Thus, culturally and linguistically diverse students may indirectly be impacted, as such decisions informs how school districts conveys their missions to teachers. These missions highlight how teachers relate to the students, ultimately reproducing the hegemonic power cycle when school districts do not use their freedom to implement culturally sustaining pedagogy.

Upon the decision of *Alexander v. Sandoval* (2001), private plaintiffs could sue only for intentional discrimination, something already provided for under the 14<sup>th</sup> Amendment (Moran, 2005). As per *Alexander v. Sandoval* (2001), it would be difficult for an individual and/or group of students to prove discrimination if a given school district was able to rebut the claims through the rationale for their choice of bilingual program model. The laws see the adoption of a program

in and of itself as evidence that schools are meeting the needs of students. English immersion programs, amid their exclusionary effects and ignorance of CLDs' home language development, would have to be exclusionary to the point of no longer relating to the pedagogical goals of the school (Moran, 2005).

Alternate provisions could also be argued, including that of the Equal Educational Opportunities Act (EEOA) (1974), where CLDs would be protected; however, this provision has its ambiguities. According to Moran (2005), no legal foundations are a perfect substitute for the anti-discrimination protections found in *Lau v. Nichols* (1974). The best alternative source of protection is under the EEOA (1974), because the statute explicitly adopts an effect rather than an intent orientation when defining discrimination. This reflects the hegemonic affects that the EEOA (1974) can have on CLDs, as it is porous as to how it covers local educational policies (Moran, 2005); students are left to the desires of the board of education and district level administrators who are charged with filling their schools with educators, curricula, professional development opportunities, and evaluations.

Moran (2005) argues the extent to which bilingual education issues were addressed when relying on the EEOA (1974), as the focus was on local districts and officials, versus state decision makers. If state-level decision makers do not directly impact the decision-making process when it comes to bilingual education and advocacy for CSP, local levels will have less accountability to their students in relation to the most appropriate curriculum delivery. While some might see the flexibility in bilingual education that came from *Lau v. Nichols* (1974) as positive, it is also the reason behind districts that implement bilingual/ESL models for CLDs that are on the opposite end of the culturally sustaining gamut.

## **Cultural Competency**

The far-reaching effects of culturally sustaining pedagogy can be envisioned through notions of othering and how society and education reflect each other. As a pedagogy that sustains linguistic, literate, and cultural pluralism as part of the democratic project of schooling, CSP demands that educators understand the scope and breadth of the parallels between the classroom and society. Bonilla (2014) argued that the dominant notion of racial ideology in the United States is considered color-blind, further marginalizing CLD groups, as this ideological approach avoids countenancing cultural differences. Color-blind ideologies work to other diverse groups, rather than allowing them access to mainstream culture. Brown (1993) supports Bonilla's notions of othering, as he recounted the various events in American history that have served as turning points in race relations in the United States.

Predicting the current American educational climate, Brown (1993) posits that events such as discrimination of the Chinese during the 1800s, the anti-German sentiment experienced during World War I, and the legal and physical altercations with Blacks during the Civil Rights era, led towards a change in attitude toward non-English speakers and their rights. Brown (1993) purported that the common denominator during the defining epochs has been the interrelated nature of local controversy with regionally and nationally imposed resolutions. One can infer that the salient criteria for the success of diverse populations is the connection between school districts and the leadership of the communities in which they serve. Van Lier (2004) posits that all environments and contexts are interrelated, thus a large part of developing cultural competency and CSP is the interdependence between the school and the community; systems that cultivate such relationships will see greater levels of success. Interdependence is how teachers use students' home languages in order to inform their curricular decisions; language

informs culture and vice-versa, the salient means through which teachers cultivate positive and negative relationships with CLDs is how they approach their students' home language. The bilingual/ESL education program of choice contextualizes school districts' attitudes toward home language use, and thus their attitudes towards culturally sustaining pedagogy.

### **Bilingual and ESL Programs**

This section will discuss the varieties of bilingual and ESL education programs. The description of each program will seek to explain by creating a discussion through a theoretical lens that best supports a students' home language development. This will better reflect theories of second language acquisition that support using a students' first language (L1) to build their second (L2) and/or subsequent languages.

Kim, Hutchison, and Winsler (2013) discussed how CLDs need support in their first and second languages. Support for both first and second languages is related to building cultural competency and is reflected in a school's bilingual program selection. Although research supports two-way immersion/dual language (Kim, Hutchinson, & Winsler, 2013), many districts opt for other types of programs and/or have different definitions of what it means to have a bilingual program. Due to a myriad of factors such as poverty and low parental education, CLDs tend to struggle in relation to their native English-speaking peers (Kim, Hutchinson, & Winsler, 2013). Therefore, it is important to select a bilingual program model that promotes cultural competence, supports language acquisition and provides access to academic content, versus a deficit thinking model that excuse students' struggles as their natural predisposition. Kim, Hutchinson, and Winsler (2013), report that there are several bilingual/ESL education models, the most popular being submersion, ESL instruction, transitional bilingual education (early exit), developmental bilingual education (late exit), and two-way immersion (TWI/dual language). The

purpose of discussing the different bilingual program models is to illustrate how a given model, through its use of students' home language, can either support or hinder its minority constituents, thus promoting or impeding development of culturally sustaining pedagogy.

**Submersion.** Submersion is not a bilingual education model but rather an ESL model and is characterized by instruction being entirely in English (sink or swim), with some programs opting to call it structured immersion. The former evades native language instruction, while the latter might allow some home language instruction before mainstreaming students (Kim, Hutchinson, & Winsler, 2013). A glaring byproduct of the submersion model is the dearth of first language development. Lack of first language development impedes CLDs' abilities to bridge from their home language to a new language, as well as stifling their multicultural development. During the late 1990s, California represented an interesting contrast between submersion models and implementing true bilingual education models. Proposition 227 hindered CLDs in that it banned bilingual teaching methods and/or the use of a language other than English to instruct Californian school-aged students (Kim, Hutchinson, & Winsler, 2013). Californians voted, and the outcome was a structured immersion approach, despite evidence supporting the linkage between biliteracy and academic achievement that could be achieved through other types of bilingual program models.

Theorists Bialystok and Barac (2012) conducted a study exploring similarities between immersion and dual language programs when evaluating positive student growth in executive functioning, as it was important to consider the status of the target language in the selected program and how the status attributed to the language affects students' long-term attitudes toward their home cultures. In addition to how program selection and implementation affects students' attitudes toward their home culture, it is equally important to consider how the program

model affects teachers' attitudes toward their students. A teacher may love his students; however, if his attitude minimizes the importance of a students' home language, students will be susceptible to poor relationships with their teachers as they will feel less respected. Submersion models can have long-term deleterious effects on how students view themselves as well as their home cultures.

Esposito and Baker-Ward (2013) discussed how Spanish bilingualism in the United States is associated with low socioeconomic status, while languages including French (within French immersion programs) are considered of higher status and affect the success of the given program. Citing the power of French and German languages, Mackey (1972) explained that self-sufficiency within the context of language, measures how speakers of the given languages can achieve many of their aspirations. The authors highlight how Spanish in the United States is oftentimes associated with poverty, thus Spanish would have a low self-sufficiency rating, negatively affecting its linguistic status and the students' overall vision as to the degree of success that maintenance of the home culture will garner for them. A factor influencing the success of a given bilingual program model is the status and value provided to the students' home language. Investigating bilingual and ESL models through the lens of the degree of linguistic status, is a salient factor to discuss when evaluating CSP, as most data on successful bilingual programs point to using students' home language to bridge to English, thus building literacy in both languages.

**Push-in and pull-out ESL.** Kim, Hutchinson, & Winsler (2013) explained that ESL is oftentimes oriented around pull-out during elementary years, while graduating to a full class period later in schooling. The opposite is also possible, as there may be ESL push-in for students where an ESL specialist works alongside his students within the mainstream setting, rather than



removing students for small-group instruction. The difference between push-in and pull-out ESL and submersion, is the acknowledgement that CLDs would benefit from some degree of individualized instruction in order to meet their linguistic needs. While in theory, push-in and pull-out programs sound like they could be successful, there are strong obstacles that could prevent the equitable treatment of ESL teachers and their students. ESL push-in and pull-out programs require co-planning in order to be seen as more than just a glorified teaching aid. According to McMahon (2016), there may be minimal time to co-plan when using this model, causing the ESL teacher to blindly enter the classroom where he needs to service his students. In addition to this obstacle, many ESL teachers have multiple grade levels to service, and it's impossible to allot an ESL teacher common planning time with every grade level he teaches (McMahon, 2016). In these types of programs CLDs are at risk of feeling ostracized from their peers, being viewed as special or different, and identified as cognitively lower than their mainstream monolingual peers.

ESL pull-out intends to provide individualized instruction based on language levels; however, requires that students miss class time, as ESL pull-out may take students away from class during important times, as the pull-out teacher needs to orient groups around language levels, rather than grade level schedules (McMahon, 2016). Missing class time can cause friction between the classroom teacher and the specialist, which leads to an acrimonious relationship between the two teachers fomented through resistance to follow each other's curricular decisions. This inevitably causes the given students to suffer. ESL push-in and pull-out programs could have damaging effects on the psyches of the teachers and students involved, as both groups are at risk of being perceived by self and others as pariahs. When this occurs, CSP suffers a breakdown.

**Transitional bilingual education.** Given the stigma and rigors of the English immersion and ESL push-in and pull-out models, the most common bilingual model within the United States is the transitional bilingual education model (Kim, Hutchison, & Winsler, 2013). Otherwise dubbed early exit (de Jong, 2011), this model bears similarities to English immersion and ESL push-in and pull-out models in that it focuses on rapid English acquisition, and varies in providing instruction in the students' native language for typically two to three years before receiving instruction exclusively in English.

According to the Iris Center of Vanderbilt University (2013), transitional bilingual education programs require CLDs to acquire enough academic English proficiency in a shorter amount of time, in order to transition to a mainstream educational setting. This model runs contrary to the natural development of a culturally and linguistically diverse students' abilities, as well as ignores tenets of culturally sustaining pedagogy. While the transitional bilingual education model integrates CLDs sooner into a mainstream setting, it does little to develop their home language, which negatively affects cross-linguistic transfer. Poor cross linguistic transfer foments a subtractive feedback loop, where low proficiency in both languages creates a cycle of diminishing proficiency. Diminishing linguistic proficiency promotes lower degrees of cultural awareness of the home or majority culture, ultimately defeating the purpose of culturally sustaining pedagogy. Rao and Morales (2015) explained that culturally and linguistically responsive teaching supports CLDs' L1 maintenance and L2 language development, as well as affirms critical aspects of their ethnic, cultural, and linguistic identities.

Transitional bilingual education does not truly develop bilingualism, but rather takes a utilitarian approach to native language instruction, offering a manner to integrate students into a predominantly English setting after two to three years. Furthermore, Leider, Proctor, Silverman,

and Haring's (2013) study found that elementary bilingual students proficiency levels varied in their native and second languages, resulting in a wider range of literacy achievement. As a dual language teacher, I have observed that it is exceedingly rare when a given student will have equal proficiencies in English and Spanish. My purpose is to build literacy in both L1 and L2, rather than use the home language as a practical tool to build majority language proficiency. Supporting the notion that a given bilingual program relates to students' affective growth, leading to sociocultural growth, Dworin (2011) stated that educators would benefit by becoming cognizant of the impact of how bilingual programs affect students on a longitudinal level. Dworin's (2011) study on bilingual K-12 students, highlighted that native Spanish speakers were oriented around two distinct language ideologies, where there are many sub-ideologies that inform students' day to day interactions with the curriculum. These ideologies viewed language through a utilitarian lens; the antithesis of the transitional bilingual education model, developmental bilingual education maintenance program focuses on building students' literacy in their home language.

**Developmental bilingual education.** Developmental bilingual education (late exit), centers on additive bilingualism where CLDs develop literacy in both their home language and English (Kim, Hutchison, & Winsler, 2013). Students in developmental bilingual programs tend to have a higher academic performance, due to cross-linguistic transfer that occurs when learning in both languages. Supporting the notion of cross-linguistic transfer and academic success, Lindsey, Manis, and Bailey (2003), found a significant relationship between Spanish phonological awareness with later English Passage Comprehension in a group of first grade Spanish-speaking ELLs. Furthermore, students who developed metalinguistic awareness at an early age, were more likely to have the skills to bridge from L1 to L2 as they progressed in the

different grade levels. This study underscores the significance of the sense of urgency surrounding language acquisition amid our CLD population. Proper CSP must begin at an early age and revolve around the most effective methods on language acquisition for students to become multicultural citizens. Dual language education parallels developmental bilingual education in many ways, in that it looks to simultaneously build linguistic capacity and sociocultural capacity through the curriculum.

**Dual language education.** Dual language education is similar to developmental bilingual education, in that it looks to cultivate biliteracy. These programs are known as two-way immersion (TWI) and one-way immersion programs, where the goal is to reach similar levels of education as mainstream classrooms in both languages (Kim, Hutchison, & Winsler, 2013). According to Kenner (2003), children who learn two writing systems benefit both cognitively and culturally. In spite of Proposition 227 and Kenner's (2003) study, California had the most two-way immersion (TWI) programs in the United States in 2015, demonstrating that they have been able to stand up to state legislation. According to De La Garza, Mackinney, and Lavigne (2015), the salient standards of dual language is to develop students' second language, to maintain and develop their home language, and to experience academic success in both languages. As the gold-standard for bilingual education, the different models of education will be discussed, emphasizing how each bilingual program model uses the students' home language to bridge curriculum in English.

Divergence occurs in dual language education in a one-way immersion classroom comprised entirely of students whose home language is the minority language. Two-way immersion programs target a 50/50 split between majority native language speakers and minority language speakers, typically highlighting English and Spanish languages in the United States

(Kim, Hutchison, & Winsler, 2013). Although DBE and dual language programs support notions of CSP posited through the work of Ladson-Billings (1995), there are mixed results from studies on dual language classrooms, including English-speaking students becoming more proficient in Spanish than their native Spanish-speaking peers becoming more proficient in English (Kim, Hutchison, & Winsler, 2013). There is evidence that biliterate students profit from exposure to different cultures, as well as develop metalinguistic awareness and metacognition (Lindholm-Leary, & Block, 2010). Additional studies suggest dual language programs engender positive attitudes toward school (Kim, Hutchison, & Winsler, 2013), which ultimately can be traced to a reduction in othering and the widening of the philosophical lens that supports culturally sustaining pedagogy.

Dworin's (2011) study concluded that students develop two distinct linguistic ideologies. The first ideology is best described as a functional language ideology, where Spanish was primarily utilized to accomplish specific kinds of communication with others. For example, in a Spanish as a Foreign Language class, a native Spanish speaker would speak Spanish with his peers, and when upon exiting the class, would default back to English (Dworin, 2011). An additional language ideology suggested that linguistic and cultural compatibility with native Spanish speakers were a key part of the participants' general orientation. The latter parallels the benefits of CSP, as a culturally responsive curriculum that engages students instantly with connections to their home cultures and will thread seamlessly through their daily lives.

The functional language ideology suggests how CLDs are compelled to interact in English through the lens of the majority culture, while the additional language ideology suggests the need to amalgamate sociocultural practices with the curriculum in order to engender cultural sustaining pedagogy. Mallikarjun, Newman, and Novick (2017) supported Dworin's (2011)

findings, discussing that a bilingual's two languages are simultaneously utilized even in monolingual settings, raising questions about the practicality of separating learners' languages. In addition, supporting the notion of allowing CLDs to use their L1 in the classroom, Mallikarjun, Newman, and Novick (2017) advocated for ELLs using their L1 in all settings, as L1 is used to bridge to L2 in a trans-linguistic setting. When discussing the additive quality of the various bilingual education models, the benefits of dual language programs are an effective means to promote language acquisition in L1 and L2, thus promoting culturally sustaining pedagogy. Given that higher levels of language acquisition promote CSP, it can be determined that there is a strong linkage between dual language education and critical literacy.

**Critical literacy.** Daniel (2008) posits that balancing critical literacy will have a higher degree of success, as these methods will promote language output in activities where students feel most comfortable. As students become comfortable with language, they tend to take risks with the practice of language, producing more language and cultural experiences. Remembering Dworin's (2011) findings of the two prevailing linguistic ideologies among students, it can be argued that promoting critical literacy will prepare students to evaluate the best language to use within a given context, rather than basing language-use on a simple hegemonic subtext.

In her study of 11<sup>th</sup> year students within a South Australian school representing more than 50 nationalities, Knight (2009) found that highlighting othering in the curriculum demonstrated to students that othering occurs *culturally and linguistically*, even including traditions and the type of food people eat and the clothing they wear. Given the inevitable diversity that will continue to permeate American classrooms, schools have a responsibility to explore all possible scopes through which to implement the curriculum. Complex systems theory and linguistic ecology fit the elasticity of America's growing diversity, providing a lens through which

educators can highlight the bilingual programs in which they teach, as well as understand how programmatic decisions affect students' morale. Bilingual and ESL education models provide an initial first step toward evaluating where a given curriculum for CLDs fits within the spectrum of culturally sustaining pedagogy. Biliteracy provides the best path for CLDs, and thus dual language education should be the model of choice among school districts.

Kenner (2003) strengthens the promotion of biliteracy, positing that biliteracy extends children's learning and facilitates cultural exchanges within their families and communities. Larsen-Freeman's (2016) notions of viewing of the classroom as an ecological system where all interrelated parts affect the overall performance of the group, draws parallels as to how the implementation of a bilingual program highlighting critical literacy affects students' social development when interacting with their community. Given how complex dynamic systems theory approaches classroom components as variables that affect the learning environment, it can be argued that the most effective bilingual and ESL programs are those that honor students' dynamicity (Larsen-Freeman, 2016). Linguistic ecology and complex systems theory in the following chapters will highlight connections between linguistic development, linguistic ecology, and the complexity that informs it.

## CHAPTER 3: Linguistic Ecology

### Introduction to Linguistic Ecology

Wang and Hoffman (2016) argue that education runs the risk of imposing Western values on non-Western nations. The authors explain that post-colonial global citizenship education (GCE) needs to facilitate self-reflective and self-critical epistemologies. If language is connected to globalization, teachers must provide students access to the global village. Discussing linguistic ecology and the state of existing within or having some relationship with time (temporality), this chapter will examine aerial views of the various systems that inform a student's linguistic ecology. These systems inform students' social interaction, in-turn informing their language acquisition and their ability to do such.

Faltis (2013) posits that language learning is a complex, dynamic phenomena that emerges from one's social interactions. Urie Bronfenbrenner (1979) developed ecological systems theory in the 1970s, highlighting how a surrounding environment can influence a child's development. van Lier (2004) explained that bilingual students are caught in a state of flux between equilibrium and disequilibrium, as they are constantly renegotiating and reconstructing their sense of self. This fluctuation is evidenced through van Lier's (2004) and Urie Bronfenbrenner's (1979) notions of linguistic ecology. Linguistic ecology accounts for the interrelated nature of the processes that work together to form our environment (van Lier, 2004). van Lier (2004) posits that the ecology of language is at the apex of a successful multicultural education. van Lier's (2004) and Bronfenbrenner's (1979) notions of linguistic ecology are oriented around several systems that connect people both directly and indirectly.

The relationships between the variety of systemic layers within linguistic ecology create nonlinear, interdependent connections between the varieties of systems. Bronfenbrenner (1979)



and van Lier (2004) argued that whether directly or indirectly experienced, the events taking place inside an individual system and outside within a different system, share equal importance. These systemic layers include the microsystem at the individual level; the mesosystem, containing the interaction between two macrosystems; the exosystem, representing a system that the child does not come into contact with, yet experiences deep effects; and the macrosystem, including the intangible elements of society (Bronfenbrenner, 1979). The purpose of this section is to illustrate how linguistic ecology explicitly relates to linguistic development and social-emotional development, linking how CLDs relate to the world around them, both directly and indirectly.

Ladson-Billings (1995) discussed how anthropologists have spent much time researching how to connect teaching to the home and community cultures of diverse student groups that have historically experienced low academic achievement in schools. Experts have conducted a myriad of studies that demonstrate how teachers of students of minorities who incorporate language interaction patterns of students' home cultures into daily instruction, will increase student achievement. Understanding the linguistic ecologies of CLDs is one-way teachers can inform culturally sustaining pedagogy.

### **Linguistic Systems**

Van Lier (2004) and Bronfenbrenner (1979) define the terms microsystem, mesosystem, exosystem, and macrosystem as the following; the microsystem examines relationships between individuals, the mesosystem contains the connections between two or more contexts of the same individual; the exosystem examines links between two or more settings, with one of those not containing the individual; and the macrosystem is the overall environment in which individuals reside.

**The microsystem and mesosystem.** Bronfenbrenner (1979) purports that at the innermost level of one's ecological orientation is the microsystem, the immediate setting containing the developing person. Such environments include the home, classroom, or other setting in which the individual consistently inhabits. These immediate settings form the development of a person, yet they interact with each other indirectly, as what occurs in one environment might affect how an individual can operate within other environments of his microsystem. When one microsystem interacts with another, mesosystems are formed (Bronfenbrenner, 1979). Looking beyond the interdependence of the microsystem and the mesosystem, the exosystem illustrates the level of linguistic ecology within which the individual will not directly interact.

**The exosystem.** Events within the exosystem can profoundly affect an individual's development. For example, a CLD might never meet the department chair of the district's second language department, while the policies ratified at that level directly affect the students' livelihood. How a given class performed socially and academically in a prior year could inform how the teacher treats his students in the subsequent year.

**The macrosystem.** Without access to the target language community, bilingual students will experience unequal relations of power within society's social structures, including an accumulation of minimal cultural and linguistic capital (van Lier, 2004). Paralleling the relationship between CLDs and globalization, the macrosystem is the environment that informs the overall behavior of the remaining systems. Being the all-encompassing system, the macrosystem is the least tangible and the most susceptible to hegemonic patterns. Neither adult citizens nor students might ever come into contact with the elite in charge of dictating the macrosystems.

The macrosystem is the level of linguistic ecology that one could argue is the most powerful while also the most intangible. Social norms and political policies that permeate the other systems exist at this level (Bronfenbrenner, 1979). The omniscient nature of the macrosystem parallels globalization, which Wang and Hoffman (2016) argue fundamentally presumes that these ideas are agreed upon everywhere, limiting the space for debate and conflict as to the varied perspectives on what globalization should be. One could argue that notions of the global village are those that most inform the macrosystem while also impacting the other layers of linguistic ecologies, down to individual identity development.

**System interdependence.** Wang and Hoffman's (2016) argument pinpoints the salient struggle between CLDs and their learning environment as they are less linguistically proficient in English, having minimal access to American culture. The minimal access to American culture compels CLDs to accept ideas their teachers transmit to them. This pattern eventually impacts a CLDs' ability to develop critical literacy, while perpetuating the cycle of maintaining the status quo. Regardless of the model, bilingual programs become a façade used to perpetuate an inaccessible global village.

Understanding how the meso, exo, and macrosystems affect individuals, it is important to observe how the microsystem connects individuals immediately to their environment. The immediate environment represents the subjective reality through the eyes of the individual. These interconnections between the subjective nature of individuals and the events within the given settings, can be just as important as the events taking place within each individual setting. Teachers can use the interdependence between these layers of linguistic development to inform their relationships with students. As per Bronfenbrenner (1979), the environment as it is perceived takes precedence over the environment as it may exist in objective reality. Following

Bronfenbrenner's (1979) premise, it is highlighted that relationships with students are culturally bound and thus nonlinear based on the infinite factors affecting students' emotional states.

The dyad represents a two-person system, essentially the interaction of two microsystems of the mesosystem. Illustrating the mushrooming effects of linguistic ecologies, Bronfenbrenner (1979) posits that equal developmental importance goes beyond the dyad, extending to the triad, tetrad, and other levels. Amid student to student dyadic interaction, there is teacher to student interaction. How each of these dyadic relationships inform one another affects the triads and tetrads that develop (Bronfenbrenner, 1979).

### **The Triad and Mesosystem**

Events can affect a student's development occurring outside any of their given dyads or microsystems. Where one may see simple cause and effect relationships between dyads and microsystems, these two-body systems can break down as they approach entropy, branching off into triads and mesosystems. As envisioned through linguistic ecology, a collapse of a complex system in linearity will lead to bifurcations and emergent behavior. Due to the emergent nature of learning and the study completed by van Lier (2004), a complex approach to language learning accounts for the interrelated nature of the processes that work together to form our environment and honor the dynamicity of the interdependence of the various mesosystems that can emerge from a simple lesson. The tetrad illustrates the emergent behavior, as the connections students make between curriculum and other content areas branch outside the dyadic nature of the microsystem. Relating the curriculum to students' authentic use of academic content demands cultural connections to students, as well as requires an understanding of how for every student there will be a different relationship with the curriculum. Teachers who develop cultural competence will understand the variability in how students connect to the curriculum and thus

have the patience to unearth students' psyches in order to develop relationships that extend beyond simply teaching the curriculum.

### **The Tetrad and Exosystem**

Bronfenbrenner (1979) describes the exosystem as a linkage between two or more settings, while the tetrad is linked to four or more systems. These systems are indirectly connected to the individual. Given that CLDs are grappling with pressures to assimilate, it is important to investigate the tetrad and exosystem through the lens of society's influence. Cam (2014) questions the coexistence of "tyranny of unquestionable moral codes" (p. 1203) and the "bankruptcy of individualistic moral relativism" (p. 1203). This section views the tetrad and exosystem through the notion of how moral codes permeates education, explaining how given moral codes affect CLDs' performance, including the relationships they form with teachers.

Cam (2014) discusses the need to teach morality in schools, highlighting the notion that teaching through a Socratic lens will aid in balancing individual and social values. Coincidentally, the author also references that religious instruction has historically imposed values through adult imposition, denying the ability to develop critical thinking skills. Cam's (2014) thoughts parallel the earliest educational ideals of the United States, inculcated through the lens of Protestantism. Doll (2008) posits that closed systems, which one could liken to static moral codes, revolve around pre-set goals, while open systems function in order to keep the right amount of imbalance. Understanding the functioning of exosystems and tetrads, one can better understand how imbalance found through nonlinear interdependence of linguistic ecological systems foments evolution.

Imbalance allows given systems to maintain a creative dynamism, which as seen through the eyes of van Lier (2004), would incorporate notions of how morality and values initially affect context; context exhibits further turbulence as forces within the exosystem affect the micro and mesosystems. The creative dynamism characterized by Doll's (2008) vision of an open system, reflects the dynamic nature of the interdependence between intangible values and morals that affect language learning, culture, and context. The connection between linearity to values and morality parallel the roots of American curriculum, including the dissonance between American cultural values, conflicting values systems and structures within American culture, and those found in other cultures.

Larsson and Dahlin (2012) discuss that educators and students who are given the freedom to break boundaries will open new doors of opportunity. Such movement requires an understanding of how the exosystem informs behavior, including rejecting the simplistic and pietistic view of the early founders of the American educational system (Doll, 2008). Doll (2008) posits that human thinking travels across, sideways, and diagonally, skipping over from node to node or idea to idea, rather than illustrating simple cause and effect or moving seamlessly from point A to point B. Bronfenbrenner's (1979) notions of the exosystem illustrate what occurs when influences beyond A and B permeate students' lives. Culturally and linguistically diverse students are unique in that their primary exosystem might be influenced through their home culture rather than American culture. Given that language transmits culture, teachers must understand how students communicate by providing them opportunities to do so during class time, as well as allowing perceived deviation from standard cause and effect objectives.

### **Connections to Society**

Bonilla (2014) conducted a study within a Latino community and found that Hispanic leaders' negotiation of dominant ideologies faced a variety of contextual barriers that often limited the impact of a Hispanic leaders' actions. Bonilla (2014) also found that as powerful as a given Hispanic leader can be in his community, the power he wields outside that context may differ based on the agendas of the dominant culture. Bonilla's (2014) notions of minority group leaders' voices clashing with the agendas of the dominant culture, could almost have a quarantining effect on the minority population. This study represents the complex dynamics of linguistic ecology, in that the microsystem (the Hispanic leader's community) ultimately suffered from influences beyond its microsystem and mesosystem, based on norms and practices being propagated through the exosystem and macrosystem. Bonilla's (2014) case study is germane to CLDs' development, as many identify as Hispanic and rely on a connection to their community to support their cultural beliefs and to provide them with equitable opportunities. When there is acrimony between linguistic systems, diverse student groups are further shackled to the majority culture's belief systems. These cultural beliefs might clash with earlier notions of successful bilingual program models, as they might ignore research suggesting the best bilingual programs are those that support biliteracy. Kenner (2003) posits that biliteracy extends children's learning, facilitating cultural exchanges with their families and communities; when acrimony stifles fluidity between students' linguistic ecologies, children might lose their opportunity to develop biliteracy, thus being denied equal access to society.

In a study of Iranian ELLs, Kasbi and Shirvan (2017) highlighted the interdependence between language learning and students' affects. Paralleling Stephen Krashen's affective filter hypothesis, the authors discussed the notion of how anxiety levels affect language learning. The

findings of the complex nature between students' emotional states and language learning, honors the interdependence between internal and external factors that affect students' learning, those factors being anchored to their linguistic ecology. Language status plays a major role in the dissonance between the various layers amid students' linguistic ecologies.

Pascual y Cabo, Prada, and Pereira (2017) conducted a study, finding that connections of heritage language learning and service learning promoted the value of the students' L1. When coordinated carefully with culturally sensitive curriculum utilizing both flexible language policy and heritage language, service-learning promoted learning that transcends, having the potential to change communities. Understanding that learning transcends the classroom underscores the tenets of CSP and how it can be reinforced through an understanding of linguistic ecology.

### **Concluding Remarks for Linguistic Ecology**

Van Lier (2004) understood the importance of creating synergy across the variety of linguistic ecologies, as authentic communicative situations for students requires participation in communicative events, events of extreme importance, and access to the target language community. Without access to the target language community, bilingual students will experience unequal relations of power within society's social structures, including minimal cultural and linguistic capital (van Lier, 2004). At the most profound and powerful of societies, social structures are those which resonate within the macrosystem; the policies and norms that inform the subsequent interactions with and interdependence through the exosystem, mesosystem, and microsystem.

Van Lier's (2004) and Larsen-Freeman's (2016) notions of ecological systems explain the importance of understanding the interdependence of physical and temporal components of



the educational environment. Larsen-Freeman (2016) discusses how all components must be accounted for when creating a communicative environment for the students. Fostering a communicative environment will augment students' opportunities to attain biliteracy, leading to greater access to the majority culture and reducing othering.

Temporality is the state of existing within or having some relationship with time. Temporality is an important component of linguistic ecology in that social norms change over time, thus impacting society and how people interpret and manifest such norms. Reflecting on temporality, van Lier (2004) posits that if language is a form of action and action is a form of relating to the world, then one can infer that actions have changed over time due to the changing demographics. Education is of a temporal nature, based on its position with linguistic ecology. Understanding the temporality of education, it can be better understood how educational paradigms have typically reflected society's salient needs, and how such needs have affected culturally and linguistically diverse students.

Van Lier (2004) posits that the development of self is the consequence of interaction with and within the physical world. Anchored to the interdependence between the systems within a given linguistic ecology, linguistic ecology serves as a medium through which sociocultural components dictate how CLDs develop their sense of self. Given the strong connection between language and culture, identifying shaping reflects upon how CLDs can use their home languages in both an educational environment and the greater society. The shift from a given family's first language to the primary use of their second language, has traditionally occurred over three generations; however, current curriculum has accelerated this process to one generation, sacrificing students' ability to use their first language in order to bridge to the second language (van Lier, 2004),

Ayodogan (2009) supports the linkage between language learning and linguistic ecology, explaining the latent functions of society and education. According to Ayodogan (2009), the latent function of education imposes social norms on its students; norms that will have drastic consequences on students' place in the global village. In his analysis of latent and manifest functions of society, Aydogan (2009) concluded that schools inculcate social norms on their students through the lens of patriotism, history, and the need to satisfy civic duties. The author's analysis of the latent functions of education, highlights how schools have the power to inculcate a new culture on students while systematically removing their home language. Linguistic ecology provides a lens through which educators can understand the temporal nature of social norms in connection with other various systemic layers produced through these social norms, and how such norms affect the development of culturally sustaining pedagogy.

Connecting the notions posited through Wang and Hoffman's (2016) work, in conjunction with Ayodogan's (2009), Bronfenbrenner's (1979) and van Lier's (2004) studies, it can be argued that investigating language learning through the lens of linguistic ecology provides a lens through which to evaluate othering that is inflicted upon bilingual students. The lens of linguistic ecology coupled with complex systems theory, provides a scope which disrupts othering, thus engendering educational environments that develop students' home cultures while improving their emotional states and relationships with teachers.

Van Lier (2004) expanded Bronfenbrenner's (1979) notions of ecological systems theory, as he used the nonlinear interdependence between Bronfenbrenner's (1979) systems to justify the complex and emergent nature of bilingual students. Paralleling Bronfenbrenner's (1979) ecological lens, van Lier (2004) addressed the emergent nature of language learning intertwined throughout the various ecological systems. He suggested a complex approach to language

learning that accounted for the interdependent nature of the processes that work together to form our environment. Van Lier (2004) posits that ideas are contextually determined through linguistic ecology. Infusing notions of students' linguistic ecologies into the curriculum reinforces van Lier's (2004) idea that new identities need to be created compatible with the old, highlighting temporality and an ability to resituate theories across different environments.

Van Lier (2004) stated that students' construction of social self and identity is ongoing, as they are based on temporality of language use and the environment. Bilingual students are caught in a state of equilibrium and disequilibrium, as they constantly renegotiate and reconstruct their sense of self through their interactions with and influences from various ecological systems (van Lier, 2004). The interdependent relationships students have between these systems have prompted researchers to investigate the debilitating processes that occur on the way to evolution (van Lier, 2004). These instigative and debilitating processes can be likened to the turbulent balance between equilibrium and disequilibrium within complex systems, as they approach and reach entropy, where ultimate instability leads to eventual reorganization and adaptation. The relationship between turbulence, reorganization, and adaptation to linguistic ecology can be best connected through complex systems theory.

## CHAPTER 4: Complex Systems Theory

### Introduction to Complex Systems Theory

The notion of linearity and complexity in society dates to Ancient Greece. Larsson and Dahlin (2012) discussed how Greek tragedies were distinguished between two artistic drives; Apollonian and Dionysian. While the Apollonian model was more orderly and linear, the Dionysian model was complex. The Dionysian model of Greek tragedy was known for its transgression and dissolution of boundaries reflecting the transformative, emergent nature of people (Larsson & Dahlin, 2012). Supporting the connection between Ancient Greek artistic dichotomy, Larsson and Dahlin (2012) posit that educators and students who are provided the opportunity to test boundaries will open new doors of opportunity. The opportunities to test boundaries can be envisioned through the development of culturally sustaining pedagogy (CSP). Testing boundaries to provide CLDs with CSP requires a nonlinear paradigm that honors the interdependence of erratic behavior, turbulence, and emergence, witnessed through the lens of complex systems theory. Such curricular evolution requires building upon the linear, simplistic, and pietistic view of the early founders of the American educational system (Doll, 2008). This will aid in a greater understanding and the ability to utilize emergent, complex systems. The following sections discuss the salient components of complex systems theory: fractals, recursion and iteration, and bifurcation.

Paradigms oriented around complexity favor emergentism, which allow for the transgression and dissolution of boundaries that is required to build a transformative curriculum (Larsson & Dahlin, 2012). According to van Lier (2004), simple organisms or elements exemplify emergentism when they reorganize themselves into more complex, intelligent

systems. The author also argues that CLDs within a given classroom may achieve higher states of evolution when allowed to develop as part of a complex system (2004).

### **Fractals**

A fractal is defined as a curve or geometric figure, each part of which has the same statistical character as the whole. This section discusses the notion of fractal theory and how to apply them to the complexity of students, serving as a crucial piece to development. As per Grigorovici et al. (2017), Benoit Mandelbrot first introduced the term fractal when describing the patterns found in irregular systems, where patterns were otherwise identified as non-differentiable. Transcending the hard sciences into social sciences, Chengkun (2016) posits that fractal theory provided a path to better understand and probe the evolution and structure of human consciousness. Where fractal theory is relevant to identity and curriculum development, is its connection to the multiple layers of students' personalities. Fractal theory provides perspective to better understand multiple student behaviors as having equal roles in the construction of the students' psyche.

Demonstrating alignment with van Lier (2004), Chengkun (2016) used fractal theory as a lens through which to describe the environment as unpredictable and uncertain. Van Lier's (2004) notions of how different social systems form a linguistic ecology, highlight Chengkun's (2016) ideas that multiple self plays a role in the innovation of social reality. One can envision multiple self as the self-replicating nature of fractals.

Furthering Chengkun's (2016) beliefs, van Lier (2004) posits that language creates, perpetuates, and reproduces education, thus language instruction in the 21st century requires reorientation and examination through a lens accentuating the notion that students re-create their

identities every time they enter a new social situation. As contextual change increases, the notion of linear connections from one context to the next decreases, while fractals begin their infinite reproduction. Fractals can reproduce infinitely to the point where the current shape bears no resemblance to the initial shape. Understanding this fractal trait, teachers would be less prone to dismiss certain behaviors as deviant and countenance the given behavior's evolution before drawing conclusions about students.

Van Lier (2004) addressed the problem of viewing language acquisition through a linear lens, as language acquisition is intrinsically turbulent; once a rule is learned, it tends to be overgeneralized replicating fractal behavior, as CLDs continue to reproduce language through the similar rules. Reproducing language through similar rules generates new opportunities of emergence through their mistakes. When the turbulence settles, new turbulent behaviors emerge, as students move toward higher levels of proficiency. With higher degrees of proficiency, there will be new hurdles to overcome. In order to understand the myriad layers of language that inform a single student's proficiency levels, it is important to return to the notions posited through fractal theory. As learning and loss of learning are acquired at various scales, Cronbach (1988) stated that cognitive processes occur by understanding patterns of interrelated concepts embedded within other interrelated patterns. Language learning, as seen through fractals, can inform the interrelated patterns of language learning that are highlighted through turbulence and emergence.

Cronbach's (1988) theory parallels Benoit Mandelbrot's fractal geometry, developed to explore patterns of relationships in nonlinear, emergent systems (Fleener, 2005). Mandelbrot's fractal triangle has an infinite number of smaller, congruent triangles that comprise of larger triangles at each level. This complex form of geometry reflects individual learning as seen

through a turbulent lens of variable and unpredictable patterns (Cronbach, 1988). These patterns can result in chaos in the classroom, as students at various levels of learning will demonstrate multiple scales of understanding, similar to the Mandelbrot triangle that has multiple scales of triangles that amount to the larger triangles.

Cronbach's (1988) interpretation of fractals and how they interact within the human sciences in conjunction with Mandelbrot's mathematical notions, provides a better perspective as to how students' seemingly erratic behavior is less an outlier than a salient component of their personalities. Van Lier's (2004) notions of linguistic ecology have a reciprocal relationship with fractal theory, as the various systems that directly and indirectly affect students through contextual change, compel them to adapt to their environments, self-replicating through developing new behaviors. Through a myriad school environment, school policy exhibits as much fractal behavior as the individual students, as each part of the school policy takes on its own interpretation, filtering through different gate keepers; principals, teachers, students, and parents. Nonlinear interdependence highlights the emergent nature of learning, fortifying the need for a complex approach to language learning, accounting for the interrelated nature of processes that work together to form our environments (van Lier, 2004).

When examined through a historical lens, fractal geometry has embraced emerging changes in cultural activities and sensibilities, including the emergence of the modern era; capitalism, empirical science, industrialization, and urbanization (Davis, 2000). The notion that fractal geometry already permeates society, highlights the importance of using it to guide an understanding of linguistic ecology, helping teachers understand students' behavior before making uninformed decisions. Davis (2003) states that the "fractal image reflects the emergent conceptions of knowing and knowledge that pull away from classical logic and its implicit

linearities,” (p. 825). The author also reports that there is no simplest level of a fractal, as each level is as complex as the last. Identifying an individual student as an amalgam of infinitely possible fractals supports the notion that a linear response to misbehavior, is a stifling one, and ultimately an inappropriate response. Alternatively, a classroom should not be void of consequence, but rather use consequence as an orientation toward student behavior informed through fractal theory, allowing teachers to view situations through various angles before making decisions. The salient angle of this research, developing culturally sustaining pedagogy, can be informed through fractal theory, as this lens allows for the space to identify deeper reasons that inform CLDs’ behavior, rather than dismissing behaviors that do not conform to the majority culture’s social norms. This orientation toward behavior will also ease the pressure of taking negative behavior personally, so as not to take an emotional toll on the relationship between a teacher and given student.

Garmstom and Wellman (1995) further Davis's (2000) ideals, characterizing American high schools as adapted rather than adaptive organisms. Adapted high schools suggest a more static, inert approach to education, while adaptive high schools suggest and encourage the ability to cultivate emergent behavior, a major component of fractal theory. The distinction between adapted and adaptive high schools reflect Davis’s (2000) notions of the complexity of fractal geometry and how it can be used to inform relationships between teachers and students. Through this lens, it cannot be dismissed given behaviors as outliers, as all the parts have an equal impact, overall. Furthering the notion of the validity of seemingly outlier behavior, Garmstom and Wellman (1995) bridge quantum physics with behavior in the classroom through their comparisons of subatomic particles and human social systems. Imagining how a single human cell replicates itself into a fully-formed human serves as an excellent metaphor for how a single



behavior is just as relevant and informative of the whole person. In complex systems theory, the whole is often different than the sum of its parts; therefore, teachers run the risk of informing the cause and effect approach through the notion that they are objective observers of their students.

The role of observer creates a paradox, as the observer becomes part of the observation when the intent is to measure student data. The role of observation itself removes the notion of objectivity, compelling a need to consider appropriately measuring, recording, and reporting to inhibit curriculum reform and the path to culturally sustaining pedagogy (Garmstom & Wellman, 1995). Teachers must observe their students; however, Garmstom, Wellman, and Davis's (1995) notions of fractals and complexity should compel teachers to view their roles as part of the nonlinear interdependent variables that affect student behavior; fractals that inhabit the same linguistic ecologies of their students.

Garmstom and Wellman's (1995) notion is that it is a fallacy that teachers observe students objectively; this notion exemplifies context-reductive environments. These context-reductive environments evolve from the ideological frameworks filtering down from the historical foundations of mainstream American society. Society's initial needs affected how schools chose to educate their students; however, the status quo has engendered a state of inertia in present-day education, negatively affecting implementation of CSP. As per Mollenhauer (2017), linear scopes are the equivalent to cookbook procedures, as mainstream American society indoctrinates its citizens into viewing and understanding language through a linear, pragmatic lens or an end justifies the means mentality. Fractal theory can inform language learning, and thus inform how teachers deliver CSP to their culturally and linguistically diverse students. Language learning and cultural education do not follow simple recipes, rather exemplifying the infinitely repeating, self-replicating behavior of fractals.

### **Fractal Theory and Linguistic Ecology**

Given that both Bronfenbrenner (1979) and van Lier (2004) agree that language learning is complex, one can liken linguistic ecologies and their infinite opportunities for interdependence through Benoit Mandelbrot's work with fractal theory. Grigorovici et al. (2017) discusses how Mandelbrot posited that a fractal did not fit linear patterns defined through Euclidean geometry. Mandelbrot's observation parallels how students' behaviors, when influenced by dyads, triads, and tetrads, might seem erratic or unconnected at first glance, as these connections lack a linear trajectory. How the microsystems and dyads interact with the other ecological levels reflect how fractal geometry can unpack non-differentiable patterns found in irregular systems.

Grigorovici's notions of irregular systems can be represented through CLDs; contending with the pressures of American majority culture and their home culture compounds the infinite possibility of systematic layers affecting their behavior. Grigorovici et al. (2017) discusses how fractal theory reflects a complex system's structural unit, taking place on continuous but non-differentiable curves (fractal curves). Examined through CSP and the relationships CLDs have with society and the curriculum, the aforementioned can indicate that patterns of self-replicating behavior are hard to define. In an emergent, dynamic, linguistic ecology, fractal geometry can be utilized to inform students' erratic behavior (Grigorovici et al, 2017). Because students are constantly self-replicating behaviors akin to cell reproduction, connections between fractal theory and human behavior can be made; understanding that the whole is not equal to the sum of the parts. This understanding informs CSP, as it reorients educators toward a more complex view of education and curriculum design that avoids simple cause and effect relationships. Our culturally and linguistically diverse population reflects a degree of complexity informed through

linguistic ecologies and fractal systems stemming from their home cultural and American majority culture.

### **Recursion**

Recursion is coupled to fractal theory and is a process in meaning making, consciousness forming and cognitive growth, thus it is essential for a transformative curriculum (Lixin, 2014). Fleener (2005) investigated recursion, which can be defined as the action of a system using its own output as the next input, creating a feedback loop that can be extended indefinitely to create patterns, sequences or structures of boundless length. Fleener (2005) found that using recursion as a thought paradigm, highlighted the emergence of new logic that was relational and evolving, rather than analytic and deductive; a major component of CSP, demanding students to develop critical literacy.

Recursion is also related to dissipative structures. Fleener's (2005) study posits that dissipative structures reflect how energy and emergence operate at different levels of organization and disorganization. Recursion parallels dissipative structures, in that as the recursion process repeats, energy is exhausted through dissipative structures, until a system reaches maximum entropy. Complex systems theory, as seen through the recursive process and CSP, would stress that students are close to points of new emergence and growth at their most chaotic.

Fleener (2005) furthers this point as she believes that growth through states of dissipative structures and recursion is one such way that teachers and students form a joint complex system. Because teachers and students are interdependent, notions of dissipative structures and how they feed into recursion aid in explaining how bilingual teachers and their students share the challenge

of being part of a recursive system. Both teachers and students use turbulence in the context of a lesson, conversation or teaching milieu to amalgamate the behaviors of the entire system that lead to emergent behavior. Fleener (2005) supports the aforementioned, as she posits that together, teachers and students mirror the self-reproducing, steady state found in dissipative structures, (Fleener, 2005).

Dissipative structures are far from equilibrium, as they do not provide a deterministic path between the initial and final states in open systems. Bujakiewicz-Koronska (2009) discusses how dissipative structures start from different initial states while the given structures eventually reach similar stationary states. This can suggest that there is no linear means of producing an intended effect, which easily translates into the complexity of educating CLDs, as they arrive in the classroom with a wide range of backgrounds. Honoring such backgrounds is at the apex of building culturally sustaining pedagogy.

Fleener's studies on complex systems theory form the antithesis of educational paradigms that are rooted in colonial American culture, anchored themselves to certainty and rational cause and effect relationships (Fleener, 2005). Culturally sustaining pedagogy requires a holistic approach that complex systems can provide through a lens such as recursion. These scopes assist in informing students' behavior, as they provide a metaphorical lens that does not look to solve a problem, but rather inform the behavior, providing teachers with a wide range of options for intervention.

Understanding notions of dissipative structures and recursion can be used to inform culturally sustaining curriculum, as they provide a less rigid, well-defined framework through which to characterize behavior. Clearly defining behaviors and critically unpacking their roots,

help identify subsequent curricular shifts that can in-turn be informed through the fluctuations between order and disorder in open complex systems. Explaining how dissipative structures affect open systems, Bujakiewicz-Koronska (2009) discusses that order in each system arises at the cost of energy dissipated in its environment and is related to the decrease of entropy in the system and the increase of entropy in the surrounding of the system. Entropy, as seen through complex systems, means that as an individual system cools-down and stabilizes, the surrounding systems begin to heat-up, continuing the recursive cycle until they achieve maximum entropy.

Mingsheng and Xinjun (2014) define entropy as a metric of the disorder in a complex dynamic system that can be used to measure the self-organization. As the recursive process increases, the system reaches new degrees of entropy, eventually leading to individual and system emergence. Year after year, schools emulate the recursive process through new initiatives regarding curriculum. The purpose of understanding the recursive process through curriculum building is paramount to understanding how complex systems theory can inform culturally sustaining pedagogy. Examining the development of CSP through recursion, allows space for change and emergence to take place once maximum entropy has been achieved during a given school year. This informs the notion that teachers would benefit from preparing their curriculum based on the needs of the students in a given year, rather than simply on state standards and the given grade level. Regardless of the degree of stability a school reaches during a year, entropy will occur and there will always be the need for new initiatives to streamline school culture and curriculum.

Bujakiewicz-Koronska's (2009) notions of dissipative structures inform how the exhaustion of energy has the potential to ultimately evolve the system of a school district. An additional factor related to entropy is that this is irreversible and Bujakiewicz-Koronska (2009)

posit that the increase and decrease in entropy is an irreversible process. Highlighting the irreversibility of entropy during recursive process, further supports the notion that inertia is a fallacy and that students will either evolve or devolve during a given school year.

Paralleling earlier notions of temporality and irreversibility of entropy, Fleener (2005) used a clock as a metaphor for the deterministic perspective we have on the universe. The use of time in and of itself is a social construction, as it is based on a given society's socio-cultural norms. The notions of and how we use time in school reflects recursion in that time is what provides people the opportunity to develop. When time is then imposed on the larger system, the development of the overall organism is stunted, as time can be used to inculcate majority social norms on diverse student groups, forcing them to sacrifice their home cultures for indoctrination into the majority culture.

Bonilla's (2014) study within a Latino community also forecasts how the recursive process affects the overall functioning of communities. Bonilla (2014) found that Hispanic leaders' negotiation of dominant ideologies faced a variety of contextual barriers that often limited the impact of their actions. If one presumes that language transmits culture, then a conclusion can be drawn indicating that the barriers that Bonilla found were in part, due to a language gap between him and the minority and majority cultural groups. The author's impact on the community would theoretically play a role in the recursive feedback system, leading to entropy and culminating in emergent behavior. This can also promote the community system to loop back on top of itself, continuing to spiral up as it continues to evolve.

In their study on entropy, Mingsheng and Xinjun (2014) defined emergence as global properties; behaviors, structures, or patterns of a complex system arising from localized

individual behaviors, usually connecting to self-organization. The behavior of local community leaders in Bonilla's (2014) study reflects Mingsheng's and Xinjun's (2014) notions of emergence and a given community's effects on local schools. Localized behaviors found within a community will permeate school cultures, thus affecting culturally sustaining pedagogy. In addition to localities and schools, the individual effects on entropy can be seen in incredibly young children. Friedman (2001) conducted a study in four-year-olds and found they had an innate sense of entropy, concluding that children as young as four years-old, could understand the effects of randomizing forces, as well as predict highly improbable events. Friedman (2001) posited that young children have an intuitive understanding of entropy, illustrating a child's natural predisposition toward complex systems. These findings have greater implications for teachers of CLDs, as they place the onus on teachers to develop CSP, honoring students' complexity.

**Concluding remarks on recursion.** Understanding the irreversibility of recursion, educators and students would mutually benefit from creating a culture of learning oriented around complex systems theory. Complex systems theory enforces the need to investigate notions of the rational versus the irrational. Students are taught what is rational, when in actuality looking through a complex lens, it may be a more nebulous and culturally-bound term than initially thought. Fleener (2005) believes that education emphasizes the rational over the relational, leading to the hegemony of scientific rationality with an underlying logic of domination.

The post-modern movement favors the relational. Fleener (2009) believes the post-modern movement has become an uncomfortable companion to many people, affecting educational administrators, school cultures, and curriculum implementation. Fleener (2009)

believes we straddle the past and future amid current educational contexts and educational futures, forcing educators to retreat to modernist thought rather than risk uncertainty and reinvention. Such attitudes are those that perpetuate the status quo and impede development of culturally sustaining pedagogy. According to Fleener (2009), research on academic leadership highlights a deliberate lack of effort to recruit and prepare the next generation of educational leaders, reflecting an effort to stall entropy. Stalling entropy stalls recursion, in turn stalling evolution and emergence. A large part of recruiting and preparing administrators hinges to cultural competence. Seeking unprepared administrators and not preparing those already in service, will impede the population of American schools with culturally sustaining pedagogy. Lixin (2014) posits that recursion is deemed by complex systems theorists as a key process in meaning making, consciousness forming, and cognitive growth, thus it is essential for a culturally responsive curriculum. The overall byproduct of fractals, recursion, and entropy is bifurcation, a change in qualitative behavior.

### **Bifurcation Theory**

Fleener (2005) discusses how a bifurcation is a change in qualitative behavior, stemming from the fluctuation between balance and instability within a complex system. Goodlad's and Anderson's study reinforces the duty teachers have to build relationships with their culturally and linguistically diverse students. In addition to learning a new language and adopting new cultural norms, CLDs enter the classroom with a wide range of educational experiences from their home countries, including zero schooling and schooling on par with their monolingual peers.

The aforementioned relates to cognitive age, an additional complex dynamic that is harder to observe than black and white test scores. The theories further the argument that students, classrooms, and schools can be characterized by similar patterns determined by



characteristics of systems, initial effects, and bifurcations (Cronbach, 1988). Cronbach's (1988) observations of the patterns that permeate the multiple tiers of a complex system reflect the educational infrastructure and its nonlinear interdependence.

Fleener's (2005) notions that bifurcations stem from the fluctuation between balance and instability within a complex system, reflect CLDs' behavior toward new curriculum. Related to the behavioral sciences, language acquisition reflects the aforementioned components, as Fleener (2005) believes that language acquisition is dynamical and unstable, revolving around the complex interplay circulating between students, teachers, and the curriculum. Chengkun (2016) purports that bifurcation theory relates to fractal theory and recursion theory, as fractal theory provides a pathway to better understand the evolution and structure of human consciousness. Bifurcation theory relates to creating a CSP, as it supports the observance of dynamicity in a bilingual classroom as a unique organism, rather than the sum of its parts, that fluctuates and evolves through nonlinear interdependence. Evolution, emergence, and bifurcation are not predictable through simple cause and effect relationships, a major deception in how curriculum design is envisioned. At the apex of using bifurcation theory to inform a CSP, one can investigate the irreversible nature of bifurcation.

Kauko's (2014) research questions the linear notions of modern-day curriculum and how they affect CLDs. Kauko (2014) states that everything in nature is irreversible, and amid its irreversibility, nature's balance between all events from the micro to macroscopic level are subject to bifurcation, including unpredictable consequences. Kauko's (2014) notions of bifurcation help inform a CSP as it assists teachers to reorient the lens through which they view CLDs' successes and failures. Understanding that everything in nature is irreversible would re-direct educators toward a lens of complexity and thus honor all their students' behaviors rather

than simply remediating the ones they dislike and accentuating the ones they like. True remediation of students' behavior relies on honoring the whole child, rather than cherry-picking favorable behaviors and discarding those deemed unfavorable.

In addition to examining bifurcation at the modern-day classroom level, it is important to investigate how bifurcation has informed education history in the United States. Kauko (2014) stated that one way to examine bifurcation points, is to view them through the lens of changes in branches of history. One such connection to this theory is how laws have changed the course of bilingual education in the United States. Amid this overarching connection, are greater and deeper connections to complex systems, such as the notions of fluctuation, turbulence, and entropy.

Ramus map was formed, and linear notions of curriculum took hold over the United States. While bifurcation engendered linear notions of curriculum design, it has also caused the need for a modern-day culturally sustaining pedagogy. Current curriculum requires nonlinear paradigms, and according to Kauko (2014), nonlinearity does not comply with traditional notions of causality. When observing CLDs through the lens of nonlinearity, expecting them to follow a culturally-based system of cause and effect has the potential for negative impacts.

Kauko (2014) highlights the importance that bifurcation points are irreversible. Thus, teachers who countenance their students and classrooms as an organic, dynamic, and interrelated complex system, will approach turbulence to facilitate the development of culturally sustaining pedagogy. The connection between bifurcation theory with recursion and fractal theory can be seen through the notion of a system's behavior, infinitely repeating upon themselves, further developing the system, yet simultaneously making future outcomes unpredictable. Informing

CSP through notions of bifurcation honors the unpredictability that so often frustrates teachers and scars their relationships with students. Although we cannot erase the unpredictability of student behavior, we can work toward developing a CSP that honors unpredictability rather than orients education around predictable, reductionist paradigms.

Kauko (2014) addressed the paradox often reflected through reductionist paradigms, explaining that linear paradigms, look to reduce complexity within an inherently complex universe. When complexity is reduced in each classroom, teachers are at risk of losing their students' bifurcation points or changes in qualitative behavior. The more this reaction toward behavior continues, the greater the risk of the system positively evolving.

Kauko (2014) explains that complexity reduction is attempted through those whose interests are at stake and limits the possibilities of those who are on the opposite end of the majority who oversee decision-making. Colonial education had fewer constituents than modern-day education. Orienting education around those in charge, paralleled the interests of the greater society; through myriad bifurcation points, diversity has permeated society, compelling education on how to establish CSP across all schools in the United States. When developing such pedagogy, one must remember that evolution and bifurcation lead to emergence through complex, nonlinear channels.

Kauko (2014) also characterizes emergence as the differences between the system and its environment. Thus, the interplay of bifurcation points and emergence is like cause and effect, yet they do not follow the same patterns of linear notions of the cause and effect binary. One cannot understand the trajectory relationship between bifurcation points and emergence until the event is over. Cause and effect are what makes curriculum implementation for CLDs so challenging.

Given the notions posited through fractal theory, recursion, and bifurcation theory, the attempt to fit diverse student groups into a neat box is a flawed one.

The sequence of bifurcation theory views system turbulence preceding bifurcation, which then yields the emergent behavior (Kauko (2014). The choices leading to the emergent behavior are only visible and traceable after the given path has been chosen. The phenomena of complex systems make it extremely difficult to build curriculum for CLDs, as turbulence caused through balancing two meta cultures, has the potential to yield an infinite amount of bifurcation points. In order to develop culturally sustaining curriculum, one must honor and embellish the infinite iterations of organizational behaviors that stem from bifurcation points of all its constituents. A given plan is not the end of the decision-making process that informs curricular decisions but is a process that is informed through infinite patterns of fluctuation, bifurcation, entropy, and emergence.

Even in a linear system, one cannot ignore bifurcation points, as Osberg (2010) explained; bifurcation points compel us to choose, claiming that we cannot go in two directions at the same time. The author also characterizes bifurcation points as moments of forced decision making, pitting educators against time. Following Osberg's (2010) notions of bifurcation, it would be easy to fall into the trap of thinking that bifurcation is a simple fork in the road; bifurcation can truly be observed as infinite forks in the road that are oriented around temporality, as the temporal nature of a bifurcation point is anchored to the idea that it is a decision based on momentary context rather than permanence.

Reorienting CSP through a canon that understands the temporal nature of decisions will benefit teachers and culturally and linguistically diverse students. The temporal nature of

complex systems theory allots for the space of turbulence within a given system, leading to its emergent behavior. Stamovlasis (2014) supported the aforementioned as he saw parallels between complex systems theory, nonlinear dynamics, and temporality, in that he asserted that complexity theory and nonlinear dynamics can be used to describe complex systems as they change with time. Stamovlasis (2014) called for an epistemic and ontological shift, positing that the social phenomena taking place within an educational setting exhibits a wide variety of individual differences, including social and cognitive skills, highlighting that no single, unique path exists for the entire group.

Stamovlasis (2014) furthers the argument to shift curriculum development to a complex paradigm through his analysis of quantitative data. Paralleling linear notions of causality that inform teachers' responses to students' behavior, the overuse of quantitative data boxes in our CLDs. Stamovlasis (2014) suggested that quantitative paradigms are based on linear statistics, treating student achievement as error, orienting them around the myth of normal distribution. Stamovlasis (2014) argued that abnormally distributed errors are not errors, but rather an epistemologically appropriate way of examining how nonlinear components inform behavior. Paralleling the notion of honoring errors as steps toward emergence, one can argue that adverse reactions, or negative emergent behaviors, are as equally valid as are predicted behaviors. Regardless of the given behavior's perception, they are inevitably resulting from bifurcation points.

Stamovlasis (2014) furthered his point, stating that the notion of a normal distribution is itself a fallacy. There is no such thing as normal, because the more challenging tasks are those that dictate what is normal. This notion represents major obstacles in the lives of CLDs, as standardized tests often misrepresent their abilities, demonstrating linguistic biases in the

curriculum. Stamovlasis's (2014) concern about the link between institutional/system practices and the individual also highlight the power of curriculum, in that they have the power to enhance or rob students of their cultural identities. A curriculum that supports the elite through biased calibration of student achievement, is ultimately promoting lower status for the minority language, perpetuating a cycle of bifurcation points that yield emergent behavior supporting the majority and higher status linguistic culture (Stamovlasis, 2014). De Lissovoy furthers these notions of, and connections to bifurcation in his analysis of globalization.

In what he calls 'pedagogy in common,' De Lissovoy, (2011) posits that at its foundation, globalization is based in the social condition of interrelation, collaboration, and entanglement. This allows for the setting of boundaries for a global society that is oriented around interdependent bifurcation. De Lissovoy, (2011) explained that the true development of democratization hinges on understanding the interrelation that creates the global village. Given that Kauko (2010) stated that bifurcation points caused forced decisions, one can relate De Lissovoy's comments to complexity theory.

The characteristics of bifurcation theory and emergentism that force unsavory decisions and consequences for oppressed groups in education, will eventually be realized in society. One can argue that consequences of bifurcation points and subsequent emergent behavior are most critical during a child's formative educational years. During these years, students are at the mercy of the inculcation of social norms and benefit from a culturally sustaining pedagogy. Wang and Hoffman (2016) asserted that there is an implicit bias that might lead globalization to become another means for global citizenship education to form another foundation for class-based domination. For people to feel part of the global community, the educational setting must inculcate a flexible belief system in students, allowing them to extend notions of citizenship

beyond the borders of individual nations, having an allegiance to all people, rather than one set of social norms and values.

Having discussed the history of education in the United States, bilingual education court cases, the different types of bilingual programs, and the salient components of complex systems theory, the next chapter will draw connections between Martin Heidegger's notions of *Dasein* and complex systems theory.

## CHAPTER 5: Martin Heidegger

### Introduction

The purpose of this chapter is to highlight connections between Martin Heidegger's notions of *Dasein* and complex systems theory, to move closer to informing culturally sustaining pedagogy (CSP). Martin Heidegger, an influential German phenomenologist, and existentialist, used his seminal work, *Being and Time* (1996) to focus on the notion of *Dasein*. *Dasein*, meaning 'being there,' is at the epicenter of Heidegger's questions of individual identity and human existence. Heidegger (1996) defined being as simultaneously the most universal and emptiest concept. Therefore, the concept of being is undefinable and obscure, yet the most universal. According to Heidegger (1996), *Dasein* is a priority which parallels complex systems theory, in that an individual's *Dasein* is his balance between equilibrium and disequilibrium.

Educators can use notions of *Dasein* to inform CSP through nonlinear trajectories that CLDs experience along their path towards identity forming. A child's identity formation revolves around what Ayodogan (2009) referred to as manifest function, the salient purpose of one's being. In his analysis of manifest functions in society and education, Ayodogan (2009) discussed how the manifest function of a family is to reproduce and raise children, while the manifest function of education is to teach students how to become full-functioning members of society. Citing that education's most basic manifest function is to transmit knowledge, Ayodogan (2009) suggested the clear power the educational system has over its students; students face indoctrination without the ability to develop critical literacy. He furthered this point, explaining that the latent function of education is to perpetuate the existing social hierarchy or status quo (Ayodgoan, 2009).



Ayodogan's (2009) analysis parallels Martin Heidegger's (1996) notions of *Dasein*, as to be in any given society is established through the family and educational dynamic. Deeper investigation suggests that a student's notion of being is more strongly attached to family and schooling, as students have been acculturated in society through school experiences. For culturally and linguistically diverse students, this highlights the need for a CSP that honors students' backgrounds as many CLDs will face a clash of social norms between home and school culture. Heidegger (1996) explained that notions of everything and being are anchored to the individual; there is no absolute definition of proficiency in everything and what it means to have arrived at one's sense of being.

### **Certainty Versus Indefinability**

As per Heidegger (1996), *Dasein* is the experience of being. Heidegger's (1996) notions of *Dasein* and being, parallel education, discusses how education inculcates the salient cultural ideals of the majority culture. Certainty is something that our linear, modern-day curriculum inculcates in our students, having a profound effect on their identities. The colonial era influence of the Ramist map and Puritan values, and the valorization of European values leading up to the social efficiency movement in the early 1900s, United States education has seen an epistemological culture oriented around simple and linear cause and effect relationships that impact the degree to which the curriculum can be culturally sustaining. Reflecting the universal indefinability of *Dasein*, Jayne Fleener's (2005) studies of complexity challenge the positivist epistemologies of modern science. Her theories seamlessly connect with Martin Heidegger's (1996) notions of being as seen through the perspective of *Dasein*. *Dasein* promotes nonlinear interdependence as Heidegger (1996) viewed identity and time as the unity of the past, present, and future. Even though time moves forward, human identity is an amalgam of the

interdependence of the past, present, and future. Heidegger's (1996) notions of being, create a solid bridge between complex systems theory, linguistic ecology, and the education of CLDs. The notion of being for a culturally and linguistically diverse student is one of constant turbulence, including the power source behind culturally sustaining pedagogy.

### **The Heraclitus Seminar**

In his Heraclitus seminar, Heidegger (1996) questions the notion of knowledge of everything, drawing parallels to *Dasein*, in that both knowledge and personal identity and being are interrelated, based on the individual and his/her experiences (Seibert, 1979), Heidegger (1996) broadens this question, asking if the interpretation of information comes from our biology or hegemonic practices. Questioning whether information-theoretical interpretation is grounded in the biological, or if coercive steering takes its place, Heidegger (1996) highlights the questions that surround modern-day education, including providing the opportunity to reorient our perspective through a lens of culturally sustaining pedagogy. Heidegger defined coercive steering as bringing something to a desired result (Seibert, 1979).

Coercive steering resembles the linear cause and effect-based curriculum that we find in the United States, as CLDs are steered toward assimilation with their native English-speaking peers. Heidegger's (1996) notions of coercive steering, including his early notions of curriculum, reflect the idea that if a lesson has been taught and students have not understood, they have failed. These components can be further highlighted to reflect Kauko (2014), where bifurcation points force change; through a Heideggerian lens, bifurcation points inform *Dasein*. This can appear germane in how teachers are informed to deal with failure, and how teachers work with CLDs when they experience failure. Given uneven language distribution and use in schools, CLDs not versed in proficient English are at risk of deeper levels of failure. This will be

perpetuated if teachers do not inform their decisions through a culturally sustaining lens. A CSP informed through notions of *Dasein* shift the curriculum to the development of the whole, rather than moving the child from discrete points along the curricular trail.

### ***Dasein*, Bifurcation, Recursion, and Fractals**

Linking *Dasein* to Kauko's (2014) notions of bifurcation points, compels one to question the degree of agency CLDs have at such junctures of failure in their education. Kauko (2014) explained that bifurcation points force a change in qualitative behavior, paralleling Heidegger's (1996) notions of coercive steering and identity forming. The forward movement of time compels inevitable changes in identity and bifurcation points that we see in CLDs, thus heightening the necessary sense of urgency needed to implement proper curriculum change. Earlier notions of temporality can be observed through *Dasein*, as Heidegger views time as the unity of the past, present, and future. This interpretation of time can be viewed as a spiraling, recursive trajectory; even though time is moving forward, one's identity is a product of temporal boundlessness, linked to a recursive process not exclusively anchored to forward motion.

Fleener (2005) posits that the salient component of recursion is the action of a system using its own output as the next input, creating a feedback loop that can be extended indefinitely to create patterns, sequences, or structures of unlimited and boundless length. Fleener's (2005) notions of recursion resonate with Heidegger's (1996) notions of time, in that the past, present, and future are constantly working together to engender change in identity. Additionally, fractals are also self-similar and present a dialectical unity that interact with each other in a structural relationship, explaining the interdependence between the past, present, and future as seen through Heidegger's notions of the unity of time (Chengkun, 2016). Like the dialectical behavior of fractals, components of an individual's past might seem superficially unrelated; however,

one's past, present, and future create a fractal dialectic that is interdependent at deeper levels.

Transitioning from the individual to the system level, one can infer that the culturally responsive classroom through Fleener's (2005) notions of recursion uses recursion as a thought paradigm, demonstrating emergence of new logic that is relational and evolving, versus analytical and deductive. Fleener (2005) also untangles the dialectical behavior of complex systems, making such a lens more tangible and conceivable for teachers of CLDs to employ in their classrooms. The aforementioned can be used to connect seemingly erratic behavior of CLD students, allowing educators to examine the overall identity development of their kids, rather than measuring them against their peers through quantitative data. Identity development through quantitative data can damage students' psyches, jeopardizing their ability to truly join the global village.

### ***Dasein* and Globalization**

Connected to globalization and *Dasein*, Griva and Chostelidou (2017) posit that modern educational environments should provide plurality and contact among a variety of cultures and languages, thus uniting a wide gamut of cultural practices and languages. The Content and Language Integrated Learning approach (CLIL) comprises holistic features besides emphasizing meaning rather than form, reflecting the notion of process over product as seen in modern-day curriculum (Griva & Chostelidou 2017). The aforementioned also supports the notion that providing a context for purposeful language use will promote CSP, as it will open the global village to diverse student groups. Griva's and Chostelidou's (2017) promotion of communicative environments highlight the understanding that modern society is moving toward multicultural education where majority cultures have the duty to learn how to communicate with minority cultures. The content and language integrated learning approach ensures that children do not

develop identity in isolation, but rather through communicative experiences that are informed to the variety of systemic layers of their own and the surrounding linguistic ecologies.

Technological advancements and social media have maximized access to the global village, making the world seem smaller, facilitating nonlinear interdependence between cultural groups across the globe; therefore, students' *Dasein* has the potential to be defined and redefined moment to moment, day by day, through seemingly random searches on technology. Linked to bifurcation points, *Dasein*-forming occurs at lightning speed and, given how children are conditioned to communicate, will inform the type of emergent behavior they exhibit. The inevitability of pluralism through access to people can make or break the future of a culturally and linguistically diverse student. Griva and Chostelidou (2017) posit that increased pluralism engendered through the global village demands education to promote multicultural awareness within the majority culture. Our current temporal context rife with social media, demands that the notion of the successful student parallel that of multicultural competence and pluralism. This indicates that students would benefit from developing awareness of various types of identities, paralleling understanding individuals' self-perceptions, including but not limited to their personal, social, and cultural identities (2017).

Jim Cummins's (1982) theory of common underlying proficiency (CUP), discussed that L1 and L2 are interdependent, as both languages form a bridge to proficiency within the other. Assuming CUP leads to cultural interdependence, it can be argued that there is no such thing as one dominant culture, rather a culture that is forced upon the majority of the population and engendered through the majority elite. Bifurcation permanently stamps an additional layer to a given person's *Dasein*, while at the same time becoming an iteration of the individual's past, present, and future (Seibert, 1979), Given the ramifications of how bifurcation points and *Dasein*

inform individual identity, parallels can be drawn between interdependent individual identity formation and complex systems theory.

The desire and possible need to systematize education in order to meet the needs of the global village, do not need to automatically replace dynamicity or turbulence; systemization can exist through the nonlinear dynamics of the unique *Dasein* of every student. The inundation of schedules and flow charts within the common American school comes with the fallacy that organization cannot exist with turbulence. Systematization *can* exist with turbulence as complex systems are ultimately deterministic. Kofidis et al. (2006) distinguished deterministic systems from chaotic and complex systems in that a system is defined as deterministic if its state can be determined as a function of finite past states. A chaotic system will highlight problems by identifying the source of initial conditions, leading to difficulties in the prediction of the system, disrupting the status quo of curriculum oriented around linear paradigms.

### **Order within Chaos and Complexity**

One major fallacy behind complex systems theory includes that everything is chaotic with no order, thus whether intentionally or purposefully, educators will tend to veer from the chaotic in order to maintain decorum. Decorum can be defined as stifling identity forming, as many students originating from diverse backgrounds are accustomed to chaotic environments. The desire to maintain decorum might be a one-sided effect or reaction of teachers who are not familiar with recursion and dissipative structures within complex systems. As per Bujakiewicz-Koronska (2009), dissipative structures emanate from different initial states; however, they will eventually reach similar equilibrium. The aforementioned helps debunk the paradoxical notion that determinism cannot exist within complexity. While a complex system will not provide a deterministic path between the initial and final states in open systems, the end result will

nonetheless reach equilibrium, while being traced back to the initial states that caused the final behavior. Being that a salient component of linear notions of curriculum is the need for a deterministic path, one can still find cause and effect relationships within complex systems. This understanding is useful in reforming and informing how teachers approach the facilitation of culturally and linguistically diverse students' identity forming.

A paradigmatic shift to viewing the *Dasein* through complex systems theory would provide an appropriate lens through which to observe students' behavior, in-turn, informing culturally sustaining pedagogy. Veering from the linear in order to embrace the complex would engender more learning opportunities for students and their teachers, as deviating from the path could be seen as normal. While systematization might be a natural response on how to streamline curriculum, the danger is sacrificing a students' individuality. This sacrifice has the potential to be particularly harmful to CLDs, as curriculum is written for the majority culture.

### ***Dasein* and Sociolinguistic Context**

Reaching entropy and pushing through subsequent bifurcation points will impact students' *Dasein*. The lens through which teachers approach these moments will inform students' overall projection for achievement. When teachers impose linear expectations on CLDs, the probability of the lack of readiness might increase, as linear frameworks ignore their dynamicity. Lack of readiness impacts their *Dasein*, fomenting the deeper, more nefarious effect of creating a culturally and linguistically subtractive curriculum. Landry and Allard (1993) discussed how a subtractive bilingual environment will lead to losses in CLDs' L1, as well as their culture. They further argued that this is due to majority ideologies and power relations that support the primary language and dominant culture, in-turn legitimizing unequal division of resources based on race, ethnicity, and language (Landry & Allard, 1993).

The subtractive effect foments a pattern of failure that has been imposed upon CLDs in the United States. Landry and Allard (1993) expressed the need to promote maintenance of the minority language, integrating into mainstream society. In alignment with complex systems theory, Landry and Allard (1993) believed the answer to the dregs of inequitable education is a theoretical framework that permits different adaptations of educational programs to a variety of sociolinguistic contexts. Drawing connections between sociolinguistic context and *Dasein*, as social context determines how one interacts with others, in-turn informing his identity. Teachers are at the forefront of developing a sociolinguistic context that promotes multiculturalism while providing students the tools to be successful global citizens.

It is important to connect Landry and Allard's notions with *Dasein*. Heidegger highlights the notion of ambiguity within the concept of information sharing and how the recipient's perception of information will tailor his/her sense of being (Seibert, 1979). These notions of *Dasein* can be connected to complex systems theory and education, in that the sharing of information, how one perceives it, and how context forms individuals, are based on variables surrounding sociolinguistic contexts. Acknowledgement of how *Dasein* informs sociolinguistic contexts furthers how teachers can create CSP for their students. As long as education tailors' sociolinguistic contexts to fit the needs of the majority culture, CLDs' experience in their L1 will become diluted, no longer cultivating L1 competence, including sociolinguistic vitality within their L1 community (Landry & Allard, 1993). Limited literacy in L1 foments a limited ability to transfer to L2; hence, the subtractive effect has profound effects on their identity formation from a linguistic and social standpoint. When schools suffocate CLDs' metalinguistic awareness, CLDs' overall cognitive and social functioning suffers, as they will neither have the tools to access the curriculum nor the mediums through which to access success within the majority



culture. In risking the minority cultures' linguistic vitality, the greater risk is sacrificing one's *Dasein*.

Heidegger's notion of information sharing highlights Landry's and Allard's (1993) notions of linguistic vitality, as they perceive that one such way to maintain vitality is through building capital within various sociolinguistic contexts (Seibert, 1979). Such capital is built through access to schools' educational programs in the given ethnolinguistic group's language. If education impedes experiences in students' L1 stunting their sociolinguistic growth, bifurcation points will drag students down a linguistically subtractive spiral, ultimately sacrificing their *Dasein* and holding their identity development prisoner to the whims of the majority culture.

### ***Dasein*, Dissipative Structures, and Emergence**

Connections between Heidegger's notions of *Dasein* and complex systems theory also parallel Jayne Fleener's (2005) notions of dissipative structures. Fleener (2005) explained that dissipative structures reflect how energy and emergence operate at different levels of organization and disorganization. Human actors within the educational setting can be considered dissipative structures, as they are engaging with and creating their environment based on the balance between stability and instability (Fleener, 2005). Examining Heidegger's notions of the ambiguity of information sharing and from where and from whom its interpretations are formed, it can connect how individuals will organize differently and how individual organization seldom reflects the sum of its parts.

Expecting individual emergence to parallel group-level emergence reflects deterministic paradigms stemming from linear scopes. Complex systems theory still offers determinism that can be used to inform curriculum, as well as attitudes toward students' identity development.

Understanding *Dasein* assists in informing how CLDs' identity development can take labyrinthine, complex paths while simultaneously appeasing educators who need reassurance that determinism is not being abandoned. Different degrees of emergence predicated on linguistic development make CLDs the perfect candidates through which to examine *Dasein*. Such investigation connects Heidegger's notions of *Dasein* with understandings of how teachers differentiate their CLDs. While notions of differentiation are directly inculcated upon pre-service teachers during teacher preparation programs, deeper ideals of differentiation are implanted throughout one's schooling experience. Each district has its own culture, compounded with individual school cultures, and complicated with individual classroom cultures with individual teachers' dispositions informing the classroom.

Heidegger's notions of temporality and *Dasein* also reflect Fleener's (2005) notions of dissipative structure. Dissipative structures engage within their environments reaching critical points of instability, in order to achieve greater states of organization, complexity, and stability. During his Heraclitus lectures, Heidegger (1996) used a metaphor of a library that can be likened to notions in complex systems theory. Heidegger's metaphor of the library parallels how emergent behavior of a group of organisms does not equal the sum of the parts. Heidegger asks how long a library remains a library if one removes one book after another. He furthers this metaphor, explaining that the term library, can carry multiple meanings. From being a collection of books to being the actual location, Heidegger illustrates concepts set forth in complex systems theory by questioning the relationship between the part and the whole, where the sum of the parts never reflects the behavior of the entire organism (Seibert, 1979).

Upon removing one book after another, Heidegger's metaphorical library reflected complex systems theory in that the sum of the individual books does not comprise the library's

identity (Seibert, 1979). The interdependence between Heidegger's metaphor and complex systems theory is especially glaring as he elucidates that all of the books are different from the 'allness' in the sense of unity. Akin to complex systems theory, Heidegger (1996) pointed out the sum of the parts is not equal to the whole. At the apex of Heidegger's metaphor, is an interpretation of unity, as where all books come together to unify into a single library. Like the behavior of students, it might be easy to superficially quantify and coercively steer their behavior, but at its core, the unification of the group will ultimately be viewed differently than the sum of its parts. Like students and a classroom, the number of books does not necessarily make the library good or bad, as both students and classrooms are constantly in flux and ever-changing. Both students and the relevance of libraries are bound to temporality; the unity of the past, present, and future. Similar to the library and being, true cultural competence does not have a beginning and end, but is in a constant cycle of turbulence, entropy, and emergence.

Similar to the parallels between complex systems theory and the theory of the relationship between a sum of parts and the whole, Heidegger (1996) referenced notions of emergence that simultaneously reflect individual human behavior and the behavior of the organism. In his Heraclitus lectures, Heidegger (1996) questioned the meaning of entirety, asking if once someone has arrived at the entirety of thinking, has he arrived at the end of thinking (Seibert, 1979). Another connection can include his interpretation of day and night as a metaphor. Heidegger (1996) explained that the linear distinction between day and night is a fallacy, as day and night are one, paralleling his beliefs of the unity of time (Seibert, 1979). Heidegger's analysis of the library serves as a metaphor for various contexts within which humans interact with, including their reactions to their environments. The evolution of a library

is cyclical and temporal, similar to how teachers acknowledge students' identity development and how they develop culturally sustaining pedagogy.

### **Study on Differentiation**

Understanding that notions of curriculum are culturally embedded, it can be induced that ideals surrounding differentiation are also culturally embedded. Brown and Endo (2017) further the aforementioned, noting that many pre-service teachers envision differentiation indistinctly as 'just good teaching.' This foments blurred vision of how teaching practices are learned and subsequently transferred from the district, through the schools, and into to the classroom. Mixed notions of differentiation and indistinct teaching during teacher preparation programs can make CLDs especially vulnerable to diluted instruction. Teachers' conceptualization of differentiation is at the apex of how to meet the learning needs of this unique population (Brown & Endo, 2017).

Brown and Endo (2017) examined 149 lesson plans, of which only eight had accommodations for ELLs. Brown and Endo's (2017) study reflected the understanding that the rigors of learning two cultures simultaneously can cause fluctuations in students' learning in addition to the existing risk that ELLs might not receive appropriate instruction. Examining the results of this study, one can amalgamate the lingering deficiencies in CLDs' education along with Heidegger's questions of where our interpretations originate from. Understanding the state of education alongside Heidegger's notions of temporality and identity development, teachers will be better-suited to inform curriculum through culturally sustaining pedagogy.

*Dasein* and Heidegger's criteria for being are located outside the realm of linearity. They countenance the uncertainty of nature, in addition to demonstrating how their nonlinearity makes

*Dasein*'s components more interrelated, through the notion of time reflecting the unity of the past, present, and future. Heidegger's (1996) interpretation of what it means to be, fortifies the need to embrace CLDs' diversity, and thus reform curriculum in order to meet the complex needs of diverse student groups. Heidegger's notions of differentiation and individuality demonstrate further parallels, as he believes that the true ideal of entirety is expressed through people's individuality and their awareness of their own uniqueness, versus fitting in a box (Seibert, 1979). Heidegger's notions of entirety reflect the elasticity of complex systems theory, including the epicenter of culturally sustaining pedagogy. A large part of CSP is based on the individual's needs, highlighting the student as a whole while taking a holistic approach to learning. Culturally sustaining pedagogy understands that a student's entirety is completely bound to the individual and cannot be molded to a curriculum. Heidegger's philosophy on being, including his notions of time, also reflect temporality and entropy as seen through complex systems theory. Students' *being* is directly tied to the creation of authentic curriculum.

Fleener and Mathey (2006) studied Heidegger's notion of *Dasein* in relation to authentic mathematics instruction. This demanded a definition of authenticity, which became more difficult to find in relation to the context, the individual, and the overall ecology of the classroom (Fleener & Mathey, 2006). Anchored to the ecology of a given classroom, *Dasein*, then becomes fluid and malleable. This malleability reflects Heidegger's notions of dynamic absence, which he characterized as a clearing in the forest where the absence of everything leaves an open canvas for discovery. This notion of discovery can be seen through Fleener and Mathey's (2006) study on the complexity of authentic math instruction. Fleener and Mathey (2006) found that the nature of how students defined mathematics evolved over the course of the class. The evolving nature of what marked authenticity for the class, was predicated on discourse and the interdependence

between many variables. Since *Dasein* is ever-evolving, one can examine this concept through the distinct identities and self-perceptions that students develop through individual courses. Such identity development is anchored to many variables, spanning cultural components, degrees of perceived success and failure, and the teacher's rapport with the students.

### **Temporality and Identity**

Heidegger's (1996) notions of temporality reflect the entropy of complex systems. Characterizing the movement of life in nature as growth and withering, Heidegger (1996) highlights this dichotomy through the metaphor of the ripening of a fruit; the moment a fruit ripens is also the moment of its decline, a bifurcation point when looked at through the lens of complex systems theory (Seibert, 1979). One can parallel the ebb and flow of learning to the ripening and decline of fruit; once a student learns a new concept, the cycle of learning continues, with perceived declines as the student travels through the turbulent process of applying new concepts. Therefore, Heidegger's notions of *Dasein* is supported as a student's being in the world and is largely defined by his learning and the self-perceptions that follow.

Heidegger (1996) believed that being is the most universal and emptiest concept, being undefinable and obscure while simultaneously known throughout existence. Heidegger (1996) acknowledges notions of indefiniteness of the understanding of being, demonstrating alignment of Fleener's (2005) notions of valuing the relational over the rational. The being of *Dasein* is defined by its concern about being, paralleling critical thinking and metacognitive skills that are anchored to culturally sustaining pedagogy. *Dasein* is entangled within the world within which it exists, as it interprets itself through the world in which it exists, causing potential harm to diverse student groups whom are being force-fed a set of foreign cultural and linguistic norms (Seibert, 1979). As *Dasein* is focused on being in the world, the linear notion of a fixed reality shifts every

time it is perceived through a different individual, furthering the notion that a classroom culture informed through *Dasein* represents a lens more conducive to educating students who come from turbulent backgrounds; turbulent backgrounds are compounded through the layered turbulence of contending with new norms stemming from the linguistic micro, meso, exo, and macrosystems.

Heidegger (1996) posits that perception of what is objectively present takes the place of reality; perception is discussed, then it becomes the contextual reality, resonating with notions of van Lier's thoughts on the temporality of language. These notions of perception reinforce reorienting CSP through practices that invite students to develop their sense of self in relation to how they interact within the world around them. For diverse student groups, the world around them is more than the norms that govern a given classroom. Teachers need to demonstrate awareness and critical consciousness of their own identities in order to instruct diverse students (Fitts et al., 2008). The critical consciousness that educators facilitate within their students can be characterized by the complex turbulence between predictability and unpredictability that is produced through fluctuations within, and the search for one's *Dasein*. According to Larsson and Dahlin (2012), cultivating this process is exactly what Nietzsche likened to finding the ultimate creativity somewhere between Dionysian (complex) and Apollonian (orderly) paradigms. It can be argued that Larsson and Dahlin (2012) are in favor of Heidegger's notion of *Dasein*, where the Dionysian or complex paradigmatic shift is constantly occurring.

Larsson and Dahlin (2012) described a plane of multidimensionality, out of which matter is born and where language and meaning take their beginnings. Larsson and Dahlin (2012) posit that opposites mingle and flow together in the plane of consistency. This highlights connections between the classical Apollonian and Dionysian Greek dichotomies, including turbulence within complex systems. Furthermore, all components help inform Heidegger's (1996) notions of the

complexity of temporality, in that they are interrelated and evolve through fluctuation, turbulence, and bifurcation. Linguistic development links with temporality, as it is often caught in an unformed, unorganized state of development. Regardless of the many chaotic features Larsson and Dahlin's (2012) notions of the plane of consistency highlights, it is not entirely complex, as it follows a set of rules and logic where flows are constructed, and continuums of its intensity are upheld. These connections support the deterministic nature of complex systems, providing those who need to inform their curriculum through a deterministic lens, a certain degree of peace of mind.

Subjective perceptions engender meaning-making, eventually producing objective reality that begins with students' perceptions (Seibert, 1979). This concept fortifies a major prerequisite of a culturally competent classroom, in that one's *Dasein* must develop concurrently with culturally bound perceptions that will ultimately mold the reality of the classroom. The classroom dynamic continues to evolve, informing student behaviors, and completing the connection between Heidegger's notions of *Dasein* and van Lier's and Bronfenbrenner's theories on linguistic ecology. All conform to the dynamicity of a complex system. Teachers and students who unpack notions of identity through *Dasein* will enjoy greater potential to build CSP that honors the turbulent nature of learning across a variety of environments.



## **CHAPTER 6: Synthesis of Culturally Sustaining Pedagogy and Complexity in the Classroom**

The purpose of this chapter is to offer suggestions as to how educators can bridge theory and practice. Highlighting institutional issues, including teacher preparation programs and professional development, and practical suggestions for classroom practices, this chapter will culminate this study with an emphasis on culturally sustaining pedagogy (CSP) as seen through Django Paris and Gloria Ladson-Billings. Agreeing that there is a need to improve pedagogy at higher levels, Fleener (2009) found that academic leadership shows a deliberate lack of effort to recruit and prepare the next generation of educational leaders. McArthur (2012) shared Fleener's findings, as he posits that educators and pre-service teachers would benefit from having a deeper understanding of disciplinary literacy, versus general literacy. McArthur's (2012) study discussed one area where educators can become more knowledgeable by unpacking interdependence between language learning and curriculum. He argued that simply understanding the importance of content area language and its relationship to the development of Cognitive Academic Language Proficiency (CALP) is not enough, as on a deeper level language and curriculum are interdependent (McArthur, 2012).

This research has been anchored to earlier notions of curriculum design, supporting the notion that curriculum design needs to ascend to levels of CSP in order to meet the changing needs of students due to the implicit turbulence of language learning and its effects on self-perception. San Pedro (2017) supported this notion, positing that teachers who refuse antiquated notions of curriculum will promote the dynamic, evolving, and shifting features of culturally sustaining pedagogy (San Pedro, 2017). Teachers must expose ELLs to authentic language learning experiences, reinforcing van Lier's (2004) notion that new identities need to be made

compatible with the old. It can be argued that a large percentage of issues regarding teacher preparation, whether through professional development or teacher preparation programs, can be attributed to notions of groupthink.

### **Groupthink Theory**

Groupthink theory, which Irving Janis posits occurs when a cohesive group strives for unanimity over the critical thinking of its individuals (Johnson & Weaver II, 1992). Groupthink impedes the ability to realistically investigate alternative courses of action, supporting the argument that teachers who question the system will be seen as school pariahs, thus fear risking their jobs. This sentiment engenders a sense of fear in teachers that can ultimately manifest itself through views on curriculum, which in-turn affects how students view the curriculum.

It can be argued that CLDs are more susceptible to group think, as they are already part of a cohesive cultural unit with common histories that have been transmitted over the course of generations. They have plunged into a new culture where they are not provided the opportunity to question their instruction. Dealing with their own cultural notions embedded within groupthink, CLDs struggle with the pull from maintaining their first culture while integrating into mainstream culture. This creates a dueling system of cultural subtexts, where each culture has a cannibalistic effect on the other. Johnson and Weaver II (1992) discuss one antecedent to groupthink in education, being the inefficient procedure for gathering and interpreting information, as teachers have a limited time to cover expansive topics. The limited time that teachers have to collaborate and cover entire curricula's, represents an additional hegemonic factor behind local policies, as they are forced to view temporality as linear rather than cyclical through the guidance of curriculum guides. Time constraints on the amount of time teachers have to explore topics with their students, affects the type of information they provide.

Inevitably, teachers will disseminate information to students they know to be true to the given topic, without having the time to challenge students to approach the topics from different perspectives (Johnson & Weaver II, 1992). These pressures are compounded with standardized testing, as time becomes a vice that poses the threat of compressing the curriculum into fragments and parts and creates a myopic scope.

Johnson and Weaver II (1992) further discussed that the approach to students who challenge information is met with varying perspectives; sometimes students are rewarded and other times they are admonished. The notion of resistance as seen between students of color and teachers will be further unpacked in this chapter, as perceptions of resistance are at the apex of developing critical literacy, a large component of culturally sustaining pedagogy. Becoming a true member of the global village requires students to develop critical consciousness, engendering the need for teachers to implement pedagogy that promotes such mindfulness. In their study on fourth grade students' perceptions on globalization, Balbag and Turkcam (2017) found that students' perceptions of global citizenship were predicated by having had prerequisite global citizenship and an awareness of the world. Paralleling this study, the authors explain that the salient component of global citizenship is having access to information that will help them stay on pace with the rapid development of technology. Being a member of the global village has tiers; the greater the access to those tiers, the greater the probability of developing culturally sustaining pedagogy. Unpacking the dynamics of globalization, the global village foments contact between a select group of people in order to maintain economic growth, rather than give oppressed groups the freedom to ascend the social hierarchy. If language is related to socialization, then there is a direct link between membership in the global village, language, and curriculum. Balbag and Turkcam (2017) developed a Global Citizenship Scale to measure the

perceptions of fourth graders from a variety of socioeconomic status groups, ranging from low, to middle, to high. As per Balbag and Turkcam (2017), the students in the study defined citizenship around dimensions of knowledge, skills, and values, including rights and responsibilities. This differed from their vision of global citizenship which was more oriented around the values and skills of different communities. Many students were able to identify themselves as global citizens. The distinctions fourth graders made between citizenship and global citizenship reflect the impact of values that inform identity within given cultures. Furthermore, values that students learn inevitably support the status quo of the given majority culture. Understanding the role of values as they are embedded within curriculum is a possible approach to reforming teacher preparation programs and professional development, facilitating higher levels of culturally sustaining pedagogy.

### **Global Citizenship and Teacher Preparation**

Notions of global citizenship are the ultimate goal for students. Proper teacher development, including how teachers are trained to implement CSP, will promote global citizenship among culturally and linguistically diverse students. This chapter leans heavily on the work of Gloria Ladson-Billings (1995) and Django Paris, as their work is based on developing CSP while highlighting parallels to the notions of linguistic ecology, complex systems, and Martin Heidegger. The juxtaposition of this research highlights the need for deeper levels of CSP being taught at the pre-service level, including through teacher professional development.

Ladson-Billings' (1995) notions of academic success underscore the responsibility teachers have for their students' success, in addition to how the classroom experience reflects society. Studies demonstrating teachers who used language interaction patterns of their students' home cultures highlighted increased academic achievement; however, there is still the question

of how teachers set the standard for defining achievement (Ladson-Billings, 1995). Ladson-Billings (1995) posits that academic success correlates with how one fits into the social hierarchy and/or meritocracy; conforming to the social strata of the majority culture. The irony and danger for students of color, based on Ladson-Billings' (1995) theory, is that students of color who enjoy high academic achievement are continuing to cycle back into the social hierarchy and will ultimately play a role in reproducing the discrimination from which their social groups suffer. Curriculum cannot be culturally sustaining if it continues to feed and reproduce discriminatory social norms. Culturally sustaining pedagogy requires teachers and students to function as partners in education. Teachers and students evolve interdependently rather than in isolation; the sum of their individual behaviors work together to form a nonlinear, spiraling feedback loop. These feedback loops represent the turbulence that encourage emergent behavior. On the precipice of emergence exists Heidegger's dynamic absence, which as interpreted as the open space for learning where students reach an epiphany (Fleener (2005). This is the moment where the metaphorical trek through the forest culminates in a clearing of dynamic absence where students reach the inevitable bifurcation point.

### **Teacher Preparation and Resistance**

Having an understanding of linguistic ecology and how the culturally and linguistically diverse classroom functions around complex behavior, is half the battle to reorienting the curricular lens. Developing culturally competent teachers who can inform curricular decisions through an ecological, culturally sustaining lens, is the next step. Educators can reform this component through unpacking and rectifying issues with teacher preparation programs. Amid the components that contribute to lack of preparedness, Lowenstein (2009) argued that multicultural teacher education focused on a deficit model, examining what in-service and pre-service teachers

did *not* know, versus the tools they had in their toolbox. Linked to orienting teacher education programs around a deficit model, Thomas and Vanderhaar (2008) posited that educators who label teacher candidates as resistant are following a deficit model. Rather than examining the reasons why teachers are resistant to multicultural curricula, teacher trainers are quick to become part of the reason why education lacks culturally sustaining pedagogy, when dismissing teacher behaviors as resistant. Teachers and college professors might dismiss resistance morphs into something different when seen through the lenses explained in this study. As Ladson-Billings and Paris discussed productive opposition, McVee (2014) explained that professors and teachers cannot settle for examining simply *what* someone says, but rather unpack the *how*. Examining how students and teachers exhibit resistance through their language use, is means through which teachers can unpack the roots behind the discourse methods of a given interaction. Unpacking these roots will further teachers and students' abilities to productively oppose hegemonic and discriminatory practices.

Teacher candidates have similar needs as their future students; therefore, they would benefit from believing that their preparation programs are not requiring a sacrifice of their *Dasein*. A singular notion of idea of America harms students who are marginalized or displaced. American mono-culture might yield a highly functioning classroom on the surface, but beneath twirls an oppressive storm. Where resistance currently seems to be code for not following institutionalized norms, CSP would allow for a space to interpret such resistance as being on the precipice of bifurcation. Paris (2017) referred to the curricularization of racism as the manner in which systematic and racialized discrimination reflects the explicit and implicit curriculum and teaching in the United States. This racism affects more than racial groups, as it informs *the how* behind curriculum implementation and teacher training. Paris's (2017) assertion highlights a

factor that contributes to the perceived resistance of pre-service teachers. Social and political factors compound fear and resistance as seen through the perspective of culturally and linguistically diverse students. A racialized curriculum demands conformity to all its constituents; teachers, students, and families. Teacher candidates may appear resistant, as they believe they are viewed through the same deficit perspectives that often determine how teachers view culturally and linguistically diverse students.

### **Addressing Marginalization**

Because teachers of CLDs are working on the front lines with their students, they too, feel the pressures of racialized curriculum. In spite of a massive demographic shift in schools marked in 2014 where over 50 percent of students were students of color, homogenization of curriculum in schools can still be found (Paris, 2017). United States educational policy and practice continues to be centered largely on White, middle-class, monocultural, and monolingual norms of educational achievement. In addition to curriculum having the potential to marginalize students, it is also continuing to marginalize teachers. An additional issue behind the marginalization of CLDs and lack of culturally responsive teaching, is the marginalization of White female teachers. Lensmire and Snaza (2010) posit that a major shortcoming of multicultural research is the oversimplification of the racial identities of White future teachers. This highlights the need for balance on how we unpack the current culture and milieu of teaching, as Paris (2017) posits that the overwhelming number of White females in the teaching force is indicative of the dearth of culturally sustaining pedagogy. Paris (2017) argued that amid the shift of widespread student diversity in schools, the teaching force has not shifted significantly, but remains comprised of nearly eighty percent White women, many having been raised as upper-middle class.

Increasing the diversity in the workforce does not assure the development of a culturally sustaining pedagogy. Paris (2017) acknowledged that White teachers can be extraordinary, yet cautioned that when curriculum assimilates people of color, they are at risk of internalizing beliefs in the superiority of White, middleclass normed practices. Paris calls this a crisis of representation in the teaching force and teacher preparation programs. Paris's (2017) assertions are germane to diverse school districts, as these districts tend to place a premium on selecting diverse staff. Selecting diverse staff is only skin-deep, as if their curriculum and professional development have internalized ideals of White superiority, the diverse staff and students become minions of hegemonic practice.

Paris's (2017) perspective and fears of indoctrinating teachers and students to a culture of White superiority parallels the need to unpack any turbulence in teachers and students' lives, connecting their identity development to Heidegger's notions of *Dasein*. Doing so, would fuel, a CSP where all teachers and students' stories are honored through the curriculum. Paralleling the importance of understanding the temporality of culture and education, Paris's (2017) notions of curriculum demanded a Heideggerian lens that envisioned teachers and students as the products of the past, present, and future. Furthering the connections between Paris's views and notions of curriculum reform posited through this paper are additional connections to linguistic ecology.

### **Teacher Preparation, CSP, and Linguistic Ecology**

Understanding how linguistic ecology plays a role in students' behavior can also be used to inform culturally responsive disciplinary practices, as van Lier's (2004) and Bronfenbrenner's (1979) notions of the various systems allow for teachers to reflect on the interdependence between students' actions and their environments. Understanding the interdependence between students and their environments assumes a more significant role in best practices for culturally



and linguistically diverse students, as these students are expected to envision themselves through the scopes and linguistic ecologies of two or more cultures. The aforementioned is at the apex of culturally sustaining discipline management systems, as this is a major problem amid the implementation of a culturally sustaining pedagogy.

Paris (2017) called the inculcation of White superiority through the curriculum the ‘curricularization of racism’, a subtractive curriculum oriented around deficit thinking, rather than an additive lens promoting teachers and students’ skills. The author argued that even though there have been improvements, the pendulum is shifting back from an additive model toward a subtractive framework. Highlighting three salient issues, Paris (2017) argued that over time, teaching practice suffered from these shortcomings; assimilative goals, a lack of understanding about the dynamic nature of culture, and uncritical approaches to meaningfully including the practices and beliefs of communities of color in classrooms. Paris’s belief that modern-day curriculum lacks meaningful connections to people of color and the communities they form, reflecting the need to develop CSP through linguistic ecology.

Informing CSP through notions of linguistic ecology, engenders a lens through which teachers can view students as emergent organisms that are informed through their direct and indirect interaction with their environments. These environments include the microsystem they are intimately tied to, and the exo and macrosystems that they might never directly interact with. The connections between Paris’s (2017) notions of the curricularization of racism and to van Lier’s (2004) and Bronfenbrenner’s (1979) notions of linguistic ecology, may evade teachers, as they are often concerned with the rigors of the day-to-day trenches of teaching. Paris (2017) argued that in order to make permanent shifts toward a CSP, we must honor a pervasive commitment to racial equity and permeate teacher education courses and fieldwork with it, no

longer relegated to one multicultural education course. One can thread Paris's goals and the above theories through Heidegger's theory of dynamic absence.

Understanding that dynamic absence is the metaphorical open space where one finds the precipice of emergence, school districts and teacher preparation programs could highlight the importance of expanding teachers' paradigms beyond hegemonic practices, while allowing teachers the open space to emerge as more culturally competent. Teachers must learn how to critically relate to the curriculum that school districts empower them to teach. The purpose of evaluating and informing CSP for students, teachers, and pre-service teachers through complex theories and philosophies, is to create a dynamic space where teachers can confront and unpack their biases in order to better serve their students of color. True critical pedagogy demands that teachers are working in unison with the curriculum, rather than in opposition. As per Ladson-Billings (1994), "culturally relevant teaching is about questioning (and preparing students to question) the structural inequality, the racism, and the injustice that exists in society. The teachers I studied work in opposition to the system that employs them" (p. 140). Teacher preparation programs as well, given districts' professional development plans, must prepare teachers to learn how to productively oppose any systematic failures of the educational system in order to develop CSP for youth of color (Paris, 2017). Teachers must ask themselves how they can steer their students of color to advocate for themselves while developing their *Dasein*.

### ***Dasein*, and Critical Awareness, and Deficit Thinking**

*Dasein* represents the lens through which teachers can confront, embrace, shed their prejudices, and teach their students how to productively oppose injustices. All curriculum is oriented around language; therefore, teachers who understand linguistic ecology, will be better prepared to oppose the effects of the curricularization of racism. Provided that language

transmits culture, and provided that the curriculum inculcates cultural norms upon students, teachers who understand how interaction occurs between them and their students displaying different levels of the linguistic ecosystem will as a result be one step closer to implementing a culturally sustaining pedagogy.

One such model of pre-service training, is the professional development school experience. The professional development school experience (Peters, McMullen & Peters, 2018) allows teacher candidates to receive field experience in environments that promote confronting their own biases, including affording teacher candidates the ability to learn and execute culturally sustaining practices. Completing practicum in areas with high amounts of diversity will better prepare teachers to challenge their belief systems and emerge with deeper understandings of culturally responsive pedagogy. Silin and Moore (2016) explained the rigors for teachers and administrators to live up to the current progressive ideal of the culturally responsive classroom, is challenged by the dearth of space for continuous reflection as a result of pressure to collect qualitative and quantitative data. Meeting the needs of the community requires a transformative curriculum, which in order to implement, requires schools and universities finding time to allow their faculty and teacher candidates the opportunity to reflect on their practice (Silin & Moore, 2016). Due to the short amount of time that teachers have in any given school day to meet goals identified in the curriculum, universities have a responsibility to prepare teachers ahead of time to implement transformative curriculum, including ways to express their opposition productively.

Teacher preparation programs must instill a sense of freedom within teacher candidates in order to promote the ideals of social justice to permeate curriculum oriented around teaching students of color. Complex systems theory, linguistic ecology, and Heidegger occupy the paradigms through which pre-service teachers can cultivate a sense of social justice among their

peers and students. Paris (2017) explained the paradox of the evolution of the pervasive demographic shift that society and education is experiencing, as there is an opportunity and an imperative to develop CSP, yet there is no guarantee of educational and social equity in the short-term. Paris (2017) highlights how evidence suggests that notions of equality are moving in the opposite direction, paralleling a backlash against the reality of the cultural shift across the globe.

Ladson-Billings (1995) explained that effective pedagogy addresses student achievement, in addition to assisting students in accepting and affirming their cultural identities while cultivating critical perspectives that challenge inequities perpetuated through hegemonic practices in schools. This degree of critical pedagogy requires that teachers are able to provide productive opposition to inequities that they encounter. Without the ability to model for their students how to critically reflect on society and its role in the curriculum, teachers will be doing no more than perpetuating notions of White superiority. The manner in which teacher preparation programs promote reflection among their teacher candidates, is a key factor in reversing this trend of superficial cultural awareness in order for curriculum to foment pervasive shift toward honoring culturally and linguistically diverse students. This is not an impossibility, as Ladson-Billings (1995) cited a study that focused on teachers who went against the administrative grain. In this study, Ladson-Billings (1995) studied teachers who demonstrated a high degree of personal accountability to what they were teaching, rather than simply teach the resources the district provided them. The teachers critically reflected on what they had learned in their teacher preparation programs and how this translated to their classrooms. Several teachers in Ladson-Billings' study defied administrative mandates in order to teach what they believed was the most CSP for their African-American students. In addition to demonstrating critical

pedagogy, one teacher modeled how to change the curriculum while using the system. This teacher suspected that she was teaching curriculum that was not culturally congruent and proceeded to the board of education with her proposal. Including current research in her proposal, this teacher was granted permission by the board of education to beta test her ideas. The board's decision in conjunction with the teacher's success, motivated other teachers in subsequent years to attempt the same curriculum reforms.

The case occurred over two decades ago, thus modern-day teacher preparation programs should continue to work with teacher candidates on ways to express themselves so that they can effectively oppose curricula without sacrificing their careers and professionalism. In addition to preparing teacher candidates to critically reflect on what they teach and empower them to foment change, administrators and their superiors must risk shaking up the social strata in order to hire teachers who are capable of implementing true culturally sustaining pedagogy. Highlighting notions of linguistic ecology, a pervasive paradigmatic shift toward culturally sustaining pedagogy beginning at the top levels of the educational bureaucracy, will impact the classroom and microsystems at the front lines of student-learning. The microsystems at grassroots levels have explicit and implicit implications for teachers and students. Explicitly linking these implications to teacher preparation programs and mandated professional developments would theoretically encourage teachers to perform higher degrees of practices informed through social justice and equity in their classrooms. One such area reflecting notions of social justice among teachers and students, is the perspective on standardized testing and how student growth relates to a teachers' job security.

Borrero, Ziauddin, and Ahn (2018) posit that in many schools, standardized tests are at the apex of minimal scrutiny on the curriculum and educational infrastructure, along with an

emphasis on blaming the victim and also deficit thinking. The authors link the aforementioned to the pressure that school districts put on new teachers to demonstrate student growth through standardized achievement tests. As per Borrero, Ziauddin, and Ahn (2018), when students do not pass standardized tests, there are a plethora of consequences that manifest themselves explicitly including deeper tacit implications for the classroom. Poor test scores ironically produce more assessments in the classroom (Borrero, Ziauddin, & Ahn 2018). The inherent blaming of the victims reflects different types of deficit thinking, as teachers, students, and parents, receive some blame as to why students are not achieving to the prescribed standards. Amid this inherent blaming, structural inequities are ignored, and teachers continue to foment the status quo, even though they might understand the inequity, they do not have the space to unpack and reform them. Borrero, Ziauddin, and Ahn (2018) furthered the aforementioned theories through a recent study of 13 pre-service and practicing teachers.

In their study of culturally sustaining curriculum in schools, Borrero, Ziauddin, and Ahn (2018) studied 13 pre-service and in-service teachers, evaluating them on the following tenets: positionality, critical consciousness, and harnessing cultural assets. Borrero, Ziauddin, and Ahn's (2018) study found that teachers who investigate their own identities, including their students', the notion of identity became a central factor in teaching and learning highlighting the importance of positionality in pedagogy. The authors found that teachers who are honest and upfront with their students, had the goal of building meaningful relationships with them, highlighting the importance of positionality and critical consciousness in culturally sustaining pedagogy. The surveyed teachers' stance on harnessing their positionality, addressing critical consciousness and harnessing their and their students' cultural assets, played a crucial role in their attitudes towards and implementation of the curriculum.

This study highlighted the imperative that teacher preparation programs and school districts' professional development plans, account for how teachers can relate positionality to practice without seeming resistant. This is important as for all educational stakeholders' voices to be heard, they must be perceived through a lens of social advocacy and what is best for children, rather than one that appears as resistance to change. Through pre-service and in-service programs for current teachers, universities and school districts can work to develop critical consciousness among educators in order for teachers to learn how to reflect on their positionality, learning the skills to disrupt the cycles of racism that are propagated through the curriculum. Understanding oppression through the examination of the power infrastructure has on schools and school districts can lead to a desire to plan for and enact change (Borrero, Ziauddin, & Ahn, 2018). The ultimate goal should be to empower students and their communities as stakeholders to transform the curriculum. Teacher preparation programs and school districts have the power to facilitate a narrative shift from perceived resistance to empowerment to challenge positionality and the factors that perpetuate the curricularization of racism.

### **Selecting Relevant Text**

In an additional study of preparation programs that specifically unpacked a teachers' ability to select relevant text, Christ, and Sharma (2018) argued that professional development should focus on supporting teachers' learning about their students' cultures and identities and applying this knowledge to text selection and pedagogy. In addition to arguing that schools need to provide this professional development to teachers, Christ, and Sharma (2018) argued that this professional development would benefit from explicit guidance and development over time. Often times school districts begin the year with professional development initiatives, yet trainings dissipate over the school year along with teacher morale and a desire to continue. In

citing one of the subjects in their study, Christ, and Sharma (2018) explained that one teacher provided text that reflected her students' own images, lives, and experiences, thus facilitating the opportunities for her students to make connections with the content. These connections allowed students to make deeper connections with the curriculum and thus opened the pathways for higher critical conversations about the literature. Too often, teachers get stuck in the miasma of selecting text that interests them and that which has been popularized by mainstream culture.

The above misconception about proper text selection, parallels the significance of developing CSP through the lens of linguistic ecology. True literacy translates to full proficiency in all four language domains, which affects a student's grasp of the curriculum. Dearth of culturally sensitive literature reflects a disconnect between students' schema and the linguistic systems through which they have experienced life. The terms 'window and mirrors,' are oftentimes used, referring to literature and text that ferries students to windows, or places that they have not experienced, while providing them with mirrors that serve as mediums through which they can see how their lives have a role as part of the larger human experience (Bishop, 1990).

Christ and Sharma (2018) argued that mirror texts can affirm students' cultural and personal identities, thus 'windows and mirrors' serves as the foundation of culturally sustaining pedagogy. The text selection strategy also supports nonlinear interdependence of the layers of a linguistic ecosystem. Even if students have not had direct contact with certain contextual pieces found in their literature, teachers can still select texts that mirror their students' experiences. For example, I taught my students *Number the Stars* (Lowry, 1989), a story about a Jewish family living in the World War II era in Denmark. On the surface, the students had never experienced Judaism and had only experienced exposure to the glorification of Nazis as zombies through



video games. Before reading, I considered the following criteria in determining the cultural relevance of the text.

As per Christ and Sharma (2018), one way to evaluate a student group's capacity to mirror a text, is to unpack the three elements of fiction. Considering the characters' ages, ethnicity, and gender, I questioned if my students could make connections with these characters. Considering the setting, I questioned if the era of *Number the Stars*, was one to which the students could connect. I determined they could due to their perceptions of Nazis. Lastly, I considered the plot, asking myself if students had read about or experienced events that paralleled those of the book (Christ et al., 2018; Ebe, 2010; Christ and Sharma, 2018). Given that I had read *Esperanza Rising* to my students, I was confident they would be able to engage the text in a critical fashion, as they were sixth graders and had read about a Hispanic tween who had experienced the gamut of wealth in her home country, losing it all to circumstances surrounding the Mexican Revolution compelling her to move to the United States.

Modeling the three elements of fiction, I spent several days on a mini unit to establish background knowledge and a model for students on how they could critically analyze a text before, during, and after reading, in order to make mirroring connections. I asked the students a series of questions about their lives that I knew would connect to the book, additionally showing them World War II footage of Copenhagen and present-day footage of the Danish city. According to Christ and Sharma (2018), teachers require professional development that prepares them to make intentional selections when integrating mirror texts into the curriculum. Sound mirror text selection equip students with the ability and tools to make deeper connections to the text (Christ & Sharma, 2018). Using the aforementioned in my own instruction, I connected the students to the story through mirrors, discussing the age of the characters, the separation from

their parents or loved ones, the experience of moving to a new country, and the literal parallels between historic parts of Copenhagen that were peppered with familiar modern-day American comforts. These activities and artifacts linked students' microsystems to the additional linguistic ecological levels that informed the events in the story.

The nefarious side effect of teachers selecting unconnected literature to students' lives, will shackle the students to whatever the teacher or text tells them, rather than thinking about the literature critically. Poor literature selection simultaneously oppresses students and compels them to become the actual perpetrators of the curricularization of racism. Without the ability to connect their experiences to the context of the curriculum, they are reliant on the beliefs of the majority macrosystem that has informed the literature, rather than being able to compare various linguistic systems and use interdependence to develop deeper understandings of the literature. Intentional literature selection needs to be a component of strong teacher development at both the pre-service and veteran stages.

Christ and Sharma (2018) found resistance in some of the 17 teachers they surveyed. They reported that in spite of the literature and class discussions that were oriented around culturally responsive pedagogy, teachers still doubted the value of its relevance. Some teachers found little value in implementing a culturally sustainable curriculum, as they believed it required them to go above and beyond their responsibilities as a teacher. These resistant teachers supported their claims that CSP did not fit into their job descriptions, defending their skepticism by explaining that the curriculum might just be out of reach for their students of color due to their life circumstances (Christ & Sharma, 2018).

This response lacks an understanding of CSP; it demonstrates an extreme lack in sociocultural consciousness and holistic caring for CLDs' needs. Viewing students as incapable,

versus exploring their personalities for resources that the teacher and students can use, foments a deficit thinking model and a sink or swim mentality. In addition to expressing ignorance toward the needs of culturally and linguistically diverse students, this attitude creates a situation where even the most successful students have their achievement measured against discriminatory norms and teacher practices. Successful students under this type of educational regime will eventually perpetuate the same status quo that has discriminated against them and their families.

While Christ and Sharma (2018) found that the number of teachers who exhibited the aforementioned attitudes was the minority, teacher preparation programs should take caution as a single teacher will directly affect hundreds of students and staff members throughout his career. Considering notions put forth through van Lier's (2004) and Bronfenbrenner's (1979) visions of linguistic ecology, negative teacher attitudes toward culturally sustaining pedagogy will indirectly affect many more students, as said teachers have the power to influence others in their microsystem which eventually affects the surrounding systems. The 17.6 % of teachers that demonstrated resistance in Christ and Sharma's (2018) study, might as well been much higher in numbers, given the high degree of nonlinear interdependence between the systems of linguistic ecology.

### **Study on Proactive Behavioral Practices**

In their study on the discipline gap between Caucasian and African-American students, Larson et al. (2018) theorized that culturally responsive and proactive behavioral practices would minimize the gap. The authors oriented their study around 274 teachers in 18 schools, testing if culturally responsive practices were linked to positive student behavior among all students, narrowing the discipline gap between African-American and Caucasian students. Furthermore, Larson et al, 2018 measured the link between behavior management and culture responsiveness

through differing pillars; student cooperation, teacher proactive behavior management, and culturally responsive strategies. While the authors found a significant relationship between proactiveness and culturally responsive strategies, Larson et al. (2018) also concluded that teachers lacked self-efficacy in self-reporting when identifying strategies.

Larson et al. (2018) support the position of my study, in that it found a significant relationship between culturally responsive behavior management practices and reduction in disciplinary referrals, while demonstrating that teachers lacked general self-efficacy on reporting their use of such strategies. In spite of generally supporting their hypothesis, these results also highlight the need for teacher preparation programs to formally teach pre-service teachers how to effectively reflect on their self-efficacy. This plays a role in how teachers view their goals and challenges and has obvious effects on how they must approach their students. The theories and lenses posited in this paper provided a myriad of lenses through which teachers can practice their self-efficacy and reflect on their ability to infuse culturally responsive, proactive disciplinary systems in their classrooms.

Orienting discipline through the lens of complex systems theory and Heidegger's notions of *Dasein*, provides teachers the ability to morph the word discipline into instruction. Taking a more holistic perspective on behavior, the aforementioned lenses allow teachers the metaphorical space to reflect on a situation before reacting. Focusing on proactiveness, teachers who have the training to take time to reflect on their instructional practices, will gain the ability to morph disciplinary practices into instructional opportunities.

While Larson et al. (2018) has demonstrated that school-wide implementations of proactive and positive behavior management practices have reduced disciplinary referrals and suspensions, these studies have demonstrated a limited impact on the disproportionality of

referrals between Caucasian students and African-American students. Larson et al (2018) also concluded that years of service did not correlate with more proportionate results of referrals of African-American students. Experience was not a statistically significant predictor of observed or self-reported efficacy in behavior management or culturally responsive teaching, underscoring a problem that is also witnessed on the other end of the gamut with less experienced teachers (Larson et al, 2018). The mutual dearth of culturally sustaining practice between newly-seasoned and experienced teachers, furthers the notion that pre-service curriculum and professional development needs to be in place to ensure equitable education for CLDs.

Van Lier (2004) explained that linear curricular paradigms offer a means-ends model, while excluding authentic learning and is context-reductive. The aforementioned notions of temporality assist in understanding the similarities in beginning and veteran teachers' dispositions toward culturally responsive disciplinary systems and the ability to self-report on self-efficacy. It can be argued that veteran teachers' resistance reflects beginning teachers' indoctrination, as hegemonic practices have swayed them to believe that their way is the best, and the full development of such attitudes is still growing during the intermediate years of one's practice. In addition to pre-service learning, the above supports the need for ongoing professional development. The nonlinear, temporal connection can be traced between beginning and veteran teachers' viewpoints of culturally responsive practices, becoming reformed through an understanding of their interdependence. Even though time moves forward, there appears a nonlinear temporal nature threaded through our thought paradigms. Schools who understand that human thinking moves across, sideways, diagonally, while skipping from node to node or idea to idea, will establish a strong position to employ culturally responsive practices across academic and social-emotional curriculum (Doll, 2008).

The aforementioned gap in CSP is not isolated to the United States, but rather permeates any spot on the globe with diverse populations. Based in New Zealand, Smyth (2013) studied culturally responsive teaching at the primary level. This study is germane to my research, as students learn and are indoctrinated from the moment they enter a classroom. Inequities in education in New Zealand affect indigenous populations, including the Maori and Pasifika. Smyth (2013) found that differences in educational achievement connected to the relationship between students' ethnic backgrounds, their achievement, and how the two were related to maintenance of the status quo. As the Maori and the Pasifika are already marginalized from main stream New Zealand culture, an educational system that is built to maintain the status quo will automatically design this minority.

Paralleling Ladson-Billings' and Paris's notions of resistance and deficit thinking, Smyth (2013) argued that both teachers of students, researchers, and teacher trainers should be conscious of employing these models when teaching students and in how they reflect. Smyth (2013) explained that teacher trainers and classroom teachers can follow curriculum that is designed to maximize the resources teachers and students utilize, rather than following a deficit model focusing on resources that are lacking. Because professional development is at the apex of bridging teachers and students with culturally responsive practice, experts argue that the manner in which teachers have been indoctrinated into evaluating their professional development, has affected the progress of culturally responsive professional development. Meyer (2011) posits that a salient difficulty in evaluating the efficacy of culturally responsive professional development is how school district cultures have affected the teachers' use of their own prior knowledge, skills, and attitudes, and have dictated the obstacles in developing extensive professional development in the area of culturally sustaining curriculum.

Amid extensive studies, two methods on professional development emerged; lessons focusing on teachers' implicit experience and lessons teaching explicit strategies (Smyth, 2011). It can be argued that the lessons focusing on teachers' implicit experience is more conducive to lending authenticity and thus a higher probability of implementation, while the latter is closer to end of the gamut, supporting indoctrination and status quo maintenance. This study supports the notion that teachers are learners, like their students, being a salient criterion for expanding professional development that will lead to culturally responsive practices. The need for exploring teachers' implicit knowledge in order to provide sound professional development is furthered when teachers of color are trained to work with culturally and linguistically diverse students.

Rather than training teachers through deficit theories, professional development would serve teachers and their diverse student groups by offering teacher training that parallels best practices for culturally responsive instruction. Given that deficit theorizing extends beyond the classroom permeating professional development, connections can be drawn between *Dasein* and the need for professional development that implicitly honors teachers' diversity.

As per Heidegger (1996), the concept of being is undefinable, obscure, and the most universal. Teacher diversity reflects *Dasein* in that diversity and identity is universal, yet simultaneously undefinable as all individuals have an independent sense. While this understanding can be obvious, it is also intangible, making it difficult for professional development providers to train teachers through this lens when they are attempting to teach through the lens of programmatic success. Understanding teachers' needs through the lens of *Dasein* would be the beginning of implementing professional development conducive to CSP, as teachers who believe that their providers honor individual identities, will learn that honoring individuality is at the epicenter of a culturally responsive education. In addition to instituting a

subtext that underscores discovery and the honoring of *Dasein*, professional development providers and teacher educators should thread Heidegger's theories throughout their curricula.

A common misconception among teachers of CLDs is the notion that mathematics is less linguistically rigorous than other core curricula. In her study of eight Colorado schools, DeKam-Harding (2014) oriented her study of culturally responsive teaching through the lens of mathematics, arguing that including culture in mathematics curriculum permeates all areas of learning and teaching. DeKam-Harding's study was oriented around teachers who already exemplified culturally responsive practices and found that the eight teachers surveyed employed strategies such as exploring their students' home and community life, in order to provide mathematics instruction through the lens of the students' home cultures.

Rather than simply exploring students' home and community life through the lens of the classroom and the teacher, Irizarry (2017) oriented his study around collaborating with Latino students to develop curriculum for their peers. In his two-year collaborative study, Irizarry (2017) engaged in action research that ultimately concluded that students oriented their approach to curriculum development through their shared experience of being ignored, maligned, and neglected in school. Rather than inform their curriculum through methods popularized through preservice programs, students anchored their learning through shared experiences as CLDs. Irizarry's (2017) study reinforced the premise that the overall canon of education must be reoriented through a lens that honors students' individuality.

Linguistic ecology, complex systems theory, and *Dasein* support Irizarry's (2017) findings. Linguistic ecology reinforces the notion that identity development, linguistic development, and sociocultural development, are informed through various systemic levels that students may or may not encounter. Irizarry (2017) concluded that students in his study



transformed their experiential knowledge into a form of capital that affected their curriculum, making it more culturally sustainable. The notion of CLDs having the latitude to make their own curriculum and inform it through necessity born from their environments, supports the relevance of linguistic ecology as a lens through which to establish culturally responsive and sustaining curriculum.

Marginalized groups are often discriminated against not through their microsystems and mesosystems, but rather through the exosystem and macrosystems. Typically, the systems they will not come into direct contact with. The vicarious interdependence between marginalized students' microsystems and exosystems, is germane to Irizarry's (2017) study, as these students were able to explore their personal micro and mesosystemic experiences to inform their curriculum, essentially allowing them to subvert hegemonic practices fomented through macro and exosystemic influences. Irizarry (2017) concluded that "educational opportunities must be grounded in students' lived experiences, build their systems of meaning-making, and provide students with the skills and confidence to advocate for themselves" (, p. 97), reaffirming that through such methodology, students will sustain themselves and their communities.

The connections between designing culturally sustaining pedagogy through the lens of linguistic ecology, has implications for students' identity development, ringing tones of Heidegger's notions of *Dasein*. In order to fully realize teachers' and culturally and linguistically diverse students' potential, teacher preparation programs and professional development initiatives, must reorient their lenses to view education through a holistic lens, focusing on cultivating students' identities and using these roots to build their respective curricula. In order to connect theory to practice, there are several practical applications teachers can implement immediately.

## Concluding Strategies

**Assessing and building background knowledge.** Background knowledge is defined as an individual's prior knowledge or schemata on a given topic (Carrell, 1984), and is anchored to an individual's experiences that are informed through cultural practices. Assessing and building background knowledge is how school districts and pre-service programs can train prospective educators to build academic capacity in CLDs. Francis et al. (2006) discussed how CLDs can encounter inexperience with classroom norms and culturally-influenced practices. Allowing this incongruence to permeate curriculum for CLDs creates a subtext paralleling Paris's notion of the curricularization of racism. Building background knowledge and peripheral components, such as the teaching of vocabulary acquisition strategies, while providing students with opportunities to unpack language, are many ways teachers can embed the notions put forth in this research in their practical and daily instructional choices.

Additional components that parallel the building of background knowledge include amplifying students' vocabulary through teaching strategies to unpack modern words through context and provide opportunities for students to practice new learning with each other (Miller, 2016). Building background comprehends many strategies, from requiring students to relate experiences that will surface in their school work, to showing video clips and bringing artifacts to school. Teachers who employ these strategies will aid in bridging the sociocultural gaps between mainstream school culture and students' home cultures. Building background knowledge relates to linguistic ecology, in that when done properly, it consists of the myriad systemic influences that inform students' behavior.

As vocabulary and its usage is culturally embedded, a large focus around building CSP connects to vocabulary and CLDs' capacity to build their vocabularies independently. In order to

build capacity within CLDs to improve their vocabularies, teachers can provide their students with strategies on how to identify tier one, tier two, and tier three words (Miller, 2016). As per Beck et al.(2013), tier one, tier two, and tier three words, have certain characteristics. Tier one words are words that students intrinsically know. From sight words to common words, tier one are words that require little context to understand and/or zero glossary. Tier two words are the most frequent words that are found in written language, thus they permeate the curriculum, bringing with them implications of key academic understandings. Tier three words tend to be highly specialized words, such as content-specific language.

A large component of teaching students how to identify and define new words, is to explicitly teach them how to identify cognates and connect words in their L1 to new words in their L2. Cognates are words that have common meanings across multiple languages, including similar spellings, sounds, and meanings (Miller, 2016). Assisting students to identify cognates, aids in building a capacity for learning their second language, in addition to simultaneously developing cultural competence in both L1 and L2, as they are learning to use their native culture in order to build their second culture. CLDs' capacity to build their vocabularies by bridging between their home and second languages has a profound impact on their background knowledge, as their expanding vocabulary will lead to new schema, paralleling the importance of the teacher's duty to facilitate bifurcation points.

**Establishing quality objectives.** The importance of establishing quality objectives cannot be stressed enough. Strong objectives are bookends to quality lessons; strong objectives link students to the content, explicitly stating how they are going to be assessed. Echevarría et al. (2016) reported a myriad of issues surrounding proper objective writing. In addition to state standards being too vague, teachers may or may not consistently present objectives to their

students, while the reality is that objectives support the school's, districts, and state's learning standards (Echevarría et al., 2016).

A strong lesson cycle involves the teacher having established strong content and language objectives, while offering multiple demonstrations to students on how to attain the given standard represented through the objective (Pray & Monhardt, 2009). Strong content objectives include student-friendly language, ranging from phrases and pictures for younger students who cannot or are learning to read, to simply-stated terms that maintain the academic rigor of the content standards (Echevarría et al., 2016). Approaching a content objective through the verb, the action the students will be performing, is one such way to orient and return to objectives throughout a given lesson. In addition to the objective's verbs that anchor a student to what they are learning and how teachers are assessing them, language objectives establish the expectation for language use of a given lesson.

Echevarría et al. (2016) posit that language objectives parallel content objectives, by teachers needing to state them clearly, while explain them to students orally and through writing. Language objectives are required to be formally stated, distinguishing between productive versus receptive language skills (Echevarría et al., 2016). The aforementioned should reflect the language levels of students. As part of CSP practices, teachers need to be sensitive to students' language levels. A practical method to craft solid language objectives, is to investigate students' ACCESS, or the given state's English language proficiency assessment scores, correlating them with the WIDA 'Can-do Descriptors,' in order to craft appropriate language objectives for CLDs. The ACCESS test is the annual norm-referenced test that measures limited English proficient (LEP) students' English language proficiencies through the four language domains of listening, speaking, reading, and writing. Once teachers access these scores, they can use the 'Can-do

Descriptors' to craft language objectives that match students' language levels in each of the domains. Language objectives guide students from social language skills, through to building a capacity to have academic conversations with their peers, cultivating formal academic registers in writing and speaking (Gibbons, 2003 as cited in Echevarría et al., 2016).

Teachers who establish strong content and language objectives have evaluated what they want their students to learn and how they are going to get their students to attain said learning. The content objectives are paramount to anchoring students to the key concepts of the given lesson, while language objectives support CLDs' development of oral language skills necessary to proficiently convey their knowledge and vocabulary development within the given content area (Pray & Monhardt, 2009).

**Developing relationships with students' families.** Panferov (2010) posits that ELL parental involvement and students' academic achievement is tightly interconnected. The most effective component of parental involvement lies within the relationship between teachers and the parents (Cox, 2005). Shim posits that parental involvement can take on many forms. From volunteering at school, through to assuming membership on school committees, teachers and schools can provide parents with opportunities to get involved with the children's education (Shim, 2013). In addition to the aforementioned, King found that parental involvement relates to a students' decisions to attend college.

Shim (2013) conducted a study that investigated the factors that influence ELLs parents' involvement and interactions with their children's teachers. The author hypothesized that if schools did more to support parental engagement by supporting higher levels of English proficiency while being mindful of parents' work schedules, schools could attain higher levels of ELL parental engagement. Upon surveying parents, Shim (2013) found that these three salient

factors emerged as those which impeded parental involvement: teachers' judgments toward ELL students and their parents, ELL parents' concern about their inability to influence their children's teachers, and the fear of negative consequences for having verbalized their beliefs.

As a teacher, I have found myriad ways to engage my parents. The results of Shim's study parallel themes of *othering* and cultural dissonance. The aforementioned resonates through parents' distrust in their abilities to influence their children's educations. One can connect these factors to Heidegger's notions of *Dasein*, as ELL parents appear to experience multiple obstacles that impact their ability and desire to play an active role in their child's education. This negative cycle affects how ELL families and their children view themselves, thus impacting their *Dasein*. Teachers pose obstacles to developing genuine rapport with their ELL families when they avoid countenancing different ways families express their interest in the education of their children. Inviting parents to participate in school committees, sending home newsletters, maintaining phone contact, and inviting them to volunteer in genuine instructional activities are several ways that teachers can steer ELL parents away from the negative attitudes that Shim (2013) found in her study. In order to insure CSP for CLDs, teachers must cultivate strong rapport with parents to foster the identity development of these families and their children, ultimately leading to academic achievement, and opportunity, for ELLs.

### References

- Akkari, A. & Loomis, C. (1998). Toward a new understanding of language minority students' experiences with bilingual education in the united states. *Bulletin Suisse de Linguistique Applique, (67)*, 31-59.
- Alim, S.H., & Paris, D. (2017). What is culturally sustaining pedagogy and why does it matter? In D. Paris & H.S. Alim (Eds). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. New York, NY: Teachers College Press.
- Aydogan, I. (2009). An evaluation of the materialization of the latent functions of education according to student perceptions. *Education, 129*(3), 425-435.
- Balbag, N., & Turkcan, B. (2017). Elementary school 4th grade students and teachers' perceptions of global citizenship. *Turkish Online Journal of Qualitative Inquiry, 9*(2), 216-249. Doi: 10.17596/tojqi.270274.
- Beck, I., McKeown, M., & Kucan, L. (2013). *Bringing words to life: Robust vocabulary instruction*. New York, NY: Guilford Press.
- Bialystok, E. & Barac, R. (2012). Emerging bilingualism: Dissociating advantages for metalinguistic awareness and executive control. *Cognition, 121*(1), 67-73.
- Bobbitt, Franklin (1918). *The curriculum*. The Riverside Press: Cambridge, Massachusetts.
- Bonilla, C. M. (2014). Racial Counternarratives and Latina epistemologies in relational organizing. *Anthropology & Education Quarterly, 45*(4), 391-408. Doi: 10.1111/aeq.12077
- Borrero, N., Ziauddin, A., & Ahn, A. (2018). Teaching for change: New teachers' experiences and visions for culturally relevant pedagogy. *Critical Questions in Education, 9*(1), 22-39.

- Breeze, R., & Gacia Laborda, J. (2016). Issues in teacher education for bilingual schools. *Estudios Sobre Education, (31)* 9-12. Doi: 10.15581/004.31.9-12
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Cambridge, MA: Harvard University Press.
- Brown, B. (1993). *Issues in conducting surveys regarding public opinion toward bilingual education*. Washington, D.C.: Distributed by ERIC Clearinghouse.
- Brown, C., & Endo, R. (2017). The challenges of differentiating instruction for ELLs: An analysis of content-area lesson plans produced by pre-service language arts and social studies teachers. *Teacher Education and Practice, 303*(3), 372-385.
- Bujakiewicz-Koronska, R. (2009). The pearlite in a context of dissipative structures. *Phase Transitions, 82*(2), 99-114. Doi. 10.1080/01411590802546433.
- Cam, P. (2014). Philosophy for children, values, education and the inquiring society. *Educational Philosophy & Theory, 46*(11), 1203-1211.
- Carrell, P.L. (1984). Schema Theory and ESL Reading: Classroom Implications and Applications. *The Modern Language Journal, 68*(4), 332-343.
- Chengkun, T. (2016). From experiments in visualizing fractal theory to rethinking social networks as moist media. *Technoetic Arts: A Journal of Speculative Research, 14*(3), 263-273. Doi: 10.1386/tear.14.3.263\_1
- Christ, T. & Sharma, S. (2018). Searching for mirrors: Preservice teacher's journey toward more culturally relevant pedagogy. *Reading Horizons, 57*(1), 55-73.
- Cox, D. D. (2001). Evidence-based interventions using home-school collaboration. *School Psychology Quarterly 20*(4), 473-497.
- Cummins, J. (2000). Language, power and pedagogy. *Bilingual Education and*



*Bilingualism*, 23.

Cronbach, Lee J. (1988). Playing with chaos. *Educational Researcher* 17(6) 46-49.

Cummins, J., & National Clearinghouse for Bilingual Education, A.V. (1982). Interdependence and bicultural ambivalence: Regarding the pedagogical rationale for bilingual education.

Daniel, M. C. (2008). Helping English language learners: Preparing teachers to promote critical thinking and language acquisition. *College Reading Association Yearbook*, (29), 123-132.

Davis, B., & Sumara, D.J., (2000). Curriculum forms: On the assumed shapes of knowing and knowledge. *Journal of Curriculum Studies*, 32(6), 821-845.

De La Garza, T., Mackinney, E., Lavigne, A.L. (2015). Dual language instruction and achievement: A need and a void in the Midwest. *Mid-Western Educational Researcher*, 27(4), 363-382.

De Jong, J. E. (2011). *Foundations for multilingualism in education: From principles to practice*. Philadelphia: Caslon Publishing.

De Lissovoy, N. (2011). Pedagogy in common: Democratic education in the global era. *Educational Philosophy & Theory*, 43(10), 1119-1134. Doi: 10.1111/j.1469-5812.2007.00404.x.

DeNisco, A. (2014). Schools coping with common core turbulence. *District Administration*, 50(4), 22.

Doll, W. E. (2008). Complexity and the culture of curriculum. *Educational Philosophy & Theory*, 40(1), 190-212. doi:10.1111/j.1469-5812.2007.00404.x

Dworin, J. (2011). Listening to graduates of K-12 bilingual program language ideologies and literacy practices of former bilingual students. *Gist Education and Learning Research Journal*, (5), 104-126.

Echevarría, J. Vogt, M., Short, D.J. (2016). *Making content comprehensible for English learners: The SIOP model*. Pearson: New Jersey.

Elgin city, IL (2017). Retrieved, 2/4/18, from:

[https://factfinder.census.gov/faces/nav/jsf/pages/community\\_facts.xhtml?src=bkmk](https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml?src=bkmk)

Esposito, A. & Baker-Ward, L. (2013). Dual-language education for low-income children: Preliminary evidence of benefits for executive function. *Bilingual Research Journal*, 36(3), 295-310. Doi: 10.1080/152355882.2013.837848.

Faltis, C. (2013). Language, language development and teaching English to emergent bilingual users: Challenging the common knowledge theory in teacher education & k-12 school settings. *Association of Mexican-American Educators (AMAE) Special Invited Issue*, (7)2, 18-29.

Fleener, M. (2005). Introduction: chaos, complexity, curriculum, and culture. In , *Chaos, Complexity, Curriculum, & Culture: A Conversation* (pp. 1-17). Peter Lang Publishing, Inc.

Friedman, W.J. (2001). The development of an intuitive understanding of entropy. *Child Development*, 72(2), 460-472.

Gablasova, D. (2014). Issues in the assessment of bilingually educated students: Expressing subject knowledge through L1 and L2. *The Language Learning Journal* 42(2), 151-164. Doi: 10.1080/09571736.2014.891396.

Gangi, J. M. (2010, December 11). Children of color and the poor left way behind in the National Governors Association and State Chiefs Common Core Standards Initiative: “Text exemplars” for kindergarten through 5th grade. Retrieved from <http://maryannreilly.blogspot.com/2010/12/guest-blog-children-of-color-and-poor.html>

- Gangi, J.M., & Reilly, M.A. (2013). "Laying bare of questions which have been hidden by answers": The English language arts standards of the common core, K-5. *Language and Literacy Spectrum*, (23) 7-19.
- Goodlad, J. & Anderson, R.H. (1987). *The Ungraded Elementary School*. New York: Teachers College Press.
- Grigorovici, A., Bacaita, E.S., Paun, V.P., Grecea, C., Butoc. I., Agop, M., & Popa, O. (2017). Pairs generating as a consequence of the fractal entropy: Theory and applications. *Entropy*, 19(3), 1-10. doi: 10.3390/e19030128.
- Griva, E. & Chostelidou, D. (2017). Clil in primary education: Promoting multicultural citizenship awareness in foreign language classroom. *Research Papers in Language Teaching & Learning*. 8(2), 9-23.
- Harding-DeKam, J.L. (2014). Defining responsive teaching: The case of mathematics. *Cogent Education*, 1(1).
- Irizarry, J. G. (2017). "For us by us" A vision for culturally sustaining pedagogies forwarded by Latin youth. In D. Paris & H.S. Alim (Eds). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. New York, NY: Teachers College Press.
- Johnson, Scott D., and Richard L. Weaver, II (1992). Groupthink and the Classroom: Changing familiar patterns to encourage critical Thought. *Journal of Instructional Psychology* 19(2), 99-106.
- Kasbi, S. s., & Elahi, Shiryan, M.E> (2017). Ecological understanding of foreign language speaking anxiety: Emerging patterns and dynamic systems. *Asian-Pacific Journal of Second & Foreign Language Education*, 2(2), 1-20. Doi: 10.1186/s40862-017-0026-y.
- Kauko, J. (2014). Complexity in higher education politics: Bifurcations, choices and

- irreversibility. *Studies in Higher Education*, 39(9), 1683-1699. Doi: 10.1080/03075079.2013.801435
- Kenner, C. (2003). Biliteracy benefits. *Literacy Today*, (37)21.
- Kim, Y.K., Hutchison, L.A., & Winsler, A. (2013). Bilingual education in the united states: An historical overview and examination of two-way immersion. *Educational Review*, 67(2), 236-252.
- Knight, A. (2009). Re-engaging students disengaged with English: A unit of work on “othering”. *English Teaching Practice and Critique*, 8(1), 112-124.
- Kofidis, N., Margaris, A., Roumeliotis, M., & Adamopoulos, M. (2006). Investigation of the determinism of complex dynamical systems using simple back propagation neural networks. *International Journal of Computer Mathematics*, 83(4), 419-427. Doi: 10.1080/00207160600961869
- Ladson-Billings, G. (1994). *The Dreamkeepers: Successful Teachers of African American Children*. San Francisco: Jossey-Bass.
- Ladson-Billings, G. (1995). Toward a Theory of Culturally Relevant Pedagogy. *American Educational Research Journal*, 32(3). 465-491.
- Landry, R. & Allard, R. (1993). *Beyond socially naïve bilingual education: The effects of schooling and ethnolinguistic vitality on additive and subtractive bilingualism*. Washington, D.C.: Distributed by ERIC Clearinghouse.
- Larsen-Freeman, D. (2016). Classroom-oriented research from a complex systems perspective. *Studies in Second Language Learning and Teaching*, 6(3), 377-393.
- Larson, K., Pas, E.T., Bradshaw, C.P., Rosenberg, M.S., & Day-Vines, N.L. (2018). Examining

- how proactive management and culturally responsive teaching related to student behavior: Implications for measurement and practice. *School Psychology Review*, 47(2), 153-166. doi: 10.17105/SPR-2017-0070.V47-2
- Larsson, J., & Dahlin, B. (2012). Educating far from equilibrium: Chaos philosophy and the quest for complexity in education. *Complicity: An International Journal of Complexity & Education*, 9(2), 1-14.
- Leider, C. c., Proctor, C. p., Silverman, R. r., & Harring, J. h. (2013). Examining the role of vocabulary depth, cross-linguistic transfer, and types of reading measures on the reading of Latino bilinguals in elementary school. *Reading & Writing*, 26(9), 1459-1485. Doi: 10.1007/s11145-013-9427-6.
- Lensmire, T., & Snaza, N. (2010). What teacher education can learn from blackface minstrelsy. *Educational Researcher*, 39, 413-422. <http://dx.doi.org/10.3102/0013189X10374980>
- Lindsey, K.A., Manis, F.R., & Bailey, C.E. (2003). Prediction of first-grade reading in Spanish-speaking English language learners. *Journal of Educational Psychology*, 95(3), 482-494. doi: 10.1037/0022-0663.95.3.482.
- Lixin, Luol, L. (2014). Recursion in the mathematics curriculum. *Philosophy of Mathematics Education Journal*, (28), 1-14.
- Lowenstein, K.L. (2009). The work of multicultural teacher education: Reconceptualizing White teacher candidates as learners. *Review of Educational Research*, 79, 163-196.
- Mackey, W.F. (1972). *Language status and language contact in geolinguistic perspective*.
- McArthur, K.G. (2012). The metalinguistic protocol: Making disciplinary literacies visible in secondary teaching and learning. *Reading Horizons*, 52(1), 26-55.
- McMahon, C. (2016). Push in versus pull out strategies for English language learners. Retrieved

- from: <http://theeducatorsroom.com/2013/12/push-in-versus-pull-out-in-e-s-l/>
- McVee, M.B. (2014). 'Some are way left, like this guy, Gloria Ladson-Billings': Resistance, conflict, and perspective taking in teachers' discussions of multicultural education. *Peach and Conflict: Journal of Peace Psychology*, 20(4), 536-551. doi: 10.1037/pac0000067
- Meyer, L. (2011). Evaluating the effectiveness and impact of teacher professional development. In C. Sleeter (Ed.), *Professional development for culturally responsive and relationship-based pedagogy* (pp. 69–89). New York: Peter Lang.
- Miller, R. D. (2016). Contextualizing instruction for english language learners with learning disabilities. *TEACHING Exceptional Children*, 49(1), 58-65. Retrieved from <https://nl.idm.oclc.org/login?url-http://search.ebscohost.com/login?.aspx?direct=true&db=eric&AN=EJ1118441&site=ehost-live&scope=site>
- Mingsheng, T., & Xinjun, M. (2014). Information entropy-based metrics for measuring emergences in artificial societies. *Entropy*, 16(8), 4583-4602. Doi: 10.3390/e16084583.
- Mollenhauer, B. (2017). Chaos theory and fractals. *Australian Orthoptic Journal*, 9-21.
- Moran, R.F. (2005). Undone by law: The uncertain legacy of *Lau v. Nichols*. *Berkeley La Raza Law Journal*, 16(1), 1-10.
- Panferov, S. (2010). Increasing ELL parental involvement in our schools. *Theory into Practice*, 49, 106-112.
- Paris, D. (2012). Culturally sustaining pedagogy. A needed change in stance, terminology, and practice. *Educational Researcher*, 41(3), 93-97.
- Paris, D., & Indiana University-Purdue University Indianapolis (IUPUI), M.E. (2017). On Educating Culturally Sustaining Teachers. *Equity and Design*.

- Parker, D.L. (1973). Petrus Ramus and the puritans: The 'logic' of preparationist conversion doctrine. *Early American Literature*, 8(2), 140.
- Parsons, S. A., & Vaughn, M. (2016). Toward adaptability: Where to from here? *Theory into Practice*, 55(3), 267-274. Doi: 10.1080/004057841.2016.1173998
- Pascual y Cabo, D. Prada, J. & Lowther Pereira, K. (2017). Effects of community service-learning on heritage language learners' attitudes toward their language and culture. *Foreign Language Annals*, 50(1), 71-83. doi: 10.1111/flan.12245.
- Peters, J., McMullen, B., & Peters, P.D. (2018). Professional development school experiences and culturally sustaining teaching. *Journal of Higher Education Theory & Practice*, 18(1), 32-48.
- Pray, L., & Monhardt, R. (2009). Sheltered instruction techniques for ELLs. *Science and Children*, 46(7), 34-38. Retrieved from <https://nl.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db-eric&AN=EJ831453&site=ehost-live&scope=site>
- Rao, A. & Morales, P.Z. (2015). Creating a climate for linguistically responsive instruction: The case for additive models. *Mid-western educational research*, 27(4), 296-316.
- San Pedro, T.J. (2017). "This stuff interests me" Re-centering indigenous paradigms in colonizing school spaces. In D. Paris & H.S. Alim (Eds). *Culturally sustaining pedagogies: Teaching and learning for justice in a changing world*. New York, NY: Teachers College Press.
- Shim, J.M. (2013). Involving the parents of english language learners in a rural area: Focus on the dynamics of teacher-parent interactions. *Rural Educator*, 34(3), 18-26. Retrieved from

<https://nl.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1014135&site=ehost-live&scope=site>

Silin, J., Moore, M., & Bank Street College, E. (2016). Progressive practices in public schools.

Occasional Paper Series 35. *Bank Street College of Education*.

Soudien, C.C. (2013). A politics of intellectual engagement: Six key debates. *Education as Change*, 17(2), 165-179. doi: 10.1080/16823206.2013.803657.

Smyth, H. (2013). What does research say about the effectiveness of professional learning and development for culturally responsive teaching at the primary school level?. *New Zealand Journal of Teachers' Work*, 10(1), 169-188.

Stamovlasis, D.S. (2014). Bifurcation and hysteresis effects in student performance: The signature of complexity and chaos in educational research. *Complicity: An International Journal of Complexity & Education*, 11(2), 51-64.

Thomas, S., & Vanderhaar, J. (2008). Negotiating resistance to multiculturalism in a teacher \ education curriculum: A case study. *Teacher Educator*, 43, 173-197.

<http://dx.doi.org/10.1080/08878730802055057>

Transitional Bilingual Education, (2013). Retrieved from:

[https://iris.peabody.vanderbilt.edu/module/ell/cresource/q1/p03/ell\\_03\\_link\\_pockets\\_03/](https://iris.peabody.vanderbilt.edu/module/ell/cresource/q1/p03/ell_03_link_pockets_03/).

Triche, S. & McKnight, D. (2004). The quest for method: the legacy of peter ramus. *Journal of the History of Education Society*, (33)1, 39-54.

<https://nl.idm.oclc.org/login?url=http://search.ebscohost.com/login.aspx?direct?=true&db=eric&AN=EJ1130860&site=ehost=live&scope=site>

Van Lier, Leo (2004). *The ecology and semiotics of language learning*. Kluwer Academic Publishers: New York.



Wang, Chenyu; Hoffman, Diane M. (2016). "Are" we the world? A critical reflection on selfhood in U.S. global citizenship education. *Education Policy Analysis Archives*, 4(56).