MATHEMATICS AND MULTILINGUAL LEARNERS:

TRANSFORMATIVE LEARNING THROUGH IN-SERVICE

TEACHER PROFESSIONAL DEVELOPMENT

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Abstract

In response to the increasing linguistic and cultural diversity in US schools, in-service teachers are faced with the significant challenge of addressing both the linguistic and instructional needs of their multilingual learners (MLLs). This study explores the transformative learning experiences and raised ideological awareness of K-12 in-service teachers during a 15-week, online, asynchonous, professional development (PD) course. Theories and methodologies simultaneously focused on English language development and academic mathematics content instruction for MLLs. As one of the most linguistically and culturally diverse states in the country, Hawaiʻi is an ideal context in which to counter the assumption that mathematics is independent of language but is instead highly dependent on it and must be directly addressed and learned *concurrent to* academic content. This study provides evidence of the linguistic obstacles faced in the academic mathematics classroom (e.g., "mathematical register," Halliday, 1978; Schleppegrell, 2007) and how "language is implicated in the teaching of mathematics" (Schleppegrell, 2007, p. 139; Carter & Quinnell, 2012; Garrison & Mora, 1999; Rubenstein & Thompson, 2002).

This qualitative study is informed by transformative learning theory (Cranton, 1994; Mezirow, 1991, 2000), which involves "an enhanced [awareness] level of the context of one's beliefs and feelings, a critique of their assumptions and particularly premises, an assessment of alternative perspectives, a decision to negate an old perspective in favor of a new one or to make a synthesis of old and new, an ability to take action based upon the new perspective, and a desire to fit the new perspective into the broader context of one's life" (Mezirow, 1991, p. 161).

In-service teachers (also referred to here as participants) taught general and/or academic math classes, math courses specifically for MLLs, or, particularly in the elementary years, were

educators of all subjects with MLLs in their classes. Individual teachers taught between three to 80 MLLs on a regular basis.

Data collection focused on written reflections through weekly discussions, posted in an online group forum, which allowed the teachers to read and comment on each other's understandings of the required article readings and related discussion questions. These online forums allowed the teachers to share new ideas, personal perspectives, ask follow-on questions, or in any other way "relate the [weekly] course content to [their] real-world teaching experiences" (syllabus). Weekly summaries were also required, submitted directly to the instructors and not made available to other participants. Each of these submissions addressed the general topic of the week, but could also include any perspectives on the course content, classroom observations, and reflections on discussions (syllabus). Participants' personal, increased ideological awareness and transformative learning experiences from these written sources reflect their unique classroom situations and beliefs across a number of relevant themes, though due to limited space, only two will be presented: the academic language of math, and first language use in the classroom.

Data analysis demonstrates how participants came to recognize that math is not a "universal language" and instead that the academic linguistic complexity is highly contextualized and requires specific pedagogical strategies to support the simultaneous acquisition of language and academic content. In doing so, participants commented on the importance of having this realization and the positive impact it has on their understanding of their MLLs. Consequently, they realized that teaching practices would be improved by including a focus on language as well as content.

Participants also gained awareness of the importance of respecting all students' prior knowledge, which in every classroom must be shown as a beneficial contribution to learning. In particular, the equitable pedagogical practice of encouraging and supporting their students' first language use in the classroom provided the teachers with opportunities to confront the prevalent ideology of English monolingualism; that is, in the US context, there is the common misconception that when learning English it should be in an English-only context and where any language other than English should be excluded to the point of banning other languages. By confronting this ideology and recognizing the significant diversity in their classrooms, teachers discovered that all students' languages must be considered as valuable resources and included in learning (García, 2005; González, Moll, & Amanti, 2005).

Awareness was also raised about the reality of academic language requiring four to seven years to be acquired (Cummins, 1984). This was cited by the teachers as a critical piece of knowledge they needed. They also recognized that expectations must be kept high because, regardless of current English language proficiency, students are capable of thinking critically and engaging in high-order thinking with the appropriate scaffolds. When both the language complexity and support from the teachers mirror students' language proficiency levels (Gibbons, 2002, 2009), then the students' ability to engage in critical discussions will be greatly improved. As a result, participants developed a new commitment to support the long-term language learning of their students and provide opportunities for extensive language practice in the mathematics classroom.

Areas suggested by the study for future research and action include the following: (a) using math as exemplar towards promoting equitable multilingual education in other content areas and among multiple actors; (b) the need for pre-service education in MLL pedagogy; (c)

the need for more comprehensive PD courses for in-service teachers across content areas, and in particular those which support and promote ideological awareness; and, (d) engagement of multiple actors—including teachers, students, parents, administrators, community members, policymakers—in ideological awareness and transformative learning, and the subsequent promotion of multilingual policies and practices that will benefit not only MLLs but all students.

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CHAPTER 1

INTRODUCTION

"A growing number of children in …schools are indeed multilingual, but

this does not mean our classrooms have become multilingual."

(Hélot & Young, 2006, p. 69)

A standard approach to professional development "requires little

in the way of intellectual struggle or emotional engagement, and

takes only superficial account of teachers' histories or circumstances."

(Little, 1993, p. 22)

Scholars across the fields of education, applied linguistics, and second language studies

have been increasingly supporting the need for better education for multilingual students. With

the continued increase of global (im)migration due to multiple factors—including, for example,

Pacific Island nations facing the irreversible effects of climate change and refugees fleeing war-

torn Syria—comprehensive pre- and in-service teacher education and the provision of equitable

instruction and education for all students is of pressing concern. This education must include

current, effective pedagogy specific to multilingual learners[1] (MLLs), such as using the students'

home language in addition to learning the local language, while simultaneously confronting the

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[1] 'Multilingual learners' is used in this study rather than 'limited English proficient' or 'English language learner'. This is done intentionally to address the fact that the latter two describe students in deficit terms. Instead, "when students see themselves (and know that their teachers see them) as emergent bilinguals, they are much more likely to take pride in their linguistic abilities and talents than if they are defined in deficit terms" (Cummins, in García & Kleifgen, 2010, p. x). In taking this meaning a step further, I choose to use the term *multilingual learners* instead of emergent bilinguals to further recognize the diversity of students' linguistic abilities.

often-present language ideologies promoting education in the dominant/national language only and in a standardized form.

It is well-recognized that educating MLLs is challenging for teachers, in particular in a context where English is the medium of instruction and dominant language in society (Batt, 2008; Farr & Song, 2011; Hollins & Guzman, 2005). In addition, it is not uncommon for long-established ideologies in education settings to become normalized (Blommaert, 1999) and commonsense (Farr & Song, 2011), and potentially overshadowing teachers' personal and professional beliefs and classroom practices (Farr & Song, 2011; O'Brien, 2011), thus resulting in little change.

Recent studies on the education of MLLs explore the challenges faculty face in infusing the teacher education curriculum with MLL pedagogy (Costa, McPhail, Smith, & Brisk, 2005), preparing linguistically responsive teachers (Lucas & Villegas, 2011), and teachers' perceptions of MLL education (Batt, 2008), including teachers' attitudes towards having MLLs in the mainstream classroom (Walker, Shafer, & Iiams, 2004). However, there has been little attention paid to the language ideologies of teachers—and in particular their potential personal and professional ideological transformation—which are not often explored or reported. More specifically, in the context of the United States, the language ideologies of English monolingual education, Standard English language use, and other related ideologies such as Americanization on the part of teachers in particular have not been explored in great detail. As such, I introduce the concept of ideological awareness (Bakhtin, 1981; Ball, 2012), which is rarely explored in the field of language education, in particular as it relates to teachers of linguistically diverse students. Such awareness can also help teachers gain knowledge of multilingual strategies, and subsequently a better understanding and appreciation for the natural multilingual practices of

their students and the wealth of knowledge they bring to the classroom. In addition, in exploring relevant ideologies and having a critical perspective toward language pedagogy, teachers can more likely experience ideological transformation and change classroom pedagogical practice. One such example is the introduction of first language use in the mainstream classroom as not only an appropriate pedagogical strategy, but also used as a tool for ideological analysis against the notion of English monolingualism.

This study focuses on work with in-service public school teachers that is threefold: (1) to give evidence of how teachers' discourse changed in relation to their teaching mathematics to their MLLs through participation in an online, long-term professional development (PD) course; in particular, showing how the teachers' perceptions and attitudes changed from having a superficial understanding of the challenges and barriers MLLs face to recognizing their abilities and potential; (2) to explore how this recognition subsequently influenced and/or will influence their teaching and classroom practice; and, (3) to help uncover ideologies in the local education context of one US state, Hawai'i. Through the use of written reflections, teachers share their personal stories of both new pedagogical content knowledge and ideological awareness. These experiences helped the teacher-participants become critically aware of their personal ideologies and those prevalent in the local education system. The teachers then followed with their reflections and transformative beliefs on how they might make different decisions, thus impacting what they as teachers do in their respective classrooms.

While teachers' views are represented in recent education and applied linguistics literature, their voices and participation through engaged reflection at the local level and exploring locally relevant pedagogies and ideologies related to MLLs is underrepresented in discourse and scholarly publications. In addition, "according to a teacher survey conducted in the

United States, teachers in the mainstream content-area classrooms face difficulties in accessing professional development and resources for teaching ELLs" (Takeuchi & Esmonde, 2011, p. 332). This statement highlights the importance of this study's focus on a long-term in-service teacher PD course for mainstream English monolingual classrooms with a specific focus on the content area of math as an exemplar. More specifically, teacher transformative learning is necessary for the provision of equitable education for this growing population of students, and support is imperative for teachers previously graduated from teacher licensure programs and already in the field.

As such, this study engages in-service math teachers of MLLs currently in the classroom with opportunities and scaffolded support to learn important pedagogical strategies for teaching this specific population of diverse students. In addition, teachers also had the opportunity to discuss multiple topics of concern—related to both pedagogy and ideology—that are relevant to the current education system in the United States and Hawai'i in particular; this provided the teacher-participants the space to challenge their current pedagogies, ideologies, and subsequent practices.

This study draws on current MLL theories (García, 2011; García & Kleifgen, 2010) with a specific focus on math (Brown, Cady, & Taylor, 2009; Gómez, Kurz, & Jimenez-Silva, 2011; Schleppegrell, 2007), as well as US education history (Haas & Gort, 2009; Ricento, 2008; Wiley, 2000, 2013, 2014) and the history of English language education and public teacher education in Hawai'i (Benham & Heck, 1998; Dotts & Sikkema, 1994; Haas, 1992; Logan, 1989; Potter & Logan, 1995) to both situate and explore language pedagogical practices and ideologies from the perspectives of K-12 in-service teachers in both urban and rural contexts across the state of

Hawaiʻi; in particular, Hawaiʻi represents a unique and complex context for several significant

reasons, as outlined in the following section.

<p align="center">**Hawaiʻi: A Unique and Complex Context**</p>

Although the state of Hawaiʻi has a large pre-service teacher licensure program offered

through the University of Hawaiʻi system, there has historically been no successfully sustained

pre-service teacher training programs in the state that provide certification in teaching MLLs

across grades K-12, and not enough in-service teacher education courses serving this diverse and

growing population. Davis and Phyak (2015) specifically note that the Hawaiʻi Department of

Education[2] and the University of Hawaiʻi at Mānoa College of Education have "so far failed to

provide policies and plans that offer comprehensive and effective language minority education.

The college has never had either an English Language Learner (ELL) or bilingual/multilingual

teacher education program" (p. 155). However, efforts are currently underway as of Fall 2016 to

implement a pilot cohort program in the College of Education for an MLL licensure in

connection with graduates earning their elementary teaching credential.[3] This program has the

potential to offer comprehensive and effective language minority education, as it is scheduled to

include 18 credits with an MLL emphasis in the following areas: second language learning,

multicultural education, an introduction to the study of language, instructional and assessments

for MLLs, curriculum, materials and assessment development for MLLs and responsive

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[2] Recent multilingual policy has also been approved by the Department of Education (Board Policy 105.14), entitled "Multilingualism for Equitable Education" (www.boe.hawaii.gov). While this cites the state's long-overdue official recognition and need to have policy related to MLLs in the public school, this policy was only approved in June 2016 and there is not yet evidence of how this policy will appear or be supported in practice. Further future research will need to be conducted to explore how this policy will be applied to the betterment of MLLs in particular.
[3] The Bachelor of Education Dual Licensure in Elementary Education and Multilingual Learning (EEML) program is a two-year, 120-credit pathway resulting in teacher licensure. The program prepares future K-6 teachers in both "general education classrooms *AND* English to speakers of other languages (ESOL)" as well as strategies and their application in the education of MLLs (https://coe.hawaii.edu/sites/default/files/pdf/1Degree5OptionsBEd.pdf).

pedagogy for MLLs.[4] As this program is currently in its first semester of offering, other documents and public information regarding teaching practica, field experience, and lesson observations is not yet available. However, as it is a dual licensure in elementary education, the program format will likely follow this established format in offering lesson observations, field experience, and one semester student teaching.[5]

While in the early stages, this pilot program and certification will need to continue to be supported and expanded long-term so as to better address the education needs of the significant increasing enrollment of MLL students in Hawaiʻi's schools; for example, the US Department of Education (2013) has noted the MLL population almost doubled between 2002 and 2012, increasing by 93%. In addition, 24,750 MLL students were enrolled during the 2011-2012 school year across the state, totaling 13.5% of the school population (Ruiz Soto, Hooker, & Batalova, 2015a; US Department of Education, 2013), with most speaking a native language other than English[6] (Ruiz Soto et al., 2015a; US Department of Education, 2013). This highlights the necessity for teachers to receive education to address the learning needs of this growing population.

There is also a dearth of comprehensive PD courses for in-service teachers of MLLs, in particular in the content area of math. Given the current shifts in educational reform in recent decades, teachers are faced with the challenge of targeting the state standards in every lesson, preparing students to successfully complete standardized assessments, incorporating technology into the curricula, and providing inquiry-based, authentic activities and assessments to their

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[4] https://coe.hawaii.edu/sites/default/files/pdf/TIPS_MLL_Revised_Sept19_16%20-%20for%20merge.pdf
[5] https://coe.hawaii.edu/academics/institute-teacher-education-ite/bed-elementary-eeml/forms-documents; https://coe.hawaii.edu/sites/default/files/pdf/1Degree5OptionsBEd.pdf
[6] Approximately 20% of language learners (4.7 million) (Zong & Batalova, 2015) in the United States were born in the country, many of whom have parents who were immigrants; thus, language learners belong to a complex group that is not easily categorized (National Council of Teachers of English, 2008).

students. In order to meet these demands, in-service teachers need high-quality, sustained PD (Tan, 2011). More specifically, and in direct response to the well-documented increasing linguistic and cultural diversity in US schools (NCELA, 2011), in-service teachers are also faced with the significant challenge of addressing both the linguistic and instructional needs of their multilingual learners. While PD courses related to teaching MLLs are offered across the content areas (Janzen, 2008), these are traditionally heavily focused on the social sciences; it is only very recently that the content area of math has been included (Takeuchi & Esmonde, 2011). Although the linguistic challenges of math and methods of simultaneous inclusion and acquisition are increasingly appearing in the literature, there is less of a representation in long-term PD courses; in particular, descriptions of PD in this content area have focused predominantly on general mathematics classrooms (Franke, Carpenter, Levi, & Fennema, 2001; Hill & Ball, 2004), while it is only very recently beginning to address a specific focus on language learners (Takeuchi & Esmonde, 2011).

The predominant explanation for this is that math is thought of as a 'universal language,' where anyone, regardless of language and culture, is able to understand and succeed in an academic math classroom without the necessity for concurrent linguistic support. However, there has been recent recognition by both education and applied linguistic scholars that the academic math curriculum across all grade-levels contains highly contextualized linguistic complexity; this in turn results in the need for increasing students' language proficiency simultaneously with academic content. That said, there is still a dearth of scholarly literature on comprehensive PD courses for in-service teachers of MLLs in the content area of math that focus on current pedagogical practices relevant to the local education context. By situating the PD in the local context, teachers additionally have the opportunity to engage in in-depth discourse,

collaboration, reflection, and action with their peers, which provides educators the support to further improve classroom practice.

Another challenge to the context of Hawaiʻi is its geographical position as a Pacific Island chain, with a strong Polynesian heritage, language, and culture, while also being a US state and thus with American political, social, and economic power and prestige. These factors influence decisions to emigrate to Hawaiʻi from the Asia-Pacific region in particular, of which there has been a long history and an already well-established diversity, with numbers of immigrants continuing to grow. For example, residents of the Republic of the Marshall Islands (RMI) and the Federated States of Micronesia (FSM) are among Hawaiʻi's newest and fastest growing immigrant groups and comprise over 60% of these populations' national US total (Keany, 2011; LaFrance, 2009; US Census Bureau, 2010). This increase was directly related to the signing of the Compact of Free Association in 1986, a joint agreement between the RMI, the FSM, the Republic of Palau, and the United States, allowing residents from these independent nations to migrate to the US without the requirement of a visa or a time limit on their stay. In 2008, there were documented 20,000 citizens of the RMI and FSM in Hawaiʻi with approximately 73% live on the island of Oʻahu (LaFrance, 2009). Predominant reasons for current migration include better employment opportunities, more comprehensive education for both adults and children, and access to more advanced healthcare (Heine, 2002; Omori, Kleinschmidt, Lee, Linshield, Kuribayashi, & Lee, 2007; Pobutsky, Buenconsejo-Lum, Chow, Palafox, & Maskarinec, 2005; Status of Micronesian Migrants, 2003). One additional influence for migration from their home Pacific Island nation to Hawaiʻi is the impact of climate change; for example, the RMI in particular is one of the three[7] most vulnerable Pacific nations to

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[7] The two other Pacific Island nations most threatened by the effects of climate change are Kiribati and Tuvalu.

experience climate change impacts because of low elevation and lack of significant land mass. Should subsequent climate-induced factors continue despite ongoing mitigation and adaptation, there is little-to-no option to migrate domestically. It has also been noted by the American Association for the Advancement of Science that this inevitable international migration of all RMI residents would see them as "environmental refugees" (Maldonado, 2012, p. 81) relocating to the US, with Hawai'i a likely "presumptive destination" (Huffington Post, 2011).

One further challenge in the context of Hawai'i is its long history of colonization influencing its education system and imposing English as the dominant language. Hawai'i holds the distinction of being the only US state to receive recognition of its indigenous language, Hawaiian, with official status (Lindholm-Leary, 2001) and thus becoming the first officially bilingual state.[8] With this decision comes a unique historical and legal past which has had a significant influence on the presence of not only the Hawaiian language, but also the acceptance and promotion of English since the education system's Western-influenced beginnings in the middle part of the 19th century. What resulted in the more than 150 years that followed was the rise of English monolingual pedagogy and practices to the near-exclusion of every other language in public education, including the near irretrievable loss of the Hawaiian language[9] and exclusion of Hawai'i Creole English (also called Pidgin).[10]

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[8] However, it is important to note that Hawaiian and English do not have equal standing in the law, but rather that English will prevail. The Constitution of the State of Hawai'i, Article XV, Section 4 states: "English and Hawaiian shall be the official languages of Hawai'i, except that Hawaiian shall be required for public acts and transactions only as provided by law [Add Const Con 1978 and election Nov 7, 1978]" (Hawai'i Legislative Reference Bureau, 2015, n.p.). In addition, while Hawai'i holds the distinction of being the only US state to receive recognition of its indigenous language with official status (Lindholm-Leary, 2001), it has been noted that such recognition by no means guarantees change in its support and use; as McCarty (2002) states, "these developments, though important and promising, were unlikely to reverse the decline of Hawaiian as a mother tongue" (p. 297). Wilson and Kamanā (2011) stress that, to truly be effective, "language revitalization requires carefully ordered and strategically accomplished advocacy and actions (Fishman, 1991)" (p. 37).

[9] And with it vital Indigenous knowledge.

[10] This will be discussed in further detail later in this dissertation.

In sum, the historical absence of any formal pre-service teacher education for MLLs, a dearth of comprehensive PD courses for in-service teachers, its unique geographic position in the Asia-Pacific region while also a US state, and its own long history of colonization influencing its education system make Hawaiʻi a unique context in which to explore and address equitable MLL pedagogy and normalized ideologies. There is also a limited understanding of how in-service teachers facilitate and promote language use in their classrooms, as well as a lack of engagement of teachers in discourses relating to pedagogy and ideology, such as those here in the context of K-12 math education for MLLs.

The degree and quality of use of language pedagogies in the K-12 public school classroom are highly relevant to successful education and yet are impacted by teacher ideologies, and on a broader scale, ideologies of the state Department of Education, Board of Education, and the College of Education. These ideologies are also influenced by both local and national ideologies, including English monolingualism, and counter-ideological pedagogical practices such as translanguaging, which uses the student's first language as a resource to learning. There is a significant need to explore teacher awareness of these ideologies—in particular through the engaged and transformative process of ideological awareness—that occurs when they engage in critical, guided professional and personal reflection. As such, teachers as part of this study and PD course participation provided written reflections on a variety of topics and guiding questions related to MLL math pedagogy and consciousness-raising, which helped give new attention to previously unconscious beliefs or new understandings on present ideologies as well as the negotiation and efforts to resist these ideologies in the future. This study also uses transformative learning theory (Cranton, 1994; Mezirow, 1991, 2000) to provide teacher-participants with a space for learning equitable pedagogy for MLLs in their own classrooms and, while not the

overall goal of the PD course in the study, engaging teachers in transforming their own or top-down language ideologies and practices and subsequently moving "toward substantial and viable meanings that make a difference" (Madison, 2012, p. 10). The following section briefly presents the relevance of this study.

Relevance of this Study

This study has both theoretical and practical contributions to the field of language education. Through working with K-12 in-service teachers in learning MLL pedagogy with a specific focus on math, the teachers were also able to explore and critically reflect on their current teaching practices and how what they learned would impact their teaching and learning in a positive way. Teacher-participants additionally had opportunities to become aware of and potentially change their previously unrecognized ideologies, referred to as 'ideological awareness' (Bakhtin, 1981; Ball, 2012). These pedagogies and ideologies directly relate to teaching MLLs and working within classrooms and an education system that also has its own covert and overt, conscious and subconscious ideologies.

By providing teachers with MLL pedagogy change and engaging them in written reflections, the PD described in this study addresses equitable education to meet local needs while providing teachers with a platform to critically explore relevant classroom practices and ideological beliefs; through the experience of ideological awareness and transformative learning, it contributes to creating broader transformative practices, and more effective culturally and linguistically equitable instruction. It also helps to build teacher confidence in recognizing what they are doing as legitimate and providing positive change, and helping those teachers who are not yet aware see that what they are doing is transformative.

This study also focuses on providing insights into the complexity and history of marginalization in the education of Hawai'i's MLLs, which includes looking at the past and present education systems which resulted in both withheld and provided knowledge and methods for meeting the diverse needs of students. Through analysis of course reflections written by in-service public school teachers across the state of Hawai'i, this study explores the centrality of language pedagogy—through its various challenges and possibilities—and related ideologies that have a critical impact on MLLs' successful learning. Through an exploration of teachers' ideological transformation—and drawing on the concept of ideological awareness (Bakhtin, 1981; Ball, 2012)—this study argues that MLL pedagogy taught through in-service teacher education programs such as PD courses must also address prevailing ideologies, and in particular those of the participating teachers. Thus, it is important to analyze these historically situated ideologies (e.g., English monolingualism) and then go further to explore whether these current MLL pedagogy and practices best meet the needs of those who are most directly affected by these ideologies in the classroom on a daily basis. The following section provides the theoretical framework that includes MLL pedagogy, ideological awareness, and transformative learning in professional development.

Theoretical Framework

The theoretical framework for this study includes a combination of important topics related to professional development courses for in-service teachers of MLLs: MLL pedagogy, ideological awareness, and transformative learning. While these areas are introduced here, they will be explored in further detail in Chapter 2.

Multilingual Learner Pedagogy

Hélot and Young (2006) note the distinction that "a growing number of children in…schools are indeed multilingual, but this does not mean our classrooms have become multilingual" (p. 69). For example, in the United States, as in many other countries believing the ideology of English-only, it is understood that 'the more English, the better' and that during this process of acquiring English, learning or maintaining other languages through immersion would delay this process. In his determination to stop bilingual education (e.g., English for the Children, 2007), California multimillionaire Ron Unz influenced legislation in California, Arizona, and Massachusetts resulting in predominantly English-only education through Proposition 227 (California Education Code §§ 300-340), Proposition 203 (Arizona Revised Statues §§ 15-751 to 15-755), and Question 2 (Massachusetts General Laws, Chapters 69-71B). The requirements for each of these three states demands that MLLs "be placed in English-immersion classes where nearly all instruction is in English" (Haas & Gort, 2009, p. 127). However, there have also been efforts to repeal such legislation; for example, Proposition 58 has been added to the November 2016 ballot (California Proposition 58, 2016), which addresses repealing the majority of Proposition 227 and instead allowing for all languages other than English to be permitted in public education to aid instruction across the state. The state of Hawai'i, which serves as the site for this study, has its own complex history of minority languages—including the co-official state language of Hawaiian—being excluded from education in efforts to assert English dominance[i].

Despite predominant ideologies of failure and the promotion of dominant/monolingual ideologies, scholars in the fields of MLL education and applied linguistics cite a number of critical truths about teaching MLLs as confirmed by current research and practice: (a)

mainstream monolingual teachers of MLLs do not need to speak the languages of their students in order to use effective teaching approaches which support first language development (Espinosa, 2013); (b) the languages and cultures of each student are valuable resources that should be used and promoted in classroom learning (Escamilla & Hopewell, 2010); (c) students come with a wealth of experience from their home, school, and greater community life which additionally impact language learning (Haneda, 2006; Moll, Amanti, Neff, & Gonzalez, 2005); (d) language is used by students in both functional and communicative ways which is additionally impacted by context (BICS/CALP [Basic Interpersonal Communication Skills/Cognitive Academic Language Proficiency]; Haneda, 2014); and, (e) academic language and academic content knowledge are acquired by students simultaneously rather than as two distinct experiences (Zwiers, 2008). These exemplar principles are important truths teachers of MLLs should know and, if not learned in pre-service teacher education programs, can and should be acquired through in-service teacher professional development courses.

Ideological Awareness

Linguistic ideologies are present in all aspects of society, though are critically present in education. It is thus important for teachers to understand their own ideologies in order to more effectively bring about change). While language ideologies are highly influential in the myriad ways languages are used, recognizing their influence can be much more challenging and not obviously noticed (McGroarty, 2010). In particular, Blommaert (1999) notes that as linguistic ideologies become more prevalent and accepted in any given environment, they become normalized.

Ensuring all citizens know a single dominant language—one normalized language ideology in many multilingual societies—is considered by many as a 'common-sense solution' to

perceived 'communication problems' (Tollefson, 1991). While this fallacy has been prevalent for centuries, scholars across the fields of education and applied linguistics have been working for decades to address this ideology of monolingualism (Tollefson, 1991; Wiley, 2014); however, it is still highly prevalent across education settings, in policies, throughout media reports, and elsewhere. Monolingualism is believed by its proponents to help resolve any lingering issues of linguistic inequality, where learning the dominant language is seen as a means of improving the potential for both social and economic equality (Tollefson, 1991). However, the ideology of monolingualism actually results in what are often considered to be 'unconscious assumptions' that appear as common-sense; this additionally includes a rationalization for certain actions and policies which in fact continue the inequality and subordination of various groups (Tollefson, 1991; Wiley, 2000).

Recent research related to teachers' ideologies in the education of immigrant and linguistic minority students are important contributions to begin to bring about change. The belief that English-only instruction, for example, is perceived to be the best education is evidenced in public discourse (e.g., www.onenation.org) and education policy (e.g., California Proposition 227). This is also true in the context of Hawai'i where, despite being the only state that has two official languages (Hawaiian and English), there is a well-documented, taken-for-granted assumption that the more English people use, the better.[ii] In a study by Walker et al. (2004), for example, this English-only sentiment is conveyed through teachers' comments, such as: "My grandparents came to this country and did just fine without ELL education." Walker et al. (2004) also describe 'the ideology of common sense,' where half of the study 422 participants believed that "teachers don't need specialized ESL training; common sense and good intentions work fine" (p. 145). De Jong and Harper (2005, 2008) and Harper and de Jong (2004) describe

the 'just good teaching' perspective, where there is a common misconception among teachers that using effective teaching strategies is all that is required to instruct MLLs. Countering the misconception, these authors note that educators must also know how to teach and address the language demands across the content areas, including seeing themselves as language teachers. As de Jong and Harper (2008) note, 'just good teaching' is specifically problematic for two reasons: "first it renders invisible those educational needs that set ELLs apart from US-born, fluent English-speaking students (including vernacular dialect speakers). Second, it leads to classroom practices that, although not necessarily harmful, are not always effective in meeting the needs of ELLs" (p. 129).

In an effort to address a deficit perspective on the part of teachers working with MLLs, the notion of 'ideological becoming' plays an important role in bringing about change during in-service teacher PD programs. First theorized by Bakhtin in the context of critiquing literature, 'ideological becoming' has since been applied to various disciplines to help to analyze existing ideologies; more specifically, it refers to "the process of selecting and assimilating the words of others" (Bakhtin, 1981, p. 341), and so has a place in learning experiences. Following Bakhtin, Freedman and Ball (2004) describe how ideological becoming provides a "framework for mediation, a way to consider the kinds of dialogues that could lead to change" (p. 28). For example, Ball (2000) describes her work with a teacher education course implemented in South Africa to help teachers become better prepared to teach culturally and linguistically students through exploring their internally persuasive discourse (Bakhtin, 1981; this example is discussed further in Chapter 2). Ideological becoming is relevant to teachers as a means to assist them in recognizing and comparing their own personal and professional ideologies to the experiences and lives of their immigrant and minority students, in particular as it relates to this study on PD for

in-service teachers of MLLs. Given the linguistic and cultural diversity of classrooms throughout the United States, teachers must recognize pervasive and persuasive discourse that needs to be approached through ideological becoming. Details of this particular study and examples of critically reflexive practices of the teacher-participants will be further detailed and explored in Chapters 3-7.

In addition to ideological awareness, transformative learning also plays a critical role in professional development courses for in-service teachers, and is introduced in the following section.

Transformative Learning

First proposed by Mezirow (1978), transformative learning theory is a framework which describes, analyzes, and critically explores one's learning processes. Mezirow (1991) summarizes this as having:

> …an enhanced level of awareness of the context of one's beliefs and feelings, a critique of their assumptions and particularly premises, an assessment of alternative perspectives, a decision to negate an old perspective in favor of a new one or to make a synthesis of old and new, [and] an ability to take action based upon the new perspective. (p. 161)

Following Mezirow's work, Cranton (1994) has since expanded this meaning "into a comprehensive and complex description of how learners construct, validate, and reformulate the meaning of their experience" (p. 22). Each of these components within transformative learning theory has implications for teacher-participants in PD, as they describe potential areas of critical awareness and subsequent action. Through PD, educators often must explore their own teaching practices and reflect on prior assumptions; a key component to

transformative learning is supporting participants as they learn to think critically about their experiences and perceptions, find validation in these through personal reflection, and then act on these newly acquired perspectives (Mezirow, 2000). This process is better made possible through PD that scaffolds the learning process by providing information that is highly relevant to the teachers' immediate context. Teacher-participants additionally need to be at a point where they recognize there needs to be a change and where they are ready and supported in bringing about this change.

With the increasing linguistic and cultural diversity in US schools, it is necessary for educators to continually explore professional assumptions and beliefs of their teaching practices, classroom learning environment, and student dynamics. As a result, a combination of multilingual learner pedagogy and awareness of relevant ideologies in K-12 education are important components of in-service teacher professional development, and additionally must include the creation of conditions to support transformative learning (e.g., providing opportunities for critical reflection) in order to subsequently improve the education of MLLs; that is, comprehensive education is needed for in-service teachers in order to best result in ethical, effective, long-term change in the education of MLLs.

Professional Development

Given the current shifts in educational reform in recent decades and the continued significant increases in immigrant students in K-12 education systems, teachers need to be properly prepared in order to best meet the needs of these diverse students. For those teachers already in the field in particular, further comprehensive education is required in the form of high-quality, long-term, comprehensive PD programs (Tan, 2011). Professional development is a highly prevalent research area in academic educational literature, though to a much lesser degree

of focus on teachers' experiences for how PD can in turn be critical, transformative, and consequently empower teacher-participants by providing spaces for in-depth engagement.

In long-term PD programs recognized by the Hawai'i Department of Education, including the course comprising this study, teachers have the opportunity to learn new information directly relevant to their teaching milieu. Too often in-service teacher education is in the form of one-size-fits-all workshops, often with little opportunity for significant dialogue and reflection, is often decontextualized from the school environment, and attempts to provide a "fix-it" approach (Díaz-Maggioli, 2004). Little (1993) notes that this standard approach to PD[11] "requires little in the way of intellectual struggle or emotional engagement, and takes only superficial account of teachers' histories or circumstances" (p. 22). Wilson and Berne (1999) go so far as to note that "teachers are loathe to participate in anything that smacks of 1-day workshops offered by outside 'experts' who know (and care) little about the particular and specific contexts of a given school" (p. 197). By situating the PD in the local context, teachers additionally have the opportunity to engage in in-depth discourse, collaboration, reflection, and action with their peers, which provides educators the support to further improve classroom practice. One example of locally situated PD is provided through the National Writing Project, where all created PD is developed by teachers in their local area; more specifically, the PD is grounded both in these teachers' own classroom practice but is additionally supported and verified with current theory and research.[12]

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[11] However, it should be noted that schools are often required by state policy to bring in designated PD providers and as such are not permitted to create or request contextualized PD. Many states additionally have short lists that include only large commercial or established PD providers, which leads to this one-size-fits-all approach.
[12] McKay (2010) reports on the local efforts made in creating locally relevant PD to support teachers of MLLs in the Greater Kansas City area of Missouri. The local director of this project explains their process in creating the PD: coordinators participated in "a yearlong self-study process that involves reflection and honest conversations" which helped to "identify ways of meeting goals aimed at improving professional development opportunities for teachers…at their site" (McKay, 2010, n.p.). Four key teacher-consultants were then selected, sent to a conference (the 2006 UCLA Writing Project 'With Different Eyes' MLL conference), and gathered resources that would

There are many common misconceptions about the teaching of MLLs across the content areas; many educators make the assumption that their MLLs will be given English language instruction in their other classes (de Jong & Harper, 2005), such as English or language arts, or that it should be left to the MLL specialist who has already received formal training in this area. There is also the reality that the majority of content area teachers—including social studies, language arts, history, English, mathematics and science—are not trained to teach students who are learning English as an additional language and thus are not capable of addressing the specific needs of MLLs in specialized academic content areas (Barwell, 2005; Fortune, Tedick, & Walker, 2008; Richardson Bruna, Vann, & Escudero, 2007; Turkan & Schramm-Possinger, 2014). While teachers often receive inadequate pre-service training, PD attempts to help fill this gap with diverse opportunities for continuing education, including PD for teachers of MLLs in particular. Chapter 2 provides further details on the provision of PD that best meets the needs of in-service teachers, including not being a one-size-fits-all approach and that is additionally long-term. The PD course at the center of this study (Chapter 3), for example, is a 15-week course that was, due to grant funding, offered for free to all teachers in the HIDOE who wished to participate.

Professional development created and provided in the local context can help address the immediate challenges of teachers currently in the classroom and be tailored to local needs. As noted above, pre-service teacher education through the University of Hawaiʻi system has been

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support their fellow teachers of MLLs. These teachers also wrote a mini-grant that would help fund two days of PD in their area related to teaching MLLs. With funding received, the resulting PD/workshop "included presentations run by teacher-consultants and other identified educators of English language learners. Time for group reflection, for workshops about specific strategies for ELL students, and for action planning were included. A range of elementary through college educators learned strategies at the first Saturday workshop and implemented them immediately in their classrooms the following week. The next Saturday, they were able to discuss successes and challenges" (McKay, 2010, n.p.). While not long-term PD, this example shows the positive results that can come from being proactive in wanting equitable education for both teachers and their MLLs.

reported to be lacking in substantial training and certification in the area of language minority education across grades K-12 (Davis & Phyak, 2015). It has further been noted by these authors that the HIDOE relies on trainings provided by federal-level organizations such as WIDA; however, PD courses have been created at the local level[iii] which are comprehensive in nature and provide in-service teachers with necessary training to teach MLLs across the content areas, including from among the STEM fields (science, technology, engineering, and math). Examples of four of these successful PD courses—*Reading Comprehension in Science for English Language Learners*, *POWER 8 Writing in Science for English Language Learners*, *Technology to Support Literacy for English Language Learners*, and *Reading Comprehension in Math for English Language Learners*—are discussed in further detail in Chapter 3, with the latter course additionally being the context for this study. This latter course also has created opportunities for ideological awareness and transformative learning for all teacher-participants; this space of awareness and transformation are critical components to the effective education of in-service teachers and ensuring the more equitable education of MLLs by bringing about more lasting change.

Purpose of the Study

This study aims to explore the following questions as a means to learn more about K-12 in-service teachers' transformative learning regarding MLL and math-specific pedagogy, and ideological becoming via participation in a 15-week online, asynchronous PD course. It also presents excerpts from written reflections by the teacher-participants documenting their new teaching practices and ideologies as they work daily with MLLs. These questions include:

- What are in-service teachers' beliefs about language in content learning (e.g., the challenges of acquiring academic mathematics language; first language use as an equitable and effective classroom practice), and what role do they see themselves playing in supporting the teaching and learning process?

- How do in-service teachers' beliefs—including ideologies and practices—change during participation in a long-term professional development course focused on strategies for teaching mathematics to multilingual learners?

While both points are represented in the scholarly literature to-date, there is however little-to-no evidence of how these work when combining math and English language acquisition simultaneously.

Structure of the Study

This dissertation explores the increased awareness and transformative learning experiences of K-12 in-service public school teachers as they participate in an on-line, asynchronous, 15-week professional development course focusing on teaching mathematics to MLLs. Through participation in this course—including, for example, exchanging dialogue with peers, reading relevant articles, publications, and web resources, answering weekly guiding questions, and completing an 8-week case study with 2-3 MLL students—the teacher-participants were able to engage in critical reflection and share their personal and professional learnings and understandings of working with MLLs.

In exploring teachers' increased pedagogical and ideological awareness and subsequent transformative learning experiences, Chapter 1 introduced the purpose of this study, including the need for studies such as this that focus on the challenges mainstream teachers face when teaching MLLs without having received adequate pre-service training, and the transformative

potential of educational opportunities such as the PD course described in this study. This chapter additionally presented the immediate context of Hawaiʻi, citing an historical absence of pre-service teacher training programs for working with MLLs across grades K-12, a dearth of comprehensive PD courses statewide for in-service teachers of MLLs, its geographical position in the Asia-Pacific region while being a US state, and its long history of colonization influencing its education system and English as the dominant language. This chapter also explained the relevance of this study and the need for in-service teachers' increased MLL pedagogical awareness, ideological becoming, and subsequent transformative learning through participation in long-term PD courses as a means to provide equitable, ethical education for MLLs.

Chapter 2 goes into greater depth with the content introduced in Chapter 1 and thus is divided into three main sections: (a) multilingual learner pedagogy, (b) teacher ideologies and attitudes, and (c) teacher professional development, transformative learning, and ideological becoming. As such, this chapter begins with a focus on current theories and effective best practices in K-12 MLL education, including: (a) English-only versus multiple language use in mainstream classrooms, (b) translanguaging, (c) holding an ideology of failure versus maintaining high expectations, and (d) language as a 'hidden' curriculum, including academic language, vocabulary development, and a brief discussion on basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). The second section of this chapter then explores the language ideology of monolingualism and discusses the topic of challenging and negotiating teachers' ideologies and attitudes. This further includes details on ideologies in and influencing MLL education—for example, restrictions on immigrant and/or minority languages at the global, national (US), and local (Hawaiʻi) levels—as well as examples of resistance to these ideologies. The third and final section of this chapter explores in-service

teacher professional development, transformative learning, and ideological becoming and clarity; more specifically, this chapter concludes with a more in-depth discussion on transformative learning theory within the context of in-service teacher PD, citing the need for educators to continually explore personal and professional assumptions and beliefs about their teaching practices, attitudes, ideologies, and understandings of educating MLLs.

Chapter 3 provides the methodological framework for this study, and begins by further exploring engaged ideological analysis as a possible current conceptualization of qualitative research. This chapter then presents the study's setting, questions, positionality, participants, and concludes with a description of the methods of data collection and analysis.

Chapters 4, 5, and 6 explore the teacher-participants' critical reflections, ideological becoming and transformative learning while participating in an in-service PD course for K-12 mathematics teachers of MLLs related to specific salient themes. These reflections show the teachers' transforming attitudes and ideologies when working with MLLs. Chapter 4 focuses on the academic language of mathematics and teachers' self-reported transformative learning experiences related to the challenges MLLs face in learning this specialized language. Chapter 5 looks in particular at the related topics of first language use in the classroom and introduction to the notion of translanguaging and instances of ideological becoming. Chapter 5 also includes a counter-narrative on the topic of first language use in the classroom and explores one teacher-participant's lack of pedagogical and ideological transformation, which is then followed by a concluding discussion. Chapter 6 explores the final overall reflections of several teacher-participants who also had their reflections included in Chapter 4 and/or 5, further documenting the teachers' self-reported ideological becoming and transformative learning experiences over the full 15-weeks of the course. These chapters additionally describe how these experiences

played an important role in the participants' personal and professional learning and growth as teachers of MLLs.

Chapter 7 revisits and discusses the two main questions that frame this study, followed by the implications of this study on in-service teacher PD and connections to the conceptual framework (Chapter 2). This final chapter then concludes with recommendations for future study.

CHAPTER 2

CONCEPTUAL FRAMEWORK

Language is the 'hidden curriculum', where "so pervasive is language,

and so intimately a part of the total patterns of interaction

in which people engage in schools, that it simply

slips from the forefront of teachers' attention."

(Christie, 1985, p. 25)

"The education of [MLLs] must be seen as a shared responsibility by

all teachers and…the knowledge and skill base for

all teachers must be reconceptualized accordingly."

(Bunch, 2013, p. 302)

Multilingual classrooms are a 21st century reality in the United States (Costa et al., 2005; Nieto, 2002); for example, approximately 4.4 million MLLs were enrolled in US schools in the 2012-2013 school year (National Council of Teachers of English [NCTE], 2015), citing an increase of more than 65% MLLs over the past decade (NCTE, 2006). Thus, all educators need to be prepared to teach linguistically diverse students regardless of the academic content area. With this historically unprecedented growth and every teacher's responsibility to be knowledgeable in MLL pedagogy comes the need to understand educators' ideologies and attitudes toward this population in order to additionally challenge and change inequitable practices. In addressing the need for teachers to acquire MLL pedagogy and to explore related

ideologies and attitudes comes the requirement for comprehensive PD.[13] PD combines in-service teacher education of specific pedagogy with opportunities for transformative learning and ideological awareness and becoming. As such, Chapter 2 expands on the introduction provided in Chapter 1 and so presents three key areas: multilingual learner pedagogy, teachers' ideologies, and PD and transformative learning theory. The first section, related to MLL pedagogy, includes discussions on current theories and effective best practices in K-12 education. The second section describes K-12 teachers' ideologies and attitudes toward working with linguistically diverse students at the global, national (US) and local (Hawai'i) levels, followed by an in-depth discussion of how these beliefs can be challenged and negotiated. The third and final section introduces content-area PD for teachers of MLLs (including those that are long-term, are not one-size-fits-all, challenge ideologies and attitudes, and foster educational change). It concludes with an exploration of transformative learning theory and the notion of ideological awareness.

Multilingual Learner Pedagogy

In November 2015, the US Census Bureau (2015) released a report that at least 350 languages are spoken in US homes and that 20.7% of individuals (60,337,288) in the US aged 5 years and over speak a language other than English (US Census Bureau, 2013). With this linguistic diversity comes the need to prepare educators to effectively teach the MLLs in their classrooms, as working with MLLs is no longer confined to a small group of educators teaching traditional 'English as a Second Language' courses (Lucas & Villegas, 2011; Santos, Darling-Hammond, & Cheuk, 2012; Wong Fillmore & Snow, 2000). Thus, for all teachers, this includes not simply to 'teach English' but "rather to purposefully enact opportunities for the development

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[13] For example, only 17% of middle school teachers considered themselves very well prepared to teach mathematics to MLLs but said they had few opportunities to participate in PD related to this content area and student group in particular (Fulkerson, 2013).

of language and literacy in and through teaching the core curricular content" (Bunch, 2013, p. 298). Additionally, there has been a significant amount of research on preparing teachers who will become/are 'English as a Second Language' specialists, those who teach in self-contained English classes, and bilingual teachers (García, Arias, Murri, & Serna, 2010; Lucas, Villegas, & Freedson-Gonzalez, 2008); however, there is less research on preparing mainstream teachers of MLLs in specific academic subjects (Janzen, 2008; Lucas et al., 2008), and still less in the content area of mathematics (Takeuchi & Esmonde, 2011). The following section presents examples of current theories and effective best pedagogical practices for teachers of MLLs in K-12 mainstream classrooms.

Current Theories and Effective Best Practices in K-12 Multilingual Learner Pedagogy

Pre-service K-12 teacher education and in-service PD programs need to be comprehensive and include effective best practices to create education change (Borko, 2004; Coady et al., 2003). Given the recent significant increase in the number of MLLs in all classrooms, this education is especially important for mainstream teachers across the content areas who have MLLs in their classrooms (Karabenick & Noda, 2004). This includes the need for thinking about and teaching MLLs to be reconceptualized from the 20th to the 21st century (García et al., 2011) towards achieving educational equity; these 21st century skills involve a shift away from rote learning to critical thinking, which is especially important and relevant to culturally and linguistically diverse students as it builds on the strengths and daily language practices that students bring with (Hornberger & Link, 2012). Additionally, 21st century skills include all students needing "to be able to find, evaluate, synthesize, and use knowledge in new contexts, frame and solve non-routine problems, and produce research findings and solutions. It also requires students to acquire well-developed thinking, problem solving, design, and

communication skills" (Darling-Hammond & Adamson, 2010, p. 1). These skills can best be achieved by teachers who are well-trained to teach MLLs across the content areas, including knowledge of pedagogical theories and practices to be used in their classrooms on a daily basis.

      English-only versus multiple language use in mainstream classrooms. Cummins (2005) notes that there has been minimal evidence in research that solely monolingual instruction is effective, and that research needs to address the predominant assumption that "instruction should be carried out exclusively in the target language without recourse" to the students' first language (p. 588). García et al. (2011) describe a case study of a school in New York City—International High School—that shows students speaking a diversity of languages while being provided an education where the teacher is a monolingual English speaker. Rather than an English-only environment, however, the students are encouraged to choose which languages they will use to better understand the academic content, and thus make their own decisions about what language will best help them learn the material. Students are additionally supported in developing their own learning strategies in whatever language makes sense to them, and as such the pedagogy is in no way English-only. In a similar but more recent study, Malsbary (2015) reports on ethnographic work conducted in two high schools in Los Angeles and New York City. The New York public high school, for example, "followed a specialized program model that emphasized teaching recently arrived youth language through advanced content *without* separate ESL classes" (Malsbary, 2015, p. 7). Malsbary (2015) cites one example of a 9th- and 10th-grade science teacher who—despite not speaking any of the languages of his students—was able to successfully support the use of all of his students' languages; for example, during a group-work activity on the lesson topic, plankton, the teacher

took a vocabulary card out of a student's hand and noted that the student had translated

the word in their home language: "Then you are always thinking in English and you have

the translation. You have both languages to help you." Students then wrote out

translations of the primary science concepts they would learn that day on the board in all

of the languages present in the classroom. Their classmates shouted out clarifications as

they worked, co-constructing knowledge of academic terms in home languages that some

students may not have known. (p. 10)

This teacher recognized the importance of how first language use can aid his students' learning

of academically dense material and, additionally, used the following practices during the above

lesson:

…leveraging native language in the classroom, encouraging students to speak, making

connections to other subjects, speaking individually to each student at least once during

the class, supporting students to work collaboratively, pointing out students'

metacognitive learning, among other practices. (p. 10)

While many mainstream school teachers across the US use English only and exclude students'

first languages—due to, for example, personal and professional ideologies, external pressure

from the school, administrators, parents, community, media reports, and local and national

language and education policies (Hélot & Young, 2006; Wiley, 2000, 2014)—the equitable and

effective strategy of first language use in the form of translanguaging in particular is being

increasingly promoted by language scholars and evidenced in classroom practice such as the one

introduced above (García et al., 2011).

Translanguaging. Translanguaging is the action of engaging in multilingual practices,

including all modes of communication, and centers not on the languages spoken but instead on

the observable practices of language in use (García, 2009; Hornberger & Link, 2012). It is well-noted by language scholars that this newly defined concept of how language is used diverges from the standard understanding of language practice, such as code-switching (García, 2009, 2014; Hornberger & Link, 2012). In contrast to code-switching—which focuses primarily on transferring or borrowing from one language to another, and considering language use to be dichotomous (García, 2009)—translanguaging "shifts the lens from cross-linguistic influence" to how speakers of multiple languages "intermingle linguistic features that have hereto been administratively or linguistically assigned to a particular language or language variety" (García, 2009, p. 51; see also Hornberger & Link, 2012).

Translanguaging additionally serves as an important pedagogical resource, where MLLs can use their language abilities and "practices *flexibly* in order to develop new understandings and new language practices, including academic language practices" (García, 2014, p. 112). There is a common myth that teachers of MLLs need to speak the languages of their students in order for the students' first languages to be effectively used in the classroom. Monolingual teachers may additionally believe that, should students be allowed to use their first language in the classroom, the students will easily get off-task or their behavior may become disruptive to learning (García & Li, 2014). However, scholars and advocates for multilingual education and first language use in the mainstream classroom (Cummins, 2005, 2007; García, 2011; García & Flores, 2013; Hornberger & Link, 2012) show that this need not be the case. In her forward to *Theorizing Translanguaging for Educators* (Celic & Seltzer, 2011), García explains that incorporating translanguaging in learning benefits all students and can be encouraged and supported by all teachers. Teachers can learn the importance of using multiple languages in the classroom as effective resources both for teaching and students' learning. García explains that

this simply needs the teacher to both recognize and be willing to not have total control over their students' learning but to instead become a learner themselves (Celic & Seltzer, 2011). Incorporating translanguaging in the classroom requires teachers to believe that the student's voice should be supported first-and-foremost, regardless of the language used. Teachers need to additionally provide models of translanguaging to help the students understand how it can benefit their learning and then to encourage this diverse language use in any use of language or literacy in school (García & Flores, 2013). Including translanguaging as a sound pedagogical strategy additionally helps teachers recognize that their students' language and cultural knowledge is a learning resource (García & Flores, 2013) and provides teachers a more complete understanding of the abilities and resources students bring with them on a daily basis. This understanding additionally helps teachers identify the ways in which they can include these resources in classroom practice to provide more comprehensive, inclusive, and effective education (Hornberger & Link, 2012).

Ideology of failure versus maintaining high expectations. Multilingual learners have long experienced a lack of inclusion within their own classes and an ideology of failure as projected by both teachers and fellow students (DaSilva Iddings & Jang, 2008; DaSilva Iddings & Katz, 2007). While many teachers are well-intentioned—including what Hatch (1992) calls a 'benevolent conspiracy,' where teachers "mask any inadequacies that take place during communication" (p. 56) in an effort to "smooth over or cover up" (p. 67) challenges in MLLs' communication—those who hold a deficit view are lacking in important training of pedagogical practices to support equitable education.[14] For example, MLLs have experienced an absence of

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[14] Deficit views are not solely due to a lack of training; further factors contributing to a teacher's deficit perspective also include, for example, personal and professional ideologies, external pressure from the school, administrators, parents, community, media reports, and local and national language and education policies.

inclusion in academic discourse when not called on to answer questions in a whole-group setting (Verplaetse, 2000). Verplaetse (1995, 1998) report on studies where content-area teachers modified how they interacted with their MLLs, and in particular how MLLs were given fewer open-ended questions and more lower-level cognitive questions than their other classmates (Verplaetse, 2000). Allard, Mortimer, Gallo, Link, and Wortham (2014) additionally found students being asked only lower-order thinking questions when teachers held a deficit view. Teachers have also provided curricula that is often diluted in an attempt to make it more understandable (Borgioli, 2008; Trumbull & Pacheco, 2005) and that is lacking in challenging academic and linguistic content. Gibbons (2009) notes that "the development of curriculum distinguished by intellectual quality and the development of higher-order thinking has in reality rarely been a major focus of program planning for EL learners" (p. 2). Wong Fillmore (2014) argues that these students can not only succeed when provided with higher expectations and standards of teaching, but that academically challenging curricula is exactly what they need. When schools deny MLLs this education, they are automatically disadvantaged in their ability to make progress and thus achieving high levels of proficiency in English are delayed.

While many MLLs face challenges in acquiring English—in particular in a monolingual learning environment—difficulty in learning English should not be reason to lower expectations or hold a deficit view. In contrast, scholars report that when teachers maintain high expectations for their students, it has a positive effect on MLLs' academic achievement (Banks & Banks, 2004; Bravo & Garcia, 2004; Walqui, 2006). For example, MLLs can reach high levels of academic achievement when they are provided with challenging and enriching curricula across all grade levels (Genesee, Lindholm-Leary, Saunders, & Christian, 2002). In addition, when teachers recognize and incorporate their students' linguistic and cultural backgrounds in their

classrooms—thus treating this knowledge as a resource rather than a deficit—MLLs are better

able to access and benefit from the curricula (Bravo & Garcia, 2004). Stepanek (2004) succinctly

explains this as follows: "pedagogical possibilities [should]…build on diversity as an intellectual

resource rather than a problem or tension" (p. 3). Many teachers have "fundamental

misunderstandings" about what they need to know to effectively teach their MLLs, as well as

how best to support the development of simultaneous language and academic content (Wong

Fillmore, 2014, p. 624).

Language: The hidden curriculum. Mainstream teachers need to know about language

and be provided with an appropriate knowledge-base in order for their MLLs to succeed (Bunch,

2013). Christie (1985) calls language the 'hidden curriculum', where "so pervasive is language,

and so intimately a part of the total patterns of interaction in which people engage in schools, that

it simply slips from the forefront of teachers' attention" (p. 25). All teachers benefit from

knowing the challenges MLLs face when learning academic content in a new language—

including understanding the amount of time anticipated for students to acquire academic

language versus that needed for everyday communication—as well as pedagogical approaches to

teaching academic language and vocabulary development.

Academic language. Education researchers note the importance of teachers being aware

of 'pedagogical *language* knowledge' (Bunch, 2013; Galguera, 2011), which Bunch (2013)

describes as the "knowledge of language *directly related to disciplinary teaching and learning*

and situated in the particular (and multiple) contexts in which teaching and learning take place"

(original italics, p. 307). Wong Fillmore and Snow (2000) call for the need for all teachers to

have a foundation in 'educational linguistics', and to learn to think and act linguistically (Bailey,

Burkett, & Freeman, 2010), or to be what Lucas et al. (2008) call 'linguistically responsive

teachers.' This requires specific knowledge of academic language and understanding its complexity for MLLs. Schleppegrell (2007) notes that "each subject area has its own ways of using language to construct knowledge, and students need to be able to use language effectively to participate in those ways of knowing" (p. 140).

In her review of research by applied linguists and math educators, Schleppegrell (2007) explores the complexities of mathematical language and notes that the last three decades have seen significant acknowledgement of the ways that "language is implicated in the teaching of mathematics" (p. 139). Halliday's (1978) notable work on the "mathematical register" resulted in the conclusion that "counting, measuring, and other 'everyday' ways of doing mathematics draw on 'everyday' language, but that the kinds of mathematics that students need to develop through schooling use language in new ways to serve new functions" (Schleppegrell, 2007, p. 140). As such, there are a number of linguistic challenges cited by scholars in the field (Halliday, 1978; Moschkovich, 2012; Schleppegrell, 2007), where mathematical grammar, vocabulary, and semantics are found to be challenging for all students, including MLLs in particular (Schleppegrell, 2007). With these challenges come the need for a specific focus on each of these areas (i.e., not simply rote vocabulary learning) to aid in understanding the entire mathematics register (Halliday, 1978). Moschkovich (2009) also cites the importance of recognizing that learning mathematics is much more than acquiring new words, and instead must involve creating meanings for these words. Ball, Hill, and Bass (2005) note that "knowing mathematics for teaching demands a kind of depth and detail that goes well beyond what is needed to carry out the algorithm reliably" (p. 22).

Vocabulary development. Vocabulary should be integrated, as it appears in all lessons across all grade levels throughout each school day (Blachowicz, Fisher, & Watts-Taffe, 2005).

As such, vocabulary instruction must be more than simply providing a list of new words to be memorized at the start of each week, and instead include in-depth explanations that help to expand on and contextualize the meaning of each word (Blachowicz et al., 2005; Cirillo, Richardson Bruna, & Herbel-Eisenmann, 2010; Freeman & Crawford, 2008; Kovarik, 2010). In the content area of math, for example, MLLs are challenged with multiple meanings of words common in everyday language that have specific meanings in mathematics (e.g., *mean* can refer to something or someone that is 'offensive' in 'everyday' language versus referring to 'an average' in the math content area; *table*: 'furniture' versus 'an arrangement of numbers, symbols or words to show facts or relations'; *operation*: 'medical surgery' versus 'a math process, such as addition or multiplication' [New York University Steinhardt, 2009, p. 4]). Additional examples are words that appear in a lesser extent in everyday language, though are commonly used in math (e.g., *round* as a circle versus '*round* a number to the tenths place', or *square* as a shape versus *square* as a number multiplied by itself [Rubenstein & Thompson, 2002, p. 108]), and words or phrases that are specific to math (e.g., divisor, equation, prime number, algebraic, least common multiple). It is also important to note that it is not necessary to keep vocabulary instruction for introductory-level MLLs at a basic level; instead, these students will benefit most from learning that includes the same level of challenge and content as all other students, but including elaboration on the definitions, context, and use of the vocabulary that would likewise benefit all students (Bay-Williams & Livers, 2009; Blachowicz et al., 2005; Carter & Quinnell, 2012; Winsor, 2008).

  BICS and CALP. Cummins (1979, 1980, 1984) first proposed the distinction between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP) to provide teachers with a better understanding of the time it can take to acquire

proficiency in a new language. While there is still the common misconception that academic English can be acquired in a short amount of time—as evidenced by English-only legislation in California (Proposition 227), Arizona (Proposition 203), and Massachusetts (Question 2) and their provision of only one year of language support through structured English immersion (Haas & Gort, 2009; Walker et al., 2004)—Cummins explains that BICS may take one to three years to acquire, while CALP may take anywhere from five to seven years (Cummins, 1979, 1980, 1984). Cummins defines CALP as components of language proficiency that relate to the acquisition of literacy skill in both the first and second language, while BICS includes oral fluency and sociolinguistic competence that can develop independently of CALP (Cummins, 1980). This distinction of social language versus academic language is well-cited in the scholarly literature (Corson, 1997; Hakuta, Butler, & Witt, 2000; Thomas & Collier, 2002) and is important for teachers to know as it can help inform instruction: the difference between BICS and CALP was intended to "draw educators' attention to the timelines and challenges that second language learners encounter as they attempt to catch up to their peers in academic aspects of the school language" (Cummins, 2008, p. 71).

While there have been criticisms of the distinction between BICS and CALP—for example, its seemingly linear progression of development, its dichotomous view of language acquisition, its "conflating language proficiency and academic achievement" (Bunch, 2006, p. 286), and its possibility of being perceived as a deficit theory where students struggling with learning academic language have 'low CALP' (Cummins, 2008; MacSwan, 2000)—Cummins' definitions are still widely accepted in the field of language education and are important inclusions in teacher education programs (Hakuta et al., 2000; Parla, Karnes, & Ludlam, 1996). In response to these critiques, Bunch (2006) and Gibbons (1991), for example, have put forward

additional explanations on the distinction between language for daily communication and academic language that provide a less dichotomous approach. Bunch (2006) calls these areas the 'language of idea' and 'language of display', which describes all language used in schools as academic language: "Challenging the dichotomy between 'conversational' and 'academic' language, I argue that *both* the language of ideas and the language of display…[are] central aspects of the academic task at hand, representing two different *academic uses* of language" (original italics, Bunch, 2006, p. 298). In the context of elementary education, Gibbons (1991) prefers to use the terms 'playground language' and 'classroom language', where 'playground language' "enables children to make friends, join in games and take part in a variety of day-to-day activities that develop and maintain social contacts" (p. 3). Regardless of choice of terminology and in spite of the above exemplar critiques, there is a value in keeping this notion of BICS/CALP in teacher education, and in particular for those teaching MLLs. For teachers to begin to understand the challenges their language learners face, in particular addressing academic content, they need to be aware of the distinction between

> (a) language that is relatively informal, contextualized, cognitively less demanding, used in most social interactions, and generally learned more easily; and (b) language that is more formal, abstract, used in academic and explicit teaching/learning situations, more demanding cognitively, and more challenging to learn. (Coleman & Goldenberg, 2010, p. 61)

By understanding that it may take only one-to-three years to acquire BICS and anywhere from five to seven years (Cummins, 1984) to achieve CALP, teachers will better be able to appreciate the challenges their students face. It has additionally been noted that teachers who have received additional training specific to MLL education, those who have studied an additional language as

an adult, and those who have experience abroad are more likely to be supportive of and implement strategies for MLLs (Youngs & Youngs, 2001). A further exploration into, for example, the personal and professional ideologies impacting this group of teachers would be worthwhile in their learning more about what perpetuates this perspective and so is explored in the following section.

<div align="center">**Teacher Ideologies and Attitudes**</div>

There are a number of examples of challenges to implementing effective MLL pedagogy by mainstream K-12 teachers. In many instances, teachers have not received adequate education about effectively teaching MLLs and thus report feeling ill-prepared (Costa et al., 2005; Ladson-Billings, 1999; Menken & Antuñez, 2001). Teachers are often additionally influenced by the media and top-down national and local policies (Hélot & Young, 2006; Walker et al., 2004) which result in a lack of emphasis on MLL pedagogy in teacher education programs and further the misunderstanding on the benefits of such approaches. However, of critical importance to effecting changes is an understanding of teachers' ideologies and attitudes; as such, the following sections discuss: (a) language ideology; (b) monolingualism and, closely related to this, holding a deficit perspective; and, (c) challenging and negotiating teachers' ideologies and attitudes.

Language Ideology

Ideology entails a perception of common sense. It is conceptualized both explicitly and implicitly as a commonsense idea that is systematic, situated in culture, and is carried out in everyday practices (Gal, 1992; Rumsey, 1990). However, ideology can additionally be "partial, contestable and contested, and interest-laden," abstract, and challenging to occur consciously (Hill & Mannheim, 1992, in Woolard & Schieffelin, 1994, p. 58).

Emerging from linguistic anthropology (Blommaert, 1999a; Schieffelin, Woolard, & Kroskrity, 1998), scholars define language ideology as particular understandings about languages that are made to rationalize or justify perceptions of language structure and use (Silverstein, 1979). This definition must be expanded, however, to note that "language ideologies are never only about language" (Gal, 2005, p. 24); that is, ideologies that may seem to discriminate only against language in fact also discriminate against the language speakers themselves. Blackledge (2005) notes that "in a world where explicitly racist discourse which describes particular groups of people in negative terms is no longer permitted, symbolic means of discrimination, [including]…languages other than English emerge as a symbolic marker of difference" (Blackledge, 2005, p. vii). As such, ideologies which value particular languages over others, and at the expense of others, continue the (re)production of difference and devaluation of languages and their speakers.

Language ideologies signify how languages are perceived and the related discourse that is constructed and perpetuated to serve the best interests of a particular cultural or social group (Kroskrity, 2002). This discourse on the meaning of languages is specifically embedded in the historical context, which includes "the actors, their interests, their alliances, their practices, and where they come from, in relation to the discourses they produce" (Blommaert, 1999b, p. 7). Language ideologies are additionally taken up in the local context (McGroarty, 2010; Pietikäinen & Kelly-Holmes, 2013) and as such come to be considered 'commonsensical' (Heinrich, 2004), 'normal' (Blommaert, 1999b), and otherwise naturalized ways of thinking and behaving; it is at this point that these ideologies reach a point "beyond criticism" (Heinrich, 2004, p. 167).

These definitions can be helpful in understanding teachers' ideologies and attitudes of MLLs, in particular as they relate to language, as language is at the center of both learning

and teaching (DiCerbo, Anstrom, Baker, & Rivera, 2014). These ideologies and attitudes—including personal, professional, cultural, and ideological—determine how teachers view and conduct themselves as educators of MLLs and thus significantly both impact and drive classroom practice (Macnab & Payne, 2003; Richardson, 1996). As such, the following section discusses K-12 mainstream teachers' ideologies and attitudes related to working with MLLs, in particular related to monolingualism.

Monolingualism

Despite scholarly evidence that monolingualism is ineffective and discriminatory (Blackledge, 2000; Coupland & Kristiansen, 2011; Milroy, 2001; Wiley, 2005), it is still highly prevalent in the education of MLLs. By its nature monolingual ideology requires that all students learn the dominant language, and negative attitudes towards immigrant and minority languages value some languages at the expense of others (Blackledge, 2005). The ideology of monolingualism and dominant/national language use in education applies to many nations, and "reflects the view that language diversity is essentially something imported as a result of immigration" (Ricento, 2008, p. 45). For example, there is a growing divide in Spain between citizens of Spain (designated as Spaniards and including Castilian and Catalans) and immigrants arriving from outside Spain's borders (Medvedeva & Portes, 2016; Pujolar & Gonzalez, 2013). Even immigrants from Spanish-speaking countries, such as Latin America, are also considered "'deficient' and 'disadvantaged'….[T]eachers and school administrators devalue students' native languages and dialects and reinforce the legitimacy of 'pure' local Spanish, thereby potentially limiting, erasing, or even reversing bilingual advantage of immigrant youths" (Medvedeva & Portes, 2016, p. 8; see also Martin-Jones, 2007; Martin Rojo, 2010; Moyer & Martin Rojo, 2007).

Spain is not alone in its dominant language/monolingual approach to K-12 education. Teachers in France, for example, promote a strict monolingual learning environment because of the common belief that "integration can take place only through the acquisition of the national language and that speaking minority languages…slows down this process" (Hélot & Young, 2006, p. 71). However, Hélot and Young (2006) note that teachers' attitudes are heavily influenced by government reports which state that French must be the priority language in education and that monolingualism will promote an environment of inclusion and integration; however, it has also been reported that this model has failed, and that efforts toward integration via monolingualism actually result in assimilation[15] and widespread discrimination both in and out of schools (Hélot & Young, 2006). Elsewhere in Europe, immigrant languages and non-standard varieties are seen as a threat and so are excluded from use in education and beyond (e.g., Cyprus: Ioannidou, 2009; Spanish/Catalan: Moyer & Martin Rojo, 2007; Basque: Urla, 1993).

Gkaintartzi and Tsokalidou (2011) report on the ideologies of four mainstream teachers of Albanian immigrant students in two Greek schools (kindergarten and elementary). One teacher perceived the linguistic and cultural diversity of her immigrant students as a problem, one that is believed by the teacher to adversely affect the learning of all students in their class (Gkaintartzi & Tsokalidou, 2011). All four teachers included in this study additionally noted that the first language should not be used because the students must know Greek: "…they have a deficit and lack cognitive and linguistic capacity to perform academically in the Greek school"

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[15] There is a subtle distinction between assimilation and integration. Assimilation "implies losing one's identity, which risks becoming absorb[ed] in the system. Integration, on the other [hand], makes room for a person's individual cultural values, practices, and identity" (Hamilton, 2016, n.p.). Integration can further be described as the "preferred experience since it acknowledges the mutual relationship and impacts that refugees, immigrants, and individuals in the host culture have on each other" (Hamilton, 2016, n.p.).

(Gkaintartzi & Tsokalidou, 2011, p. 591). One further example of a teacher's misconception about the benefits of the students' home language are the teacher's constant choice of words to describe their MLLs' 'linguistic deficiency', including "*gaps*, *language problems*, *unknown words*, [and] *they don't have the vocabulary*" (original italics, Gkaintartzi & Tsokalidou, 2011, p. 592). Similar studies in Greece (Tsokalidou, 2005) describe teachers using "the term 'aloglossa pedia' (that is 'other language-speaking children') to refer to non-native, bilingual children, a practice which has important ideological and educational repercussions to the bilingual students' lives" (Gkaintartzi & Tsokalidou, 2011, p. 589). Examples of ideological and education repercussions include teachers (a) making little-to-no effort to better understand the challenges their immigrant students face in learning Greek, (b) promoting a stigma of 'other' that adversely affects student self-esteem, and (c) (by association) discouraging Greek-speaking children from recognizing the benefits of being bilingual and/or encouraging them to learn an additional language (Tsokalidou, 2005).

In Belgium, Pulinx et al. (2015) describe an intentional monolingual ideology where teachers in the Flanders region are strict in enforcing Flemish monolingualism in their classrooms, caused by teachers having a deficit perspective of immigrants students' first languages and subsequently lower expectations of MLLs more than other students.[16] In France, Young (2014) notes how teachers are, for example, "clearly unaware of the research which links home language development with progress in second-language learning…and are consequently ignoring and sometimes actively discouraging the use of home languages" (p. 164). Teacher

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[16] This study reports on surveys completed by 775 secondary teachers from 48 schools, with Pulinx et al. (2015) noting that this region is known for strict monolingual ideologies. Agirdag (2010) explains this monolingualism with Flemish in particular as follows: "Even though Belgium has two major languages (i.e., Dutch in Flanders, and French in Wallonia), bilingual instruction does not occur since Belgian law only permits education in one official language" (p. 308).

comments reflect a monolingual mindset and the perceived necessity to keep languages separate as they will otherwise "contaminate the national language" (Young, 2014, p. 164); for example, one teacher shared that she "did not think that it would be useful to encourage plurilingualism in the *school*" because "*the* school should focus on French in the interests of efficient *learning*" (original italics, Young, 2014, p. 164).

In the context of Asia, Gu (2011) reports on secondary school teachers' language ideologies and attitudes of Chinese immigrant students in Hong Kong. Teachers emphasize the importance of Cantonese and English, while Putonghua (Standard Mandarin, the language of the mainland Chinese students) is marginalized, neglected, and faces discrimination. Gu (2011) additionally points out that English, also a non-local language, is seen as prestigious and "indicative of having a good education" (p. 526) while Putonghua is degraded. Similarly, Phillion (2008) describes elementary school teachers' attitudes of Chinese immigrant students in Hong Kong, where immigrant students' language and culture are ignored.

Kanno (2003, 2004, 2008) reports on language minority education in Japan, particularly on the foreign-national students in Japan's public schools, noting that 20,692 students (13% of the total student population) were determined by the Ministry of Education to be in need of language instruction in Japanese and so designated as Japanese as a second language learners (Kanno, 2008). In one public school, for example, classes are taught solely in Japanese, with no organized or regular support in maintaining students' first languages from either the school or teachers (Kanno, 2003). A lack of support to maintain MLLs' first languages in the classroom is common, with schools believing the first language to be extraneous (Kanno, 2008). This in turn affects cognitive development, as MLLs' "academic learning is put on hold while they are learning Japanese" (Kanno, 2008, p. 239), resulting in gaps in academic foundational knowledge

at the elementary level and contributing to further when entering middle school (Kanno, 2004). Thus, the education system's dominant ideology to treat all students the same—including Japanese children—ignores students' uniqueness and instead attempts to have all students fit the same mold (Kanno, 2008). While many teachers are well-intentioned, it is the ideologies of the Japanese education system that predominantly impact the education of MLLs and perpetuates failure (Kanno, 2008).

As described above, the highly discriminatory practices of officially 'forbidden languages' (Gándara & Hopkins, 2010) excluded from education occur worldwide. However, these practices are especially prevalent in countries with a long history of immigration, such as the United States, a country which "has no official language policy. It only has laws that provide non-English speaking students a right to acquire the English language" (Gándara et al., 2010, p. 20). In the United States, English-only education and emphasis on assimilation has been present for almost two centuries, predating the Civil War and the anti-immigrant Know-Nothing movement (Wiley, 2000). In the early 20th century, immigrant children arriving via Ellis Island who spoke languages other than English "were assigned to special reception classes or what became known as 'steamer classes' for children 'off the boat' from Europe in which there was only intensive work in English" (García & Flores, 2013, p.149). More recently, anti-bilingual legislation passed at the turn of the 21st century—such as those in California (Proposition 227, in 1998), Arizona (Proposition 203, in 2000), and Massachusetts (Question 2, in 2002)—have resulted in English-only education that has not yet been successfully repealed. These policies have been well-endorsed by political leaders and influenced by media coverage both with national television networks and in print (e.g., *New York Times, Wall Street Journal, Washington Post*), such as the following statement by Arizona State Representative Laura Knaperek in her

endorsement of Proposition 203: "We want children to be successful, and English is the language of success" (Sherwood & Chiu, 2000, n.p.). In contrast, Wiley (2005) describes this current emphasis on English-only/anti-bilingual education policies and practices by stating: "monolingualism is the real linguistic deficiency" (p. 600).

In addition, English-only education and pedagogy are not simply limited to the states with current explicit English-only education policies, but instead are prevalent across the country (e.g., Walker et al., 2004).[17] Walker et al. (2004) surveyed 422 K-12 public school teachers in a 'Great Plains state' on their attitudes and ideological beliefs of working with MLLs. The majority of teachers' comments reflect their perceptions on the importance of English-only education for MLLs. For example, in answering open-ended questions, teachers held a negative or neutral view on the use of languages other than English: 250 teachers (61%) reported either neutrally or in favor of a learning environment in schools that prohibited the use of any language but English, feeling that it would result in more productive learning and a better overall education (Walker et al., 2004). This perception reflects the English-only argument which claims that English is "best taught monolingually, that the more English is taught, the better the results, that using students' [first language]…will impede the development of thinking in English, and that if other languages are used too much, standards of English will drop" (Kamwangamalu, 2010, p. 130).

Specific studies on teachers' ideologies, preparation, and implications in working with MLLs (Mantero & McVicker, 2006; Rueda & García, 1996; Walker et al., 2004) include pre-

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[17] One example of English-only enforcement in public schools outside the often-reported contexts of California, Arizona, and Massachusetts was published in the *Washington Post* and made national news in late 2005. A Kansas City, Kansas, high school student, Zachariah Rubio, received a 1.5 day suspension for answering a friend's question (to borrow a dollar) in Spanish ("no problema"). While the school district later officially revoked this decision—stating that "speaking a foreign language is not grounds for suspension" (Reid, 2005, n.p.)—it cites the continued emphasis on tolerance of English-only in schools.

service teachers in graduate programs (Dong, 2004), teachers across K-12 schools (Karabenick & Noda, 2004), mainstream elementary teachers (Gersten, 1999), and mainstream middle school and secondary teachers of MLLs (Reeves, 2004, 2006; Rubenstein-Avila & Lee, 2014; Yoon, 2008, 2010; Youngs & Youngs, 2001). The large majority of studies focus on the broader themes of teachers' (a) levels of professional and personal (un)preparedness for working with MLLs (Reeves, 2006; Verplaetse, 1995, 1998, 2000), (b) opinions on how course materials should be modified combined with feeling overwhelmed due to time constraints and increased workload in addressing these needs (Walker et al., 2004; Yoon, 2010), (c) beliefs that addressing the needs of MLLs in the mainstream classroom will adversely affect the education of all other students (Gándara et al., 2005; Reeves, 2004), and (d) attitudes that educating MLLs doesn't require training and instead simply requires 'common-sense' (Walker et al., 2004).

Few studies, however, have focused specifically on subject-specific/content area mainstream teachers' ideologies and attitudes on educating their MLLs, and those that do tend to include only small numbers of teacher participants (e.g., Gersten, 1999; Reeves, 2004; Verplaetse, 1995, 1998, 2000; Yoon, 2008). For example, Gersten (1999) reports on four monolingual English-speaking teachers of Latino MLLs, and concludes that teachers were frustrated when teaching MLLs and were only teaching superficial content, including spelling, grammar, and vocabulary acquisition out of context. Gersten (1999) describes an "unresolved tension between the teachers' sense that they should patiently provide students with opportunities to express their ideas and thoughts in a relatively unfamiliar language and their desire for fast-paced lessons and correct English-language usage" (p. 37).

In her year-long study of four mainstream secondary teachers, Reeves (2004) explores their challenges of teaching MLLs without having received pre-service or in-service education in

this area. Teachers commented that providing accommodations for MLLs equated to cheating them, for example, "if a student has something to read that's in English…if they have to wade through it for 10 hours to get [it], then that's what they're going to have to do" (p. 54). Another teacher reported that while empathizing the student's "double burden" of learning English and content simultaneously, she refused to modify class-based content and language. Yoon (2008) reports similar findings from two teachers, summarized in the following 6th-grade teacher comment: "I don't do a lot of special things for my ESL students….I don't know how bad it is [laughs], but…we are not trained….I don't teach specifically for them….I think the ESL teacher's job is to make their time beneficial" (Yoon, 2008, pp. 508-509). Teachers in each of the above studies held negative attitudes of MLLs[18] that carried over into classroom practice; as such, they positioned themselves as 'mainstream teachers' and 'teachers of all students', rather than recognizing how their attempts at 'equitable education' (e.g., "I treat all students the same") adversely affects their students' academic success.

Of the larger-scale studies (e.g., Karabenick & Noda, 2004; Reeves, 2006; Walker et al., 2004; Youngs & Youngs, 2001), teachers explain their attitudes related to working with MLLs. Reeves (2006) reports on a survey of 279 public high school teachers in a mid-sized city in the southeast US, finding that 90% of teachers had no training for working with MLLs and that almost 45% had no interest in receiving training despite the majority of participants feeling unprepared to effectively teach MLLs. Similarly, Walker et al. (2004) describe the results of surveys completed by 422 K-12 mainstream teachers in one state, noting that 51% of teachers

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[18] Despite these negative attitudes, they are not all-inclusive. Yoon's (2008) study of three in-service teachers included one whose work is very positive and supportive of MLLs' learning; for example, Mrs. Young recognizes her responsibility for teaching all students. She additionally holds "an active role in meeting the students' cultural, social, and academic needs in her classroom" (Yoon, 2008, p. 505); for example, "Mrs. Young reported that her intention of having her ELLs share their opinions and positioning them as intellectual was not for the benefit only of ELLs, but also for non-ELLs" (Yoon, 2008, p. 506).

were not interested in participating in training for instructing MLLs, even if provided the opportunity. Youngs and Youngs (2001) surveyed 143 mainstream, middle school teachers on their attitudes of working with MLLs. In response to the question "If you were told that you could expect two or three ESL students in one of your classes next year, how would you describe your reaction?" (p. 108), 72% of teachers responded as having a "very displeased," "moderately displeased," or "neutral" reaction. Karabenick and Noda (2004) present results of surveys completed by 729 teachers in a midwestern suburban district that recently received high numbers of immigrant and refugee MLLs. These authors report that while 70% of teachers believed that MLLs "would be a welcome addition to their classroom" (p. 60), only 43% of teachers reported that they would like to have MLLs in their classes. While the above studies report on areas where language learners are relatively new to the general education population and where teachers were not previously prepared to work with MLLs, additional studies are also cited from states which have experienced longer-term linguistic diversity. In California, for example, Gándara et al. (2005) surveyed approximately 5,300 teachers, of which about 4,000 were mainstream teachers with MLLs in their classrooms. The top five challenges reported by these K-12 teachers were teacher-parent communication regarding home-community issues, a lack of time to best address the needs of their MLLs, variation in students' academic and English levels, an absence of appropriate tools and materials to help differentiate instruction, and teacher-MLL communication related to academic and social issues. Gándara et al. (2005) additionally note that the self-rated attitudes of the teachers differed between teachers who had completed the Bilingual, Cross-cultural, Language, and Academic Development (BCLAD) course (11% of respondents) and those without additional specialized certification. Those teachers certified in working with MLLs reported higher confidence in their ability to instruct "general pedagogy,

reading, and English Language Development, as well as in the expected areas of primary language reading and writing" (p. 12). While not reporting on the specific attitudes of individual teachers in their study, their research does cite teachers' general attitudes and confidence in effectively educating their MLLs due to specialized training and, further, among those who spoke their students' languages. The significance and impact of further MLL-specific education in the form of professional development will be discussed later in this chapter.

One final point to be noted here relevant to this deficit perspective is an additional ideology prevalent in the K-12 education of MLLs: instead of viewing multilingual learners' linguistic abilities as fundamental strengths, they are viewed with an ideology of failure or from a deficit perspective (DaSilva Iddings & Jang, 2008; DaSilva Iddings & Katz, 2007; Hadaway & Young, 2009; Verplaetse 1995, 1998). This is reflected in the choice of terminology and number of acronyms used in scholarly literature and by governments, the media, and the general public to refer to those learning English as an additional language. These vary in denotation and connotation, with common designations being non-English proficient (NEP), limited English proficient (LEP), English language learners (ELL), emergent bilingual (García, Kleifgen, & Falchi, 2008), and multilingual learners (MLLs). NEP and LEP are most used by the US government in official documents and legislation and refer to students learning English as an additional language and who require additional support in order to meet education standards and succeed in an English-only learning context; however, there is staunch argument that NEP is a negative term that emphasizes what the students lack instead of recognizing their current and future potential (García et al., 2008). ELL is the most commonly and generally used term for this population, though language education scholars also note it as being "both too broad and not inclusive enough [and] likely to elicit views of students as deficient" (Galguera, 2011, p. 86).

More recently, critical language education scholars are choosing to use the term 'emergent bilinguals' (García, 2009; García & Kleifgen, 2010) to recognize "students who are developing academic English and becoming bilingual" (García et al., 2011, p. 4) or, as García et al. (2008) explain: "through school and through acquiring English, [emergent bilingual] children become *bilingual*, able to continue to function in their home language as well as in English, their new language and that of school" (original italics, p. 6). These authors choose to use the term emergent bilinguals "because it has become obvious to us that a meaningful and equitable education will not only turn these English language learners into English proficient students but, more significantly, into successful bilingual students and adults" (García et al., 2008, p. 7). I choose to use the term 'multilingual learners' (MLL) instead of emergent bilinguals to further recognize the diversity of students' linguistic abilities and that students are not solely adding a second language but are continual learners of multiple languages (Mitchell, 2012).

The above studies note mainstream teachers' predominantly negative ideologies and attitudes about their MLLs and cite the need to acquire a new understanding and beliefs for working successfully with MLLs. With appropriate education and under the right circumstances, however, these ideologies and attitudes can be confronted, negotiated, and changed (Pettit, 2011).

Challenging and Negotiating Teachers' Ideologies and Attitudes

Recent research related to teachers' ideologies and attitudes in the education of immigrant and linguistic minority students cites the importance of specialized training targeting MLLs across the content areas (Amaral, Garrison, & Klentschy, 2002; Cuevas et al., 2005; Lee, 2004; Lee et al., 2004; Ross, 2014; Takeuchi & Esmonde, 2011). Teacher participation in professional development that is "locally situated, inquiry-based, longitudinal, and [includes]

critical examinations of practice" (Butler & Schnellert, 2012, p. 1206) provides spaces for

transformative learning (Mezirow, 1991, 2003, 2009). Such education places the teacher "*at the*

center of their own learning" (original italics, Taylor, 2000, p. 155) and creates opportunities for

teacher-participants to confront long-standing assumptions and expectations through critical self-

reflection and choosing new actions based on these reflections (Adams & Brooks, 2011;

Saavedra, 1995; Stoddart, Pinal, Latzke, & Canaday, 2002).

Positive attitudes of MLLs are more likely to be found among teachers who have

received substantial quality formal training in MLL theory and pedagogy (Byrnes, Kiger, &

Manning, 1997; Walker et al., 2004). In their survey of 169 teachers in Arizona, Utah, and

Virginia, Byrnes et al. (1997) present findings that suggest positive attitudes of mainstream

teachers towards MLLs required work experience with MLLs combined with comprehensive

education and formal training. These authors note that "formal training gives teachers skills and

knowledge to work effectively" with MLLs and that "empowering teachers can help attenuate

the development and maintenance of negative language stereotypes" (Byrnes et al., 1997, p.

641). Reeves' (2006) survey of 279 mainstream public high school teachers shows a

predominantly positive attitude on the part of teachers, where 75% (n = 209) of teachers reported

that having MLLs in the classrooms "created a positive educational atmosphere" (p. 136);

however, negative attitudes are still highly prevalent among those who are ambivalent to or have

not received any formal, comprehensive training (Reeves, 2006). Karabenick and Noda (2004)

make similar conclusions; in their survey of 729 teachers from 16 elementary schools, seven

middle schools, and three high schools, teachers across all grade levels recognized their need for

professional development and were open to such opportunities, as well as having a generally

positive interest in having MLLs in their mainstream classes (Pettit, 2011).

Teachers' ideologies and attitudes in working with multilingual learners—for example, related to MLLs' academic capabilities and linguistic knowledge—are highly prevalent in K-12 education and significantly impact the provision of equitable education (Karabenick & Noda, 2004; Reeves, 2004, 2006; Walker et al., 2004; Yoon, 2008; Youngs & Youngs, 2001). However, when confronted, challenged, and further explored in efforts to bring about change, these experiences can lead teachers to have increased self-efficacy and can subsequently result in a more positive attitude in working with MLLs; thus, the following and concluding section here focuses on teacher professional development and the opportunities it affords for transformative learning and ideological awareness.

Teacher Professional Development, Transformative Learning, and Ideological Awareness

It is well-cited across the fields of education and applied linguistics that the majority of K-12 mainstream teachers are ill-trained and thus unprepared to teach multilingual learners (MLLs) (Costa et al., 2005; Ladson-Billings, 1999; Menken & Antuñez, 2001). Ballantyne, Sanderman, and Levy (2008) report that "only 29.5% of teachers with ELLs [English language learners] in their classes have the training to do so effectively" (p. 9). In the content area of mathematics, for example, the *2012 National Survey of Science and Mathematics Education: Status of Middle School Mathematics* report that only 17% of middle school teachers consider themselves very well prepared to teach math to MLLs, while additionally noting that "relatively few professional growth opportunities gave heavy emphasis on" teaching mathematics to MLLs (Fulkerson, 2013, p. 10). The National Center for Education Statistics (NCES, 2012a) cite that of the 55.6% of teachers nationwide with at least one reported MLL in their classrooms, only 26.8% participated in "various types of" professional development focused on MLLs in the 12-months

prior to completing the survey (NCES, 2012b, n.p.). With PD opportunities varying significantly in content, scope, and depth—for example, ranging from one-day workshops to semester-long graduate-level courses, and from a simple introduction to MLL teaching strategies to a focus on MLL pedagogy in specific content areas—their level of effectiveness in teacher change and subsequent application of new knowledge may be much lower than the above studies report; that is, while NCES (2012b) report that 26.8% of teachers participated in PD programs related to MLLs, this may overestimate the actual effective learning experiences that these teachers may have had during these PD courses. These trainings may additionally not have supported negotiating and challenging teachers' current ideologies, attitudes, and beliefs in working with MLLs, resulting in a potential lack of transformative learning and change in teaching practices toward more equitable MLL education.

Teachers additionally self-report facing a number of challenges when working with MLLs, including feeling overwhelmed at integrating MLLs into their mainstream classes, commenting for example that "we are burdened enough with adapting for everyone else" and "the regular classroom teacher has enough on his/her plate already" (Walker et al., 2004, p. 141). In-service mainstream teachers—through no fault of their own—have received little effective preparation for teaching MLLs in specific content areas during their teacher-education programs and thus do not have the formal training needed, or only through workshops or short-term PD upon graduating and entering schools as in-service teachers. Of the training that is often provided, most teachers note experiencing "one or more sessions in which experts from outside the schools present ideas, materials, or techniques in the manner of traveling salesmen" (Gonzalez & Darling-Hammond, 1997, p. 35) and thus follow a one-size-fits-all model (Díaz-Maggioli, 2004; Little, 1993; Nishimura, 2014; Wilson & Berne, 1999). In contrast, teachers

"want to find ways to make organized growth experiences…more meaningful and to eliminate the drudgery of ineffective sit-and-listen forms of inservice education" (Gonzalez & Darling-Hammond, 1997, p. 35). Gándara et al. (2005) note that the top four frequently cited problems with MLL teacher PD were that it: (a) was not planned well and the presenter had little-to-no experience working with MLLs; (b) did not match the skillset and knowledge needed by the attending teachers and included general information the teachers were already aware of; (c) was not appropriate content for teaching MLLs in particular; and, (d) was not applicable for practical application in the classroom. As such, the lack of current practicing teacher knowledge of MLL pedagogy is directly linked to insufficiently available pre-service education and present challenges in accessing in-service PD opportunities (Gándara et al., 2005; Menken & Antuñez, 2001; Takeuchi & Esmonde, 2011; Youngs & Youngs, 2001).

Professional Development

As K-12 in-service teachers are having growing numbers of MLLs in their classrooms (NCES, 2012a; NCTE, 2006, 2015), it is important they are instructed appropriately to provide equitable, high-quality education for their students. This requires on-going opportunities for comprehensive continuing education through long-term PD courses (Karabenick & Noda, 2004; Lee, 2004; Lee et al., 2004). Professional development can be defined as "a *learning process* resulting from *meaningful interaction* with the context (both in time and space) and eventually leading to changes in teachers' *professional practice* (actions) and in their *thinking about that practice*" (original italics, Kelchtermans, 2004, p. 220). Kelchtermans (2004) further notes that PD by nature entails teacher learning, and that learning outcomes become observable twofold: (a) through changes that are evident in classroom practice (e.g., differentiating instruction), and (b) through changes in teacher thinking that relate to the "how and why of that practice" (p. 220).

Little (1993) explains that one key factor setting apart effective PD is its ability to support teachers—both as individuals and as members of a professional community—to become "shapers, promoters, and well-informed critics" (p. 130) of what is working and what needs to change given the current education climate. Butler and Schnellert (2012) explain that PD should place teachers in the center of efforts to bring about change and that "meaningful, sustained changes in classrooms are fostered by engaging teachers jointly in locally situated, inquiry-based, longitudinal, and critical examinations of practice" (p. 1206). In order to better meet these needs, PD should additionally focus on MLL learning within specific content areas.

Many in-service mainstream teachers have had little opportunities to participate in PD that focus specifically on teaching MLLs. Studies over the past decade document the very low percentage of time allowed for in-service PD focused on MLLs, as well as concerns over the quality of the PD (Ballantyne et al., 2008; ; Gándara et al., 2005). Gándara et al. (2005) studied the challenges, experiences, and PD needs of California teachers collected via survey. Of the almost 5,300 educators who responded, the authors report that during a five-year period prior to the completion of the study, 43% of teachers who had more than 50% MLLs in their classes had received at most one in-service PD course related to teaching linguistically diverse students. They additionally cite that of the teachers who had between 26-50% of MLLs in the classes, 50% of teachers had taken at most one PD course in the previous five years (Gándara et al., 2005).

Courses addressing MLL pedagogy in specific content areas are growing (Barwell, 2005; Fortune et al., 2008; Richardson Bruna et al., 2007; Turkan & Schramm-Possinger, 2014), although few focus simultaneously on STEM (science, technology, engineering, mathematics) content areas and MLLs (e.g., science: Hart & Lee, 2003; Lee, 2004; Stoddart et al., 2002), and more specifically mainstream mathematics teachers of MLLs (Ross, 2014; Takeuchi &

Esmonde, 2011). As Ross (2014) notes, despite the increasing number of MLLs in mainstream classrooms, "the corps of mathematics teachers who can readily adjust content instruction for ELLs is outpaced by the growing numbers of ELLs in mainstream classes" (p. 85), and PD "opportunities and assistance for practicing mathematics teachers of mainstreamed ELLs have not kept up with this growth" (p. 96; Ballantyne et al., 2008; Costa et al., 2005; Flynn & Hill, 2005). Despite this gap, Ross (2014) notes that PD for MLLs in specific content areas helps strengthen teacher effective practice in the classroom; as such, it is necessary to determine what contributes to make PD effective.

Teacher PD needs to simultaneously be critical, reflexive, and transformative to bring about truly significant and sustained change. This includes learning that is relevant to each educator's teaching context, rather than a one-size-fits-all model or one that simply addresses a more general or superficial approach (Díaz-Maggioli, 2004; Little, 1993; Nishimura, 2014; Wilson & Berne, 1999); PD should consider the specific needs of the teacher and their individual circumstances (Butler & Schnellert, 2012). Focusing on the local context—that is, PD that is addressing the immediate challenges teachers currently face and thus is grounded in local classroom practice—allows for more critical engagement and ideological awareness on the part of the teacher in both their own learning process and how it impacts their MLLs. It additionally provides the space for discussion, reflection, and subsequent transformation in teaching their MLLs because of its direct relevance to their current group of students and applicable to their daily teaching needs and practices.

While not a requirement for effective PD, there are a growing number of studies that focus specifically on the positive aspects of participation in online professional development for in-service teachers. Though not MLL-specific, exemplar contexts range from online courses

offered at colleges and universities as part of graduate education programs (Barab, Thomas, & Merrill, 2001; Lee, Chauvot, Plankis, Vowell, & Culpepper, 2011) to much more specialized areas such as online courses for middle school algebra teachers (Carey, Kleiman, Russell, Venable, & Louie, 2008; Russell, Carey, Kleiman, & Venable, 2009). In addition to the range of courses available, Carey et al. (2008) note that there has been a significant increase in online PD in recent years, that it provides teachers with training that would otherwise not be available in their geographic region, and that the flexibility made available through asynchronous programs allows for teachers to better balance their work and personal commitments. While having practical implications, scholars further describe how online PD that is offered asynchronously can provide and support deeper levels of reflection as opposed to face-to-face meetings; this is due to the fact that online, asynchronous PD offers more time for personal reflection (Lee et al., 2011) and provides written record that can be revisited and subsequent critical thinking and greater depth of reflection (Carey et al., 2008; Russell et al., 2009). Carey et al. (2008) explains that because online courses "can store written records of teacher conversations, and because teachers can participate in group discussion asynchronously, OPD [online professional development] allows teachers to contribute ideas when they are ready and to be more reflective in their written, online comments" (p. 6). Barab et al. (2001) describe how courses offered asynchronously can "support deep learning about content" and allow for "open sharing about personal experiences" (p. 105). These authors additionally note how the graduate students participating in an online course as part of a master's degree in Adult Education "were willing to be vulnerable…[and] were engaged in deep learning" (Barab et al., 2001, p. 106) they believe could not have been achieved in face-to-face interactions. Russell et al. (2009) report on a comparative study of face-to-face and online PD for elementary mathematics teachers, including

examining how teachers' pedagogical beliefs and instructional practices changed over time. Findings suggest that while both formats had a significant impact on the teachers' learning and beliefs and with positive outcomes, teachers who participated in the online course additionally reported that they would be more open to taking such courses in the future than the teachers who took the same course face-to-face (Russell et al., 2009).[19]

Professional development should also encourage collaboration, including educators participating in, reflecting on, and linking activities relevant to their own experiences and teaching contexts (Butler & Schnellert, 2012; Garet, Porter, Desimone, Birman, & Yoon, 2001). PD can also offer opportunities for shared meaning-making (Hord, 2009) and create spaces for critical thinking and dialogue aimed to further improve teaching and provide subsequent methods to advance student learning (Hord, 2009). Additional significant benefits are building on what the teachers as learners bring to the PD course and providing effective spaces for new ideas to be learned (Zwiep & Benken, 2012). Additionally, learning and receiving feedback from fellow teachers can validate newly acquired practices with others in similar positions.

Professional development should also place teachers in situations and environments where current thinking is confronted and challenged, where they are supported with higher-order thinking, and which promote critical reflection (Zwiep & Benken, 2012). This additionally requires the PD go beyond a focus on instructional strategies to aid learning to further recognize and address the various ideologies inherent in working with multilingual learners and educators' co-roles as language teachers. As Nieto (2006) notes: "subject matter knowledge is important, of

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[19] It should be noted, however, that online PD is not without its drawbacks; for example, (a) participants may find learning the required technology to be challenging and/or may experience intermittent internet connectivity; and, (b) they may be logging in from home and be distracted by other things around them (e.g., family members, pets, phone calls, receiving emails).

course, but if teachers do not learn how to question it, they end up reproducing conventional wisdom and encouraging students to do the same" (p. 470). While recognizing that pedagogical knowledge is necessary, teachers must also create and sustain positive and meaningful connections with their students that is paramount to their success (Nieto, 2006); this additionally includes the reality that "if teachers do not understand the life-and-death implications of the work they do, no amount of certification requirements or tricks of the trade will help" (Nieto, 2006, p. 470).

An increasing number of studies provide examples of in-service teachers' ideologies and attitudes in working with MLLs, both internationally (Gkaintartzi & Tsokalidou, 2011; Gu, 2011; Medvedeva & Portes, 2016; Phillion, 2008; Pulinx et al., 2015) and in the United States (Karabenick & Noda, 2004; Reeves, 2004, 2006; Rubenstein-Avila & Lee, 2014; Walker et al., 2004; Yoon, 2010; Youngs & Youngs, 2001). By participating in PD which supports confronting and negotiating ideologies and attitudes of working with MLLs and promotes transformative learning, teachers can bring about change resulting in education equity. Traditional PD includes "top-down decision-making, a 'fix-it' approach, lack of program ownership among teachers, prescriptive ideas, one-size-fits-all techniques, fixed and untimely delivery methods, little or no follow-up, [and] decontextualized programs" (Díaz-Maggioli, 2004, p. 6). In contrast, a more comprehensive approach to PD involves teacher-focused inquiry in contexts relevant to the participant, along with appropriate support, and offered in a timely manner (Díaz-Maggioli, 2004). This latter format further promotes an environment which can push teachers to change their ways of thinking about their students. As Nieto (2002) concludes, teaching MLLs "successfully means above all challenging one's own attitudes towards the students, their

languages and cultures, and their communities. Anything short of this will result in repeating the pattern of failure that currently exists" (p. 196).

Professional development should be "a means of fostering and/or enacting educational change," with teachers at the center of these efforts (Butler & Schnellert, 2012, p. 1206). PD should additionally "be grounded in teachers' realities, sustained over time, and rich with opportunities for teachers to grapple, confront, and negotiate" (Zwiep & Benken, 2012, p. 5). For example, Takeuchi and Esmonde (2011) report on a PD program for mathematics teachers of MLLs in Toronto, Ontario, Canada. Through monthly meetings with six elementary school teacher-participants over an 8-month period, teachers confronted their concerns about how to best meet the learning needs of their MLLs. In particular, teachers noted the academic language challenges their students faced and "wanted to learn more about 'math language that is easy for all to understand'" (p. 338). Through discourse and subsequent action in the classroom, Takeuchi and Esmonde (2011) report on one teacher's specific change in "focus[ing] on what students *can* do rather than what they *cannot* do" (original italics, p. 341), resulting in improved facilitation of MLLs participating in mathematics discussions and activities.

While there is no literature at present on the transformative learning experiences of mainstream mathematics teachers of MLLs (other than Takeuchi & Esmonde, 2011),[20] exemplar studies are cited in the scholarly literature for the content area of science. For example, Hart and Lee (2003) present the results of their study of 53 elementary school science teachers of MLLs and the simultaneous focus on language and literacy development with science content. The authors had two objectives: "(a) to examine teachers' initial beliefs and practices about teaching English language and literacy in science and (b) to examine the impact of the intervention on

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[20] However, this study is an example from outside the US (i.e., Canada), and as such the teachers have experience with an education system and policies that vary from the US.

teachers' beliefs and practices" (Hart & Lee, 2003, p. 475). Following the conclusion of the first year, teachers "express[ed] more elaborate and coherent conceptions of literacy in science instruction…[and] they provided more effective linguistic scaffolding in an effort to enhance students' understanding of science concepts" (Hart & Lee, 2003, p. 475).

Stoddart et al. (2002) report on a locally situated 5-week summer PD course for elementary teachers of predominantly Latino MLLs. While focusing on simultaneous science content and second language acquisition and development skills, teachers were noted to have experienced a change in perception, most particularly in recognizing a previously restricted view of student ability (in particular in inquiry science and language learning) to a more comprehensive understanding of how the two can be successfully integrated and their positive affect on MLLs. Additional studies of science teacher PD focusing on MLLs report growth in teacher beliefs, knowledge, and practices following participation in comprehensive, long-term, context-specific PD (Lee, 2004; Lee et al., 2004). Each of these studies cite examples of efforts to enact educational change through teachers' transformative learning, and in particular the opportunities for such learning through professional development.

Transformative Learning

In the current US educational context of continually increasing numbers of MLLs in mainstream classes, and in-service mainstream teachers already responsible for simultaneously teaching academic content and language to MLLs, there is the demand and ethical requirement to provide comprehensive continuing education to teachers through long-term PD courses (Karabenick & Noda, 2004; Lee, 2004; Lee et al., 2004). Only through education providing effective pedagogical practices and opportunities to challenge prevalent ideologies and attitudes in the teaching of MLLs can teachers bring about lasting equitable educational change. More

specifically, long-term in-service teacher PD can provide opportunities for transformative learning,

> the process of becoming critically aware of how and why our presuppositions have come to constrain the way we perceive, understand, and feel about our world; of reformulating these assumptions to permit more inclusive, discriminating, permeable, and integrative perspective; and of making decisions or otherwise acting upon these new understandings. (Mezirow, 1990, p. 14)

This type of critical engaged learning and subsequent new awareness are paramount for in-service teachers, with the notion of transformative learning playing a key role in this process.

Transformative learning was first proposed by Jack Mezirow in his 1978 article entitled "Perspective Transformation," where he reported on a comprehensive study on the transformative experiences of women returning to college after a long hiatus (Mezirow, 1978). Over the following two decades he furthered his theory in efforts to better understand transformative learning in adult education. Early influences on this theory include Freire's literacy work in Latin America and in particular 'conscientization', referring to "the process in which men [sic], not as recipients, but as knowing subjects, achieve a deepening awareness both of the socio-cultural reality which shapes their lives and of their capacity to transform that reality" (Freire, 1970, p. 452). Freire (1970) explains that following reflection, "reflectiveness results not just in a vague and uncommitted awareness, but in the exercise of profoundly transforming action upon the determining reality. *Consciousness of* and *action upon* reality are, therefore, inseparable constituents of the transforming act" (original italics, p. 453).

Mezirow defines transformative learning as an on-going process where current frames of reference—assumptions and/or expectations referred to as habits of mind, mindsets, and meaning

perspectives—are transformed into more critically reflective, discriminating, open, and inclusive understandings (Mezirow, 1991, 2003, 2009). These frames or 'habits of mind' are initially "broad, abstract, orienting, habitual ways of thinking, feeling and acting, [and] influenced by assumptions" and which "selectively shape and delimit our perception, cognition and feelings by predisposing our intentions, beliefs, expectations and purposes" (Mezirow, 2009, p. 92). In the education of multilingual learners, this 'habit of mind' could include lingocentrism, the predisposition to regard others who don't speak your language with a deficit perspective, as inferior, or in some way lacking. In response, transformative learning recognizes that the person brings existing interpretations, understandings, assumptions, and expectations from which to create change. This transformative learning can involve: (a) critical self-reflection "on the source, nature and consequences of relevant assumptions—our own and those of others;" (b) "taking action on our transformed perspective—we make a decision and live what we come to believe until we encounter new evidence, argument or perspective that renders this orientation problematic and requires reassessment;" and, (c) "acquiring a disposition—to become more critically reflective of our own assumptions and those of others, to seek validation of our transformative insights through more freely and fully participating…and to follow through on our decision to act upon a transformed insight" (Mezirow, 2009, p. 94). The following section provides further information on this transformative learning process and how such reflection and change in thinking can be fostered through scaffolding and support.

Teachers can experience transformative learning in a number of ways within these exemplar categories, including "a critical assessment of assumptions," "planning a course of action," "acquiring knowledge and skills for implementing one's plans,", "provisional trying of new roles," and "building competence and self-confidence in new roles" (Mezirow, 2009, p. 94).

Saavedra (1995) studied the social interactions of five K-5 teachers and their transformation (both individual and as part of a group) during a long-term study group. Findings suggest that teachers were able to experience critical reflection as a way to better connect theory and practice and bring about teacher action and change related to teaching MLLs. For example, teachers conducted and reviewed current pedagogical research and theories relevant to teaching MLLs. They additionally experienced agency through developing new understandings and practices in working with MLLs, and subsequently were more aware of encounters and everyday practices that either supported or challenged their new learning; as Saavedra (1995) summarizes, "through agency, a union of reflection and action, participants enter into a process of conscientization which leads to transformations" (p. 100). Finally, teachers' critical reflection on their "discussions, their readings, their observations, their interactions between students or peers, and the different contexts in which these events occur" (Saavedra, 1995, p. 109) resulted in their realization that "reflection and future action drives professional development, and taking time and energy to become critically reflective is a worthwhile and necessary undertaking" (p. 109). As Saavedra (1995) concludes, "reflective practices lies at the heart of transformative learning for teachers. It is a struggle with their questions, their critiques of what occurs in schools and their attempts for resolution that pushes forward their transformations" (p. 113). It is through these transformative conditions[21] and on-going confronting and negotiating of various ideologies, attitudes, and beliefs that teachers can experience the transformation process, and

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[21] Such transformative conditions can be created in a PD setting, for example, when including the following: "a safe, open, and trusting environment" (Taylor, 2000a, p. 154) that fosters "group ownership and individual agency" (Taylor, 2000a, p. 155). When teachers are placed at the center of their learning in a supportive environment while addressing controversial themes can provide an environment promoting critical reflection (Baumgartner, 2001; Taylor, 2000a).

which point to teachers being placed "*at the center* of their own learning in a critically reflective…setting" (original italics, Taylor, 2000a, p. 155) (D'Andrea, 1985; Loe, 2010).

More recently, Adams and Brooks (2011) report on a grant-funded graduate course (Project Alianza) offered to mainstream secondary school teachers which encouraged "dispositional change and professional efficacy toward [MLLs]…in practicing K-12 mainstream educators" (p. 7). This study focused on 135 practicing teachers' "critical incident reflection journal writing" collected during two years between Fall 2008 and Spring 2011, resulting in transformative learning identified as occurring through three primary actions proposed by Mezirow: "excavating and naming assumptions, exploring and taking on multiple perspectives, and engaging in critical reflection" (Adams & Brooks, 2011, p. 10); in this article the data was collected on two areas: school change projects and course interactions. Within the school change projects, each teacher interviewed one MLL at their school. Many teachers noted that this was their first time to hold an extended conversation with an MLL student due to embarrassment and "that they had subconsciously avoided talking with ELLs out of fear of language barriers or fear of their inability to relate to students" (Adams & Brooks, 2011, p. 16). Teachers' initial comments included one participant's amazement that MLLs were "just normal kids like all the others," while another shared: "For years I have been afraid to talk to ELL students. Yes, I said afraid. There have been many times that I have ducked into rooms to avoid meeting them in the hallways" (Adams & Brooks, 2011, p. 16). Following the interviews with an MLL student, teachers noted "immediate changes in their classroom and instructional relationships" with these students in particular and this introductory "foundational experience provided teachers with the confidence and understanding that they needed to develop a different relationship with their [MLLs]….Once they saw that they could relate to them and the students welcomed their

overtures, many teachers overcame their fear of initiating a relationship with their…[MLLs]"

(Adams & Brooks, 2011, p. 17).

It should be noted that transformative learning theory is not without its critiques.

Baumgartner (2001) believes there is an overemphasis on rational thought in Mezirow's

explanations, and that it "ignores the affective, emotional, and social context aspects of the

learning process" (p. 17). Taylor (1997, 1998, 2000a) critiques the original framework for being

too linear a process, although more recent studies recognize the process of transformative

learning to be "evolving, and spiraling in nature" (Taylor, 1997, n.p.) and "more individualistic,

fluid, and recursive than originally thought" (Taylor, 2000b, p. 292; Baumgartner, 2001). For

example, Saavedra (1995) notes that the teachers participating in the year-long study group were

placed at the center of their own learning and provided a space that supported the emotional and

social contexts in the learning process (Baumgartner, 2001). This ownership requires an

environment where "the learner should be socially and cognitively active in the constructions of

these events" (Saavedra, 1995, p. 178). Taylor (2000a) explains that "the significance of

processing feelings increases the power and appreciation of critical reflection when fostering

transformational learning" (p. 156). Mezirow (2000) has acknowledged these and other critiques

and expands his understanding that learning occurs "in the real world in complex instituitional,

interpersonal, and historical settings [and] must be understood in the context of cultural

orientations embodied in our frames of references" (Mezirow, 2000, p. 24; Baumgartner, 2001;

Taylor, 2000b). A PD setting can take this complexity into account by creating a learning

environment where participants are involved in authentic, real-world contexts relevant to the

individual participants; for example, Saavedra (1995) cites one teacher-participant as noting that

"teaching…occurs within a complex socio-cultural context, inhabited by culturally and

linguistically diverse learners, [and] conclude[s] that in order to make changes in her practice she must rethink some of her perspectives, believes, and objectives within her role as teacher and learner" (p. 160). Despite these critiques, however, transformative learning theory has the potential to help teachers "become more imaginative, intuitive, and critically reflective of assumptions…and…acquire meaning perspectives that are more inclusive, integrative, discriminating, and open to alternative points of view" (Mezirow, 1991, p. 224).

Ideological Awareness

The notion of ideological becoming (Bakhtin, 1981) plays a role in challenging and negotiating teachers' ideologies and attitudes. It is necessary for mainstream teachers of MLLs to recognize their personal and professional "ideological points of view, approaches,…and values" (Bakhtin, 1981, p. 346) and how these influence their current teaching practice; and, once knowing, to continue on to bring about change. In a similar vein, Bartolomé (2004) uses the term 'ideological clarity' to describe the process of struggle and change: "the juxtaposing of ideologies should help teachers to better understand if, when, and how their belief systems uncritically reflect those of the dominant society and thus maintain unequal and what should be unacceptable conditions that so many students experience on a daily basis" (Bartolomé, 2004, p. 98). In the context of mainstream teachers of MLLs, ideologies and attitudes can affect teacher practice on a daily basis, having a detrimental impact on the education of linguistically diverse students.

Ideological becoming is "how we develop our way of viewing the world, our system of ideas" (Freedman & Ball, 2004, p. 5). Ideological becoming additionally includes the social process that influence peoples' perceptions and understandings about the world and which occur in an ideological environment (Freedman & Ball, 2004), such as a classroom or workplace.

Within this social process are two forms of discourse: authoritative and internally persuasive (Bakhtin, 1981); authoritative discourse is a prior discourse that is afforded more power because of its authority or pervasiveness, while internally persuasive discourse is "what each person thinks for himself or herself, what ultimately is persuasive to the individual" (Freedman & Ball, 2004, p. 12). As an example of ideological becoming in a teacher education course, Ball (2000) reports on a program offered in South Africa to help teachers become better prepared to teach culturally and linguistically diverse students. This study explores the changing perspectives of 100 pre- and in-service teachers while exposed to readings and activities that were chosen for a specific purpose; namely, to help positively affect the teachers' perspectives through the internally persuasive discourse of diverse writers about literacy (Freedman & Ball, 2004). Teachers came to the course with their own assumptions and beliefs (internal ideologies) that had been influenced by the authoritative discourses they had experienced before beginning this course; however, teachers were provided with a wide variety of theoretical readings that represented the internally persuasive discourse of the authors (Freedman & Ball, 2004). Ball (2000) chose readings with the hope they would provide the teachers with a broader range of perspectives on working with language learners and help them to continue to confront and develop their ideologies (Freedman & Ball, 2004). That is, "readings about pedagogy and best practices…would enlighten them about working with diverse student populations and cause them to give serious consideration to ways that diversity could be viewed as a resource in their classrooms" (Freedman & Ball, 2004, pp. 20-21). Thus, opportunities which support ideological becoming are paramount in teacher education programs and cite the need and potential to bring about lasting change. This process of ideological awareness and becoming as a form of critical analysis will be further explored in Chapter 3.

Conclusion

This chapter has focused on three key areas comprising the conceptual framework for this study: multilingual learner pedagogy, teachers' ideologies and attitudes, and possibilities of teacher professional development to support transformative learning and ideological becoming. In the first section of the chapter, it was emphasized that, given the continued increase of MLLs in US schools (NCTE, 2006, 2015), all teachers need to learn current theories and effective best practices in educating MLLs. In doing so, teachers need to become aware of ideologies and attitudes that may inhibit the successful implementation of MLL pedagogy (e.g., the adverse effects of English-only education; an ideology of failure), and countering these by such equitable practices as supporting first language use in the classroom, perpetuating high expectations, awareness of the challenges of acquiring academic language and vocabulary development and implementing pedagogy for success. While change is slow in coming, and high quality, long-term, comprehensive education and professional development are needed, scholars are growing not only in their advocacy for improving MLL pedagogy but providing explanations of how this is possible and evidence of its success (Cummins, 2014; García et al., 2011; García & Li, 2014; Hart & Lee, 2003; Olsen & Land, 2007). Meeting the learning needs of MLLs requires conscious effort, determination, and dedication, and is a constitutional right that is achievable with appropriate teacher education and support learning and applying content-specific MLL pedagogy.

This chapter also looked in detail at teachers' ideologies and attitudes in working with multilingual learners that are highly prevalent in K-12 education and which significantly impact the provision of equitable education (Karabenick & Noda, 2004; Reeves, 2004, 2006; Walker et al., 2004; Yoon, 2008; Youngs & Youngs, 2001). It is necessary to provide teachers with

opportunities to explore, confront, negotiate, and change ideologies and attitudes that affect all of their students (Cuevas et al., 2005; Lee, 2004; Lee et al., 2004; Ross, 2014; Takeuchi & Esmonde, 2011). Such opportunities can be provided through substantial, reflective, long-term professional development (Butler & Schnellert, 2012; Garet et al., 2001; Porter, Garet, Desimone, Yoon, & Birman, 2000; Sparks, 2002) and must specifically "take a stronger effort to challenge and change the negative attitudes and beliefs teachers have regarding language-minority students in order for school-wide reform to take place" (Walker et al., 2004, p. 135). Evidence of the correlations between teacher knowledge about and time spent with MLLs and teacher attitudes about MLLs are additionally cited in multiple studies, supporting the further importance of continued training (Gilliland, 2015; Karabenick & Noda, 2004). For example, in the context of her study on mathematics teachers' perceptions self-efficacy in working with MLLs, Ross (2014) concludes that "a positive correlation exists between teachers' participation in professional development and their heightened sense of effectiveness with student engagement, classroom management, and instructional practices when teaching ELL students" (p. 97). With this increased self-efficacy can subsequently come a more positive attitude in working with MLLs.

This chapter then explored how long-term, critical, in-service teacher professional development can provide opportunities for transformative learning. In summary, transformative learning is a process of raised critical awareness on the part of teachers when they connect the 'how and why' of their previous beliefs to their current perceptions and understandings related to working with language learners. In particular, the learning became transformative when the teacher-participants recognized how their previous beliefs constrained their MLLs' education. The teachers then continued further to reconsider and redevelop these assumptions to

subsequently allow for more inclusive and flexible perspectives related to the provision of equitable education for their MLLs, what this can look like, and how to do this in practice; that is, the final act of transformative learning was the teacher's decision to take action on their new raised awareness and enact this new knowledge and understanding through practice in their own classrooms with their MLLs (Mezirow, 1990). However, it was additionally noted that transformative learning cannot be taught, but instead provides the learner with opportunities to "find their own transformative learning" (Bersch, 2006, p. 293). When mainstream in-service teachers are provided with comprehensive PD relevant to their current teaching context and MLL pedagogy, and which support challenging and negotiating teachers' ideologies and attitudes, there is the potential for learning transformation. Currently available scholarly literature on in-service teacher PD has focused predominantly on survey data and anecdotal records of teachers' beliefs on the positive and negative factors in working with particular groups of students (Byrnes et al., 1997; Karabenick & Noda, 2004; Reeves, 2006; Walker et al., 2004; Youngs & Youngs, 2001); however, there is a further need for studies on how teachers' attitudes and ideologies changed during participation in comprehensive, long-term PD specializing simultaneously in specific content areas and MLL pedagogy. It is additionally important to note that many reports on PD programs are limited to self-reflections by teachers on their learning and change in practice *after* their participation in the PD experience, rather than at the time of learning; thus, there are few publications citing examples of what teachers have learned from their PD experiences and their thinking processes in the moment, and in turn how it changes their practice (Lawless & Pellegrino, 2007). As such, research is needed in the progressive, long-term self-reported learning experiences of teachers *during* participation in PD courses which provide opportunities for ideological becoming and clarity (Bakhtin, 1981; Bartolomé, 2004) and

transformative learning. As Mezirow (1991) notes, this latter process is "irreversible once completed; that is, once our understandings are clarified and we have committed ourselves fully to taking the action it suggests, we do not regress to levels of less understanding" (p. 152). In the current US educational context of continually increasing numbers of MLLs in mainstream classes, and in-service mainstream teachers already responsible for simultaneously teaching academic content and language to MLLs, there is the demand and ethical requirement to provide comprehensive continuing education to teachers through long-term PD courses (Karabenick & Noda, 2004; Lee, 2004; Lee, Hart, Cuevas, & Enders, 2004). Only through education providing effective pedagogical practices and opportunities to challenge prevalent ideologies and attitudes in the teaching of MLLs can teachers bring about transformative, lasting change. As such, this chapter concludes by recognizing the interconnectedness of these three key areas—multilingual learner pedagogy, teachers' ideologies and attitudes, and possibilities of teacher professional development to support transformative learning and ideological becoming—and serves as the conceptual framework on which the remainder of this study and dissertation is built. Chapter 3 provides a description of the methodology used in this study, after which Chapters 4, 5, and 6 present relevant data and analyses, with Chapter 7 offering a concluding discussion on the two main questions that frame this study, implications, and recommendations for future study.

CHAPTER 3

METHODOLOGY

"Teacher salaries [in Hawaiʻi] would be based on training, experience, and

teacher evaluations that were determined by the

number of students passing statewide tests (Wist, 1940)."

(Benham & Heck, 1998, p. 151)

"Teachers' roles have changed as high-stakes accountability has

become an increasingly pervasive factor in their daily work."

(Valli & Buese, 2007, p. 520)

The purpose of this study is to explore K-12 in-service teachers' transformative learning

and ideological becoming related to teaching MLLs, in particular in the content area of

mathematics. This involves exploring how in-service teachers' beliefs—including ideologies and

practices—change and transform learning during participation in a long-term PD course focused

on strategies for teaching mathematics to MLLs. As such, Chapter 3 first provides a theorization

of ideological analysis, followed by subsequent sections detailing the education context in

Hawaiʻi, the specific context of this study, the teacher-participants, my positionality as the

researcher, and the methods for data collection and analysis.

Ideological Becoming

Ideological becoming is central to this study and goes hand-in-hand with multilingual

learner pedagogy and transformative learning, impacting students either positively or negatively.

This study is thus framed and interpreted through this notion; that is, describing the process of 'becoming' as a current conceptualization of qualitative research. While the overall goal of the course was to "introduce classroom educators to literacy, linguistic, metacognitive, and technology strategies that target reading comprehension skills in math for ELL in grades K-8" (syllabus) and to help the teacher-participants to "identify and adopt best practices that support your school's current math curriculum in assessing and teaching ELL students" (syllabus), the structure of the course and related choice in content created opportunities for ideological awareness and becoming. In sum, in selecting the weekly topics (Table 6), in creating the weekly discussion and summary questions for reflection, and in requiring the implementation of the required 8-week case study with two-to-three MLL students, efforts were made to engage teachers in a form of critical analysis that helped them become aware of their MLL students' resources and then develop classroom approaches that recognize these. Thus, as reported in this study's findings (Chapters 4-6), this includes for example promoting ideological awareness among the teacher-participants to help understand that English-only is neither the most effective nor an equitable approach. As such, the following section draws on literature to support growing ideological awareness of the right to multiple languages in learning and, more broadly, to help all those involved in the education of MLLs to realize their students' strengths and abilities rather than maintaining and perpetuating a deficit perspective.

The US government has long considered multilingualism as a problem rather than both a right and resource (Ruiz, 1984); this is evidenced in a history of monolingual language policies[22]

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[22] Examples of these monolingual policies include national legislation such as No Child Left Behind Act (2002), and statewide legislation in the form of Proposition 227 (California Education Code §§ 300-340), Proposition 203 (Arizona Revised Statues §§ 15-751 to 15-755), and Question 2 (Massachusetts General Laws, Chapters 69-71B); see also Chapter 2. For example, Proposition 227 "requires that all California public schools conduct instruction in English. It also mandates that ELLs be taught 'overwhelmingly in English' through sheltered/structured English immersion and then transferred to a mainstream English-language classroom. Voters in Arizona and Massachusetts

despite language education scholars citing evidence to the contrary (Cummins, 2001; Davis & Phyak, in press; García & Cuéllar, 2006; García & Li, 2014; Hornberger & Link, 2012). Efforts have been made on a more local level with success (Cummins, 2005, 2007; García, 2011; García & Flores, 2013; García & Li, 2014; Hornberger & Link, 2012) but are still slow in coming and being reflected in regional and national language policies and practices. With this disconnect and the lack of awareness on the part of those who work daily with students, it is thus necessary to engage in ideological analyses that aids in raising critical awareness on the part of teachers of MLLs (Davis & Phyak, in press).[23]

Engaged Ideological Analysis

Engaging in ideological analysis in order to create and promote equitable education for MLLs requires specific identification and critique of ideologies that are reproduced through dominant language practices and policies (Davis & Phyak, in press). This study focuses its analysis on teachers working with MLLs as a means to empower the teachers and subsequently their students by supporting and promoting transformative learning and transforming ideologies. Engaged ideological analysis as a process must include a look at current practices and, as specific to this study (Chapter 5), 'disinvent' the monolingual ideology to instead promote multilingual use in learning (Davis & Phyak, in press). In exploring this ideology, these K-12 math teachers of MLLs additionally were provided with new and alternative ways to reimagine the education of their students.[24]

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have approved similar initiatives, and 25 states have English-only laws which shape ELL education" (NCTE, 2008, p. 3; Parrish et al., 2006).

[23] While this study focuses specifically on engaging teachers in ideological awareness of MLL practices—and more particularly on the benefits of first language use to better support and engage multilingual students' learning—it is also important for all participants (e.g., teachers, students, parents, school administrators, community members, local organizations, policymakers) to be involved in the process and to critically explore not only practices but policies as well (Davis & Phyak, in press). This will be discussed further in Chapter 7, recommendations for future research.

[24] While Chapter 5 centers on a report of teachers' ideological awareness related to first language use in the classroom in particular, further and more comprehensive engaged ideological analyses would include a "critical

Freire's (1970) influential work on critical consciousness helped support and promote ideological awareness among those with whom he worked. More specifically, Freire found that "reflectiveness results not just in a vague and uncommitted awareness, but in the exercise of profoundly transforming action upon the determining reality. *Consciousness of* and *action upon* reality are, therefore, inseparable constituents of the transforming act" (original italics, Freire, 1970, p. 453); thus, reflexive engagement combines with actions in order to produce lasting, equitable change. This type of reflexivity requires a space in which the participants feel comfortable in engaging in dialogue that also raises questions about prevalent ideologies; this combination of reflectivity and dialogue further encourages discussion on alternate ideologies that can subsequently impact action through praxis.[25]

The intended outcomes of this reflexive engagement are ideological clarification, awareness, and becoming; that is, a new understanding of the harmful consequences of prevalent ideologies. This in turn can result in an open naming of the ideology among participants, "awakening a sense of injustice" and empowering the teachers to "transform [these] hegemonic ideologies into situated" (and here, local) changes to teaching practices that result in a more equitable education for multilingual students (Davis & Phyak, in press). The remainder of this chapter introduces the research context, the teacher-participants, my positionality as the researcher, and the methods for data collection and analysis for this study of teacher ideological becoming and transformative learning.

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investigation of sociopolitical inequalities, historical oppression, and linguistic discrimination" (Davis & Phyak, in press) as played out in the language policies and practices in the national context of the US and the local context of Hawai'i. This will be further discussed in Chapter 7 as an area recommended for future research.

[25] In this study, for example, teacher-participants come to recognize (see Chapter 5) the monolingual ideology as harmful and support for first language use as beneficial, thus reaching their own decisions and subsequently noting how they will change classroom practice (i.e., achieve a sense of 'ideological becoming' [Bakhtin, 1981]).

Education Context in Hawai'i

This section situates the conditions under which the teacher-participants in this study work, and in particular situated in the larger context of the state of Hawai'i and the impact of federal education policies. As such, it provides details on the following topics: an introduction to an age of standardization and high-stakes accountability; the No Child Left Behind Act and the implementation of standardized assessments; the Common Core State Standards; and, WIDA standards and assessments. This section continues with a presentation of challenges related to the Department of Education and the College of Education at the University of Hawai'i at Mānoa before concluding with a summary of additional challenges experienced by teachers.

An Age of Standardization: High-Stakes Accountability

An education system with high-stakes accountability and standardized assessments is not a new experience in the US nor in the local context of this study. Even before Hawai'i became the 50th state, there were instances of high-stakes accountability within the education system. The first report of teacher accountability through student assessments is attributed to the appointment of Henry Walsworth Kinney (1914-1919) as superintendent. Holding the prior positions of newspaper editor and professional businessman, Kinney was focused on "holding schools accountable to financial budgets, curriculum objectives, teacher qualifications, and student performance" with a focus on "economy in operation and business efficiency and administration" (Benham & Heck, 1998, p. 150). For example,

> teacher salaries would be based on training, experience, and teacher evaluations that were determined by the number of students passing statewide tests (Wist, 1940)….Testing was held at the end of every year for grades 1 through 4, and at the end of each term for grades 5 and 6. However well intentioned the testing process might have been, the 75%

passing criteria led to cheating and many unhappy teachers who did not like the idea of

being judged by the outcome of their students' test scores. (Benham & Heck, 1998,

p. 151)

Now a century later, the state faces the same issues; that is, with the many forms of legislation in

place requiring strict enforcement, "teachers' roles have changed as high-stakes accountability

has become an increasingly pervasive factor in their daily work" (Valli & Buese, 2007, p. 520).

The proceeding sections will introduce various policies that impact teachers' daily work context.

No Child Left Behind Act. The No Child Left Behind (NCLB) Act was signed into law

by the US Congress in 2002 under President G. W. Bush with the outcome to create higher

standards of education and, critically, connecting standardized assessments with the provision of

federal funding to schools (García & Flores, 2013). NCLB is noted to be incredibly

comprehensive, including guidelines that impact policy and practice in seemingly every aspect of

teaching: "recruitment, preparation, certification, induction, licensure, assessment, professional

development, school and curricular change, and all sorts of education research related to teachers

and teaching" (Cochran-Smith & Lytle, 2006, p. 669). As Cochran-Smith and Lytle (2006)

summarize:

> NCLB and its accompanying policy documents make it clear that tests are the primary
>
> sources of information for teaching and the principal route to informed decisions about
>
> instruction; [in sum,] tests are how we know about what students are learning, and good
>
> teaching entails raising test scores. (p. 678)

In addition to holding control over curriculum and assessment, NCLB places significant weight

and outcomes for teachers that is dependent on student performance. As Menken (2009)

explains:

High-stakes testing is the core of NCLB, as tests are used to hold each school, district, and state accountable for student performance, therein affording the federal government greater control over the constitutionally decentralized national system of US education….The law specifies testing in both English and mathematics…[and that] each school must meet "adequate yearly progress" (AYP) goals for student performance, using a complex formula determined by the state; if a school fails to achieve these goals, either because students fail the tests or do not progress in the ways required, then the school faces sanctions such as loss of federal funding or closure. (p. 104)

The requirements of NCLB have met with criticism, however, as will be presented in the following section.

Criticism of NCLB. There has been substantial criticism of NCLB even before its enactment. For example, it has been critiqued for its one-size-fits-all, top-down structure and its use of yearly statewide testing as a means to assess student learning and to ensure state-level accountability (Cochran-Smith & Lytle, 2006). Complaints have also been made as to its influence in the significant increase in students dropping out of school (Orfield, Losen, & Wald, 2004). It has also been questioned whether individual schools and their teachers could and should be solely responsible for increasing test scores and the feasibility that teachers and students would be able to succeed under regulations that affected them on a daily basis. Despite such concerns, however, these critics were in turn rebuked, including from President Bush, who cited their "soft bigotry of low expectations" (Cochran-Smith & Lytle, 2006, p. 669). It has additionally been argued that NCLB does not reflect the complexity of the teaching and learning process and that it has a negative impact on teacher agency; that is, this policy places significant limitations on the curriculum and asserts control over the teachers and their ability to be effective

educators. In the immediate context of Hawai'i, it has been recognized that the influence of NCLB and its focus on standardized assessments has dissuaded potential teachers from wanting to work for the Hawai'i Department of Education and instead search for opportunities in private schools[26] (HPEC, 2008). In one further example from the local context of Hawai'i, Davis and Phyak (in press) cite a PBS sponsored forum on education hosted in 2015; here the director of the Hawai'i State Teacher's Association was reported saying: "If Common Core Standards curriculum and [standardized] testing are so great, why doesn't Punahou[27] buy into this?" (This topic will be further discussed below related to the Common Core State Standards).

High-Stakes Standardized Assessments. In the wake of NCLB and its emphasis on mandated standardized testing—and in direct contrast to the growing shift in demographics across US schools towards increasingly diverse classrooms—language assessment experts have argued on its failure to take into account such diversity and its subsequent ineffectiveness on meeting the learning needs of MLLs (Menken, 2006, 2009). Despite NCLB's intent to "ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education" (US Department of Education, 2004; see also Davis, 2009), such a law emphasizes *equal* rather than *equitable* education and has resulted in extreme disparities across populations.

For MLLs in particular, this context of strict, standardized testing requirements under NCLB is particularly difficult, as it requires all students to reach a certain level of achievement regardless of English language ability, prior education experience, and often giving little consideration to the amount of time spent in the US. In addition, there is the continuing

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[26] In addition to Hawai'i's 255 K-12 public schools and charter schools, there are "111 private K-12 schools statewide, including 33 Catholic schools and three special-purpose schools" (Wong, 2014, n.p.). Hawai'i represents the highest percentage of "school-age children attend[ing] private schools" at 15% (c. 18,000 students in the 2014-15 school year [NAIS, 2015]) estimated at approximately 14% of elementary school students and 22% of secondary school students (Hillier, 2007) and "nearly double the national average" (Wong, 2014, n.p.).
[27] Punahou is among the most prestigious K-12 private schools in Hawai'i.

misconception that math is a 'universal' language (Chapter 2) where, regardless of English language ability, all students are expected to be able to pass grade-level assessments with little-to-no support. For example, although MLL students are excluded from taking the state-wide reading test if they have been in the country for less than one year, many states require students to take—and be expected to pass—state math tests (Wright & Li, 2008). This furthers the misconception that math is free of language and that there is not a significant level of English reading ability needed in addition to the math content knowledge to perform well on such assessments. Teachers across all content areas are thus challenged to meet the needs of their MLL students while also being under extreme pressure to ensure these same students pass tests targeting native English speakers (Abedi, 2002, 2004; Martiniello, 2008; Wright & Li, 2008), thus staying in line with the NCLB mandate or risk facing drastic consequences.

As one of the content areas included in these high-stakes assessments, math, for example, poses numerous challenges for all students, but in particular for multilingual learners; for example, Martiniello (2008) analyzed word problems from standardized tests and found a significant number of syntax and vocabulary-related challenges which did not favour MLLs who were of comparable proficiency in math:

> At the highest end of the linguistic complexity range, items contained complicated grammatical structures that were essential for comprehending the item, along with mostly low-frequency, non-mathematical vocabulary terms whose meanings were central for comprehending the item and could not be derived from the context. (p. 337)

Abedi (2006) also notes that language unrelated to academic mathematics content can significantly affect the validity and fairness of standardized assessments for all students, but especially MLLs. This lack of differentiation of linguistic knowledge and math ability not

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only places unnecessary and harmful demands on these students and does not offer an adequate and realistic assessment of present skills, it additionally is challenging and demanding for teachers to best serve the needs of their students given the current strict, high-stakes standards.

Common Core State Standards

The Common Core State Standards (CCSS) have been established in the content areas of Mathematics, English Language Arts and Literacy in History/Social Studies, and Science and Technical Subjects[28]. As of mid-2016, 42 states[29] have adopted these standards as a way to "outline…what US students across different states are expected to know and do" (García & Flores, 2013, p. 147). Despite a new focus on expectations which include critical thinking skills and reflect some aspects promoted by language education scholars—for example, "all language and language varieties (e.g., different dialects, home or everyday ways of talking, vernacular, slang) provide resources for mathematical thinking, reasoning, and communicating" (CCSS, n.d., p. 2)—the overall "English-only orientation of the CCSS" fails to recognize and understand the "linguistic, cognitive, and educational potential" (García & Flores, 2013, p. 150) that MLLs bring with them; in turn, teachers are unprepared to teach this growing group of students. There are also challenges in how the standards can and should be implemented by teachers with multilingual students; in particular, the CCSS provides only a two-and-a-half page document[30] on the education of MLLs and noting that "these students may require additional time, appropriate instructional support, and aligned assessments as they acquire both English language proficiency and content area knowledge"

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[28] http://standardstoolkit.k12.hi.us/common-core/
[29] http://www.corestandards.org/standards-in-your-state/
[30] http://www.corestandards.org/assets/application-for-english-learners.pdf

(CCSS, n.d., p. 1). As García and Flores (2013) note, "US states are scrambling to develop pathways by which students who are new to English may meet standards" (p. 149) and teachers are thus placed in the challenging position of trying to learn how best to teach their multilingual learners while following the standards that were intended to bring about equitable education for all of their students. This is significant as all teachers are responsible for the language education of their students in addition to content instruction. Thus, while teachers are tasked to do this, many teachers do not know how without the provision of much-needed training.

In Hawai'i, the CCSS were approved by the Hawai'i State Board of Education (BOE) in 2010, with initial implementation in grades K, 1, 2, 11, and 12 in the 2012-2013 school year and full implementation in 2013-2014[31]. The BOE's decision to adopt the CCSS is to "ensure that all students, including English language learners, students with disabilities, and low-achieving students, have access to high quality content and instruction aligned to the Common Core" (Matayoshi, 2015, p. 29). As noted in the section below, all teachers participated in this course after 2013 and so were in the final stages of transitioning to the CCSS and thus were required to implement the CCSS in their teaching.

World-Class Instructional Design and Assessment

At approximately the same time the state of Hawai'i agreed on implementing the Common Core State Standards, the WIDA (World-Class Instructional Design and Assessment) Standards were approved. WIDA was adopted[32] by the Hawai'i Department of

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[31] http://www.hawaiipublicschools.org/ConnectWithUs/Organization/OurSchools/Pages/home.aspx

[32] Thirty-five states are current WIDA Consortium Members (WIDA, 2014c). Although occurring after the time when teachers participated in this PD course, the reauthorization of NCLB—called Every Student Succeeds Act (ESSA)—in December 2015 also requires that all states adopt English language proficiency standards and assessments. These English language proficiency standards and assessments were required under NCLB (called "Annual Measureable Achievement Objectives") and thus are similar to (or in many cases the same as) those now offered under ESSA. While larger states (e.g., California) have developed their own standards and assessments,

Education by the approval of the Board of Education on May 21, 2009, in order to advance

"academic language development and academic achievement for linguistically diverse

students through high quality standards, assessments, research, and professional development

for educators" (WIDA, 2014a, n.p.). According to WIDA (2014b), these English Language

Development Standards are "informed by the latest developments in both English language

development research and states' content standards for college and career readiness" (n.p.).

WIDA additionally recognizes key areas in language education, which they summarize in

their two-page document "The Cornerstone of WIDA's Standards: Guiding Principles of

Language Development".[33] These areas include "students' language and cultures are valuable

resources to be tapped and incorporated into schooling" and

> students' academic language development in their native language facilitates their
>
> academic language development in English. Conversely, students' academic language
>
> development in English informs their academic language development in their native
>
> language.[34]

However, it should also be noted that WIDA is a company who has taken over the curriculum

and assessment of language learners across the country, and that (as described above related to

NCLB) making decisions about MLLs' education based on the results of standardized

assessments can be problematic. That said, the WIDA English Language Development Standards

are intended to "help guide English language development and instruction for [MLLs], and serve

as the basis for the summative annual English Language Proficiency [(ELP)] assessment to

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Hawaiʻi does not have the resources at present to do so; thus, WIDA was accepted initially due to its alignment with NCLB (and the former's already validated and established assessments) and has continued under ESSA (see Every Student Succeeds Act Provisions, 2016).

[33] http://www.wida.us/get.aspx?id=1

[34] http://www.wida.us/get.aspx?id=1

determine whether a student is making progress or has achieve the [MLL] exit requirements"

(n.p.).[35] Additional tests are administered in the form of the WIDA-ACCESS Placement Test

when MLLs first begin school and are intended to "help determine what kind of English

language support is needed for the students to progress in school. Appropriate services are then

provided to help students work towards the [CCSS]…and WIDA ELP Standards" (n.p.)[36].

Students are also tested annually with the ACCESS for ELLs assessment (Assessing

Comprehension and Communication in English State-to-State for English Language Learners)

"to determine a student's language progress and proficiency in developing English" (n.p.)[37]. In

sum, while WIDA Standards appear to provide teachers assistance in the form of guidelines and

knowledge of students' current English abilities, training is still imperative on the part of

teachers in understanding MLL pedagogy and knowing best practices for teaching and

incorporating the above guiding principles purported to be a key tenet of the WIDA standards.

As García and Flores succinctly stated: "the United States is at a crossroads—on the one hand, it

demands educational common standards; on the other, it faces the greatest student diversity of all

time" (2013, p. 147). However, WIDA is problematic in that it has created standardized

assessments that are required to evaluate language ability that do not match diverse language

minority students' backgrounds, including also cultural and social experiences. In addition, while

WIDA provides guidelines that can help provide teachers direction, it is important to attend to

the students' diversity and continue to explore options on how best to do this. The following

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[35] http://www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/EnglishLanguageLearners/
Pages/home.aspx
[36] http://www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/EnglishLanguageLearners/
Pages/home.aspx
[37] http://www.hawaiipublicschools.org/TeachingAndLearning/StudentLearning/EnglishLanguageLearners/
Pages/home.aspx

section introduces the education context of one highly linguistically and culturally diverse state, Hawai'i.

Department of Education and Hawai'i's Schools

Hawai'i's 255 K-12 public schools (including the Hawai'i School for the Deaf and Blind) are located across seven of the state's eight main islands—Hawai'i, Kaua'i, Lana'i, Maui, Moloka'i, Ni'ihau, and O'ahu—and are directed by the Hawai'i Department of Education (HIDOE). These, and 33 additional charter schools, are divided based on geography into 15 Complex Areas each comprising a high school and its feeder schools, and make the HIDOE the ninth largest school system in the United States (Matayoshi, 2015). Hawai'i is unique in several respects: for example, it is the only state that has a single, statewide K-12 school system directed by a single Board of Education, which serves roughly 180,000 students and employs approximately 25,000 teachers and staff in schools and in the state office (HIDOE, 2015). Hawai'i's public schools additionally have diverse student populations from varying socioeconomic backgrounds. As noted in Chapter 1, Hawai'i has long had high levels of ethnic diversity due its extended history of immigration. As such, there is no majority population, although Native Hawaiian and part-Hawaiian students represent the largest ethnic group in K-12 schools (28%), followed by Filipinos (21%) (Race to the Top, 2010).[38]

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[38] In addition, it is the only state with official bilingual status—Hawaiian and English—and as such "19 of the 288 public schools are Native Hawaiian immersion schools that provide instruction in Native Hawaiian" (Matayoshi, 2015, p. 5). Of these, there are "17 Hawaiian-focused public charter schools in Hawai'i. This diverse group of schools shares a common focus, where instruction and learning are grounded in the values, norms, knowledge, beliefs, practices and language that are the foundation of Native Hawaiian culture" (KSBE, 2015, n.p.); "approximately 90 percent of students served are of Hawaiian ancestry, [and] approximately 62 percent of students served are socioeconomically disadvantaged children" (KSBE, 2015, n.p.), and is also reflective of much of the socioeconomic status of students attending Hawai'i's public schools, including largely immigration populations.

Geography and Socioeconomic Status. Students in Hawai'i's schools represent a diverse demographic and cover a wide range of geographic and socioeconomic regions; these include urban centers with significant localized poverty and homeless student populations alongside areas representing some of the greatest wealth in the US (Race to the Top, 2010). In addition, almost one-fifth of all K-12 schools across the state have been designated as 'rural' (NCES), with 42% being 'distant' or 'remote' and requiring expensive air travel to reach the more urban areas (Race to the Top, 2010); for example, the HIDOE has established "PK-12 Zones of School Innovation (ZSI) that encompass both Priority Schools and the schools within their Complex Area (or feeder pattern)….The total student population of the ZSIs is 11,000, and 13 of these 14 schools are considered 'hard-to-staff' because of their geographical remoteness" (Race to the Top, 2010, p. 14). In addition to geographical remoteness, socioeconomic status has a significant impact on the students who attend public school and the teachers who work with them; for example, 51% of Hawai'i's public school students are eligible for free-or-reduced lunch citing low socioeconomic position (Levine, 2011; Race to the Top, 2010).

Multilingual Learners. The DOE has reported that there are approximately 17,400 MLL students who are enrolled in K-12 public schools and representing around 10% of the student population. However, certain complex areas (a high school and its feeder elementary and middle schools) are recording much higher percentages: "Farrington Complex (28%); Kaimuki Complex (24%); McKinley Complex (26%); Waipahu Complex (22%); Kau Complex (23%)" (Shon & Hillman, 2013, p. 6). Regarding graduation rate, it has been noted that 48% of students who are labeled as English language learners by WIDA do not graduate high school, while the general drop-out rate is 19% (HIDOE, 2013a; HIDOE, 2013b). MLLs

also experience significantly lower scores as reported in standardized assessments; for example, Hawaiʻi State Assessment proficiency scores from 2012-2013 report that MLLs scored far lower in math, reading, and science versus the general population (i.e., all students) (HIDOE, 2013a): 41% of MLLs scored proficient in math while 60% of the general population scored proficient; 46% of MLLs scored proficient in reading while 72% of the general population scored proficient; 15% of MLLs scored proficient in science while 34% of the general population scored proficient. In addition, Hawaiʻi's scores on the American College Test (ACT)—a college entrance exam that the HIDOE required 11th grade students to take for the second year in a row (Terrell, 2015)—are still the lowest in the country (ACT, 2015; College & Career Readiness Hawaiʻi, 2015; Terrell, 2015).

Although not all-inclusive, many in-service teachers in Hawaiʻi have graduated from in-state programs, such as those offered through the largest and most comprehensive teacher-training program in the state, available through the College of Education (COE) at the University of Hawaiʻi at Mānoa. While there has been an historical absence of any formal pre-service teacher education with a specific focus on MLLs across grades K-12, the COE is in an important position to begin instituting long-term education reform to better serve the future of Hawaiʻi. Without policies or plans in place which provide "comprehensive and effective language minority education" (Davis & Phyak, 2015, p. 155) to students within the DOE, equitable education is unachievable. It is within this context and absence of pre-service training that teachers in this study found themselves[39]; in particular, struggling to know how best to teach their language learners across the content areas. In contrast, the Hawaiʻi

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[39] However, it should be noted that recent efforts (as of Fall 2016) by the COE have resulted in an option for elementary teacher candidates to take a series of courses focused on MLLs as an additional licensure. Although in the early pilot stages of implementation, it is hopeful the COE will continue to support more sustainable and wider-reaching programs following this initial step towards improvement (see Afterword for related recommendations).

Department of Education (DOE) supports in-service professional development programs where teachers can attend courses and have the opportunity to learn new information relevant to their teaching milieu, such as the course comprising this study. As evidenced in the Hawai'i Teacher Standards Boards (HTSB), professional learning and ethical practice standards for teachers are clearly supported:

> 9(e) The teacher reflects on his/her personal biases and accesses resources to deepen his/her own understanding of cultural, ethnic, gender, and learning difference to build stronger relationships and create more relevant learning experiences.
>
> 9(i) The teacher understands how personal identity, worldview, and prior experience affect perceptions and expectations, and recognizes how they may bias behaviors and interactions with others.
>
> 9(m) The teacher is committed to deepening understanding of his/her own frames of reference (e.g., culture, gender, language, abilities, ways of knowing), the potential biases in these frames, and their impact on expectations for and relationships with learners and their families. (HTSB, 2012, n.p.)

However, teachers are still faced with a dearth of long-term PD programs accessible to teachers across the state that are not in the too-often form of one-size-fits-all workshops. These latter, short-term courses often provide teachers with little opportunity for significant dialogue and reflection, and are often decontextualized from the school environment and have little relevance to the local context.

Summary

Current US federal and state education policies place standardization as the determining factor of successful education and teaching practices in the K-12 government-

supported school system. Following the regulations of the No Child Left Behind (NCLB) Act and other federal policies, education 'improvement' has been a top-down, de facto approach which holds each state, district, school, and ultimately the teacher, accountable for student performance. Such high-stakes accountability and an emphasis more specifically on standardized testing limits the abilities of teachers to meet the individual learning needs of their diverse learners. It has also been well-documented and argued by language assessment experts that NCLB fails to meet the learning needs of multilingual learners as they must take the same academic content tests as native-English speakers (Menken, 2009; Wright & Li, 2008). Despite this well-evidenced mismatch in academic language proficiency between native-English speakers and multilingual learners in such assessments, high-stakes testing continues to be the foundation on which teachers must frame their instruction, while also knowing that many states use a single standardized test score as a deciding factor in grade promotion and high school graduation (Heubert & Hauser, 1999). In sum, standardization does not work with diverse populations and, as it could be argued that all learners are diverse, this goal of standardization would then seem to be ineffective for all involved.

In addition, teachers are challenged to meet an increasing number of requirements with each new policy implementation; for example, the amount of tasks and responsibilities teachers are required to take on has increased over recent years—including in-class details and out-of-class planning and professional learning—and is represented in the growing responsibilities outlined in local, state, and federal policies (Valli & Buese, 2007). It is in this situation that the teacher participants in this study find themselves. Through presenting this current education context, this study provides examples of how significant the teacher-participants' learning and growth has been through participation in the PD course. It

additionally helps better understand how knowledge of these current conditions can better inform areas by which teachers can be more effectively supported, and bring to light opportunities for change, growth, and overall improvement of the current education context in the state.

Introduction to the Research Context

Four professional development courses were created under a grant from the US Department of Education entitled *New Beginnings for English Language Learners: Innovation through Technology for English Literacy and Academic Success* (T365Z110027). This five-year grant was awarded to the Center on Disability Studies, University of Hawaiʻi at Mānoa, in 2012, with Dr. Weol Soon Kim-Rupnow as Principal Investigator (PI) and Dr. Caryl Hitchcock as co-PI. This funding allowed for the creation of PD programs relevant to in-service teachers in the STEM (science, technology, engineering, and math) fields, with 15-week online courses offered to teachers across the state of Hawaiʻi between 2013 and 2016. As locally created and offered long-term PD courses addressing the STEM fields and MLLs are rare in Hawaiʻi, a brief introduction to these four courses is provided below.

Reading Comprehension in Science for English Language Learners Course

The *Reading Comprehension in Science for English Language Learners (RC-Science)* course is a 15-week online PD course that

> introduce[s] classroom educators to literacy, linguistic, metacognitive, and technology strategies that target reading comprehension skills in science for ELL in grades K-8. You will be able to identify and adopt best practices that support your school's current science curriculum in assessing and teaching ELL students. Your participation in weekly online discussions, implementation of an 8-week case study using Reading Comprehension in

Science (RC-Science) methods, as well as completion of weekly learning reflection

summaries and a comprehensive portfolio of your coursework are required. (*RC-Science*

Syllabus, 2016, p. 2)

As of Fall 2016, the course was in its fifth offering of the 15-week version and has achieved 39

completers from 4 islands across the first four offerings of the course (see Table 1).

Table 1

Demographics of Teachers from the Reading Comprehension in Science for English Language Learners *Courses, Fall 2014-Fall 2016*

Semester RC-Science Course Taken	Number of Hawaiʻi DOE Completers	School Level Taught			Hawaiian Island			
		Elementary	Intermediate	High	Hawaiʻi	Lanaʻi	Maui	Oʻahu
Fall 2014	18	11	4	3	3		4	11
Spring 2015	7	3	2	2	1		1	5
Fall 2015	11	11			2		2	7
Spring 2016	3	2	1			1	2	
Fall 2016		on-going at time of writing						
Total	39	27	7	5	6	1	9	23

POWER 8 Writing in Science for English Language Learners **Course**

A second science-related course, *POWER 8 Writing in Science for English Language*

Learners (POWER 8), to be provided with funding from this grant has been offered every Spring

and Fall semester since Fall 2012, with Cheryl Corbiell[40] taking over as lead instructor from

Dr Caryl Hitchcock beginning in Fall 2013. There have been 45 teachers from five islands who

have completed the course as of Spring 2016, representing grades 3-12 within the K-12 public

school system (see Table 2). The course has the following description:

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[40] Cheryl Corbiell, M.C.S., is a Junior Specialist with the NB-ELL Project and Lecturer in Communication and Computer Technology at UH Maui College, Molokai. She has supported classroom research projects that use POWER 8 to improve students' writing skills.

This 15-week online professional development course will introduce current classroom science teachers (and language arts teachers collaborating with science teachers in writing projects) to technology, metacognitive, and multicultural strategies for assessing and teaching ELL in grades 4-12. Your participation in weekly online discussions, completion of a 9-week case study implementing these strategies in your classroom, as well as weekly learning reflection summaries are required. (*POWER 8* Syllabus, 2016, p. 3)

Table 2

Demographics of Teachers from the POWER 8 Writing in Science for English Language Learners *Courses, Fall 2013-Fall 2016*

Semester POWER 8 Course Taken	Number of Hawai'i DOE Completers	School Level Taught			Hawaiian Island				
		Elementary	Intermediate	High	Hawai'i	Kaua'i	Lana'i	Maui	O'ahu
Fall 2012	8	1	5	2	4				4
Spring 2013	3	1	1	1	1				2
Fall 2013	9	4	5		1			1	7
Spring 2014	6	2	1	3	2	1			3
Fall 2014	5		3	2	1	1			3
Spring 2015	6	2	2	2	2		1	2	1
Fall 2015	8	3	1	4	4				4
Spring 2016	*								
Fall 2016			on-going at time of writing						
Total	45	13	18	14	15	2	1	3	24

* 2 participants from American Samoa

Technology to Support Literacy for English Language Learners Course

A further course developed under this grant also meets the provision of STEM to MLLs and is called *Technology to Support Literacy for English Language Learners* (*Tech-4-Lit*). Designed by Mautumua Porotesano in collaboration with Dr Caryl Hitchcock and Bhonna

Gaspar[41], this 15-week online PD course has been taught by Porotesano since June 2013, with Gaspar joining as co-instructor in Spring 2015 and one additional master teacher offering support during the Summer/Fall 2014 and 2015 semesters, respectively (see Table 3). The course description reads:

> This rigorous 3-credit, 15-week, online course will introduce classroom educators to technology tools to enhance literacy skills for ELLs across all content areas. This course is appropriate for anyone interested in exploring the potential technology offers for teaching and learning, regardless of prior teaching or technological experience. Computer technology is changing the way we teach, offering educators effective ways to reach different types of learners and to assess student understanding through multiple means. You are required to participate in weekly online discussions, as well as complete computer-based technology projects, a case study, and weekly learning reflection summaries. (*Tech-4-Lit* Syllabus, 2016, p. 2)

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[41] Mautumua Porotesano, M.Ed., is a Junior Specialist at the UHM. Her assistive technology, distance learning, and graphic design backgrounds integrate technology into classrooms in the Pacific, including Hawaiʻi and her native American Samoa.

Caryl Hitchcock, Ph.D., is an Associate Professor in the College of Education, UHM, and current PI on the NB-ELL Project. She received the American Educational Research Association (AERA) Distinguished Research Paper Awards in 2002 and 2009.

Bhonna Gaspar, M.Ed., holds degrees in Computer Science and Second Language Studies from the UHM and has most recently earned a Master's degree in Learning Design and Technology. Her interests are in materials development and technology use in second language learning.

Table 3

Demographics of Teachers from the Technology to Support Literacy for English Language Learners *Courses, Summer 2013-Fall 2016*

Semester *Tech-4-Lit* Course Taken	Number of Hawai'i DOE Completers	School Level Taught			Hawaiian Island			
		Elementary	Intermediate	High	Hawai'i	Kaua'i	Maui	O'ahu
Summer-Fall 2013	15	9	5	1	7		1	7
Summer-Fall 2014	16	15		1	2		3	11
Spring 2015	13	10	1	2	2	5		6
Summer-Fall 2015	29	21	5	3	5		5	19
Spring 2016	10	7	1	2	2		5	3
Fall 2016			on-going at time of writing					
Total	83	62	12	9	18	5	14	46

Reading Comprehension in Math for English Language Learners Course

The focus of this study is the PD course *Reading Comprehension in Math for English Language Learners*; it will be described in further detail in its own section below.

NB-ELL Promotion and Support[42]

These four PD courses have been promoted and advertised by the Hawai'i State Teacher's Association on their website (most recently at: http://www.hsta.org/index.php/news/professional-development-free-ell-pd-courses-provided-by-uh-manoa), and are also available with descriptions for teachers to view on the HIDOE website. Due to the

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[42] Invaluable support for all courses is provided by Ms Loryn Gum and Dr Chuan Chinn:
Loryn Gum, M.Ed., is a Junior Specialist in the College of Education, UHM, and has served as Coordinator of the NB-ELL Project and its predecessor, the ELL-ACE Project, since 2008. She is skilled in program development, coordination, and assessment; curriculum and materials design; instruction for learners with low literacy skills; and communication with ESL learners.
Chuan Chang Chinn, Ph.D., is an Assistant Specialist in the College of Education, UHM, and Co-PI on the NB-ELL Project, serving as the Project Evaluator. Her research interests include research design, culturally competent evaluation, early intervention, and learning programs in support of positive youth development.

comprehensive nature of these four PD courses, in-service public school teachers are eligible to earn three professional development credits per course; on successfully completing 12 credits (generally four courses), teachers receive a special certification in teaching MLLs. The above four courses have significantly benefited from the addition of master teachers to support the running of the program. These master teachers completed the course in which they currently assist and were ask to return to help share their experiences and knowledge with the future teacher-participants in each course.

<div align="center">**Research Context**</div>

***Reading Comprehension in Math for English Language Learners* Course**

The *Reading Comprehension in Math for English Language Learners* (*RC-Math*) course is a math-focused PD program was created in Fall 2012. This 15-week online, asynchronous, PD program was first offered to teachers in Spring 2013 and has been offered in each subsequent semester, with 67 HIDOE teachers having completed the course as of Spring 2015, and 95 as of Spring 2016 (the course is on-going at time of writing in Fall 2016; see Table 4 for details on all courses, from Spring 2013 to Fall 2016). This PD course—which is the foundation and focus of this study—has the following objectives as outlined in its syllabus:

> This 15-week online professional development course will introduce classroom educators to literacy, linguistic, metacognitive, and technology strategies that target reading comprehension skills in math for ELL in grades K-8. You will be able to identify and adopt best practices that support your school's current math curriculum in assessing and teaching ELL students. Your participation in weekly online discussions, implementation of an 8-week case study using Reading Comprehension in Math (RC-Math) methods, as

well as completion of weekly learning reflection summaries and a comprehensive portfolio of your coursework are required. (*RC-Math* Syllabus, 2016, p. 2)

While the above description reads K-8, teachers from grades 9-12 have been welcome and seven high school educators have completed the course as of Spring 2015.

Table 4

Demographics of Teachers from the Reading Comprehension in Math for English Language Learners *Courses, Spring 2013-Fall 2016*

Semester *RC-Math* Course Taken	Number of Hawaiʻi DOE Completers	School Level Taught			Hawaiian Island				
		Elementary	Intermediate	High	Hawaiʻi	Kauaʻi	Lanaʻi	Maui	Oʻahu
Spring 2013	8	3	2	3	2				6
Fall 2013	13	9	3	1	1			1	11
Spring 2014	13	9	4		2		2	1	8
Fall 2014	19	17	1	1	2			5	12
Spring 2015	14	12		2	1	1			12
Fall 2015	17	14	1	2	1			11	5
Spring 2016	11	9	2			1		2	8
Fall 2016			on-going at time of writing						
Total	95	73	13	9	9	2	2	20	62

Participants

The data used in this study is from the 15-week online, asynchronous, *RC-Math* PD course offered for five consecutive semesters (Spring 2013 to Spring 2015)[43] and included K-12 in-service educators from across the state of Hawaiʻi. The total number of participants was 67. Consent forms were provided at the start of each course: two participants did not submit the consent form; one participant was excluded as the only male participant for being

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[43] The *RC-Math*, *RC-Science*, *POWER 8*, and *Tech-4-Lit* courses are still running at time of writing, with the last offerings for all four courses ending in December 2016 due to the conclusion of the *NB-ELL* grant funding.

potentially more identifiable; one did not submit the final portfolio and (despite significant attempts to follow-up with the participant) received an incomplete; and, five participants selected no and declined for their information to be used; thus, the total number included in this study is 58 participants.[44] All teachers in the study agreed to participate on a voluntary basis and are covered under CHS#22939.

A large focus of the course was on discussing and demonstrating knowledge and understanding of various methods of instruction for MLLs, including linguistic and metacognitive strategies for supporting the current math curriculum; at present, these are *Stepping Stones* (K-5), *Go Math!* (grades 6-8), and curricula developed collaboratively by the HIDOE and the University of Hawaiʻi (grades 9-12).[45] The demographics for each of the 58 participants are summarized in Appendices 1, 2, and 3: thirty-four participants taught general classes, five were academic math teachers and/or specialists, three taught classes comprised entirely of MLLs, two were Curriculum Coordinators, ten taught Special Education, and four comprised various roles including Student Services Coordinators and Reading Coaches; for the elementary years in particular, participants taught all subjects and had MLLs in their classes. Individual teachers taught anywhere between three to 80 multilingual learners on a regular basis.

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[44] All teacher-participant names used throughout this dissertation are pseudonyms.
[45] The "lessons were developed by HI DOE teachers who were mentored by UH mathematics and mathematics education faculty; lessons connect mathematical concepts with real-life contexts; lessons engage students in a variety of activities; [and,] learning activities develop conceptual understanding, fluency with skills and procedures and the ability to apply mathematics in real world situations" (Schatz & Gottlieb, 2014, p. 13).

<center>**Researcher Positionality**</center>

Course Design and Participation

I began working with the *New Beginnings for English Language Learners* (*NB-ELL*) grant in January 2013 as a graduate assistant in curriculum and instruction, working 20 hours per week to support the running of a pilot PD course for in-service teachers on teaching mathematics content to MLLs. I held a Bachelor of Education degree, a Bachelor of Science degree (plans were also in place to create a similar course in science) and a Masters of Arts (MA) degree in Second Language Studies with an interest in K-12 education for MLLs, and during the MA had researched and written a literature review on K-6 methodologies for English language and instruction in the content areas of math and science (in preparation for the MCAD course which was subsequently cancelled; see Chapter 1).

In the role of a graduate assistant, I served the first semester in the position of co-instructor and co-contributor, recommending potential additions/adjustments to readings and resources with an MLL focus. One example of an update made was the addition of first language use in the classroom (and a brief introduction to the term 'translanguaging'), as well as the creation of a language brief for the teachers on the challenges of the academic language of math. Following a successful semester, I took over as lead instructor of the course, though still working very closely with my supervisor and co-creator of the course, Dr Caryl Hitchcock, as well as a team including master teachers, course/project coordinator, course administrative support, technology support, and an external math consultant.

After a successful offering in the spring semester of 2013 (January-May), the PD course has been offered an additional six times throughout Hawai'i at the time of writing—August-December 2013, January-May 2014, August-December 2014, January-May 2015, August-

December 2015, and January-May 2016—and one further offering scheduled for August-December 2016[46]; data included in this dissertation is inclusive of the first five course offerings. Each course was a 15-week, asynchronous, online, in-service teacher PD course focused primarily on grades K-8 mathematics, although teachers of grades 9-12 were also welcome to participate. As co-instructor of the course, I was responsible for various grading duties and had access to all written submissions by teacher-participants for the course (described below under 'Data Collection'). As such, my role as co-instructor, contributor to course content, and position as researcher places me in a unique position to describe the study being presented.

Personal Background

In addition to my education background beneficial to the teaching position and participation in the course, I am also an international doctoral student at the University of Hawaiʻi at Mānoa. Coming from the officially bilingual country of Canada, I bring with me a diverse background of experiences that impact my teaching philosophy, in particular toward the education of MLLs. As a part of each online course, all participants and instructors (including myself) were required to post their autobiographies for all other course participants to read and comment on; thus, all teachers were also aware that my previous education experience had not been in the US setting and that I had both an 'insider' (co-instructor) and 'outsider' (international/non-US citizen) role. I have included an excerpt from that autobiography here to provide further details on my background, followed by an explanation of how these influence my beliefs about MLL education and my position as researcher.

It might be fair to say that I have had quite diverse past experiences, particularly in my schooling and main hobby of travelling. My post-secondary education includes music,

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[46] The last *RC-Math* course to be offered will end in December 2016 due to the conclusion of the *NB-ELL* grant funding.

science, and languages, with this latter interest leading me to participate in three short-term study abroad programs—to Austria, Spain, and France—as well as classes in Scottish Gaelic (my heritage language) and American Sign Language. I also hold a B.Ed. with specializations in Indigenous Education and International Education and was fortunate enough to participate in a two-month teaching placement in a rural Māori community in New Zealand. Subsequent work teaching English to refugees sparked my interest in English-as-an-additional-language education, which led me to Hawaiʻi and the MA program in Second Language Studies. Here I was able to continue learning in both the contexts of K-12 and adult education and received practical experience as the sole volunteer English teacher at a local homeless shelter. My most recent work in the field of education has been as a teacher in South Korea.

My travel experiences to date might also be considered diverse, as I have been very fortunate thus far to have visited over 50 countries. Meeting people with unique languages, cultures, customs, and traditions is always fascinating; whether hearing about the war from a local while walking the streets in Sarajevo, Bosnia, or participating in Sweat Lodge ceremonies with Mi'kmaq elders, I am always learning from each of these experiences. I have found that the linguistic and cultural diversity of Hawaiʻi also provides rich opportunities from which I can be continually learning and I am proud to call this new island home.

International experience, including travelling and living abroad, as well as foreign language study, have been shown to have a positive influence on how accepting teachers are of MLLs and engagement in acquiring and enacting relevant pedagogy (Youngs & Youngs, 2001).

Multiple experiences in these areas allowed me to bring a more critical understanding and appreciation of the challenges multilingual students face in learning a new language.[47]

My own beliefs in the importance of first language maintenance and its significant role in the successful acquisition of an additional language comes from my personal language-learning experiences, the pedagogy I was taught as a student and pre-service teacher in a postgraduate education program in Canada, and growing up in an officially bilingual country which required the learning of the other official language to at least a beginner level. Each of these experiences—postgraduate education, foreign language learning, and time spent internationally—impact my support for first language maintenance and its importance in the public school classroom, and thus the recommendation to add a topic such as 'first language use in the classroom' to the course content.

<div align="center">

Data Collection

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***Laulima* Course Site**

Each 15-week course was conducted using the online course management system *Laulima* (meaning 'cooperation' or 'a group of people working together' in Hawaiian) (see Figure 1).

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[47] While I feel my background has positively influenced my abilities as an MLL teacher toward more equitable education and my respect and appreciation for multilingualism, my understanding of the challenges other teachers face when they have not received sufficient training in MLL pedagogy comes solely from the personal critical reflections of the teacher-participants in this study. This was an area in which all my international experience to-date (save this study) did not provide.

Figure 1

Laulima site for the Reading Comprehension in Math for English Language Learners *course*

RC-Math assignments were divided into four core activities: weekly discussions, weekly summaries, an eight-week case study, and a culminating portfolio. Weekly readings were also required, along with optional supplemental materials provided. Each week of the course had its own theme(s) (Table 5):

Table 5

Sample of course topics by week

Week	Topic
2	The language of math
3	Cultural awareness and learning characteristics of culturally and linguistically diverse students
4	Standards (National Council of Teachers of Mathematics (NCTM), CCSS, and World-Class Instructional Design and Assessment: English Language Proficiency (WIDA-ELP))
5	Assessment and reducing cultural bias
6	Problem-solving, comprehension strategies, and differentiation
7	Collaborative peer groups and first language use
8	Vocabulary development and a language-rich classroom
9	Integrating literature to improve math comprehension
10	Metacognitive strategies and scaffolding
11	Video and audio feedforward
12	Using technology, cognitive organizers, and other lesson tools
13	Involving parents and the community

All participants' weekly discussions were posted in an online group forum (see Figure 2).

Figure 2

Example of forum post with peer comments (Rachel's discussion post, followed by comments from Sally and Elisa, respectively)

The Forums tool allowed the teacher-participants to read and comment on each other's submissions; each participant was required to provide constructive, critical responses to at least two of their peers' posts. Content for the weekly discussion needed to show

understanding of the required article readings and provide relevant answers to the provided discussion questions. Additional content could include sharing new ideas, personal perspectives, asking follow-on questions, or in any other way "relate the [weekly] course content to [their] real-world teaching experiences" (syllabus). Participants' contributions needed to be at least 150 words, of substantive quality and "reflect critical thought" (syllabus). Weekly summaries were also required, submitted directly to the instructors and not made available to other participants. Each of these submissions needed to address the general topic of the week (e.g., the language of math, first language use in the classroom; see also Table 5), but could also additionally include any perspectives on the course content, classroom observations, and further reflections on discussions (syllabus).

Weekly discussions and summaries were regularly collected from all 58 participants in the course throughout the five 15-week sessions, totaling 870 discussion posts of a minimum of 150 words. Additionally, all 58 participants were required to comment on at least two of their peers' discussion posts, resulting in a minimum of 1740 written follow-up responses. Each participant also submitted 14 summaries, totaling 812 posts, as well as one Final Overall Reflection per teacher per course, and thus 58 submissions. As such, 3450 written posts were collected throughout the total five offerings of the course included in this study. A summary of the data collected from each course is provided in Table 6.

Table 6

Summary of all written submissions

Course Offering (Date)	Assignments Submitted Relevant to this Study				Total Individual Pieces of Data Collected in this Study
	Discussions (15 posts per teacher per course)	Teacher responses (minimum of at least 2 responses to peers' discussion posts per week, minimum 30 per participant per course)	Summaries (14 submissions per teacher per course)	Final Overall Reflection (1 submission per course)	
Spring 2013	8 teachers x 1 post x 15 weeks = **120 posts per course**	8 teachers x 2 posts per week x 15 weeks = **240**	8 teachers x 1 submission x 14 weeks = **112**	8 teachers x 1 post = **8**	**480**
Fall 2013	12 teachers x 1 post x 15 weeks = **180 posts per course**	12 teachers x 2 posts per week x 15 weeks = **360**	12 teachers x 1 submission x 14 weeks = **168**	12 teachers x 1 post = **12**	**720**
Spring 2014	12 teachers x 1 post x 15 weeks = **180 posts per course**	12 teachers x 2 posts per week x 15 weeks = **360**	12 teachers x 1 submission x 14 weeks = **168**	12 teachers x 1 post = **12**	**720**
Fall 2014	17 teachers x 1 post x 15 weeks = **255 posts per course**	17 teachers x 2 posts per week x 15 weeks = **510**	17 teachers x 1 submission x 14 weeks = **238**	17 teachers x 1 post = **17**	**1020**
Spring 2015	9 teachers x 1 post x 15 weeks = **135 posts per course**	9 teachers x 2 posts per week x 15 weeks = **270**	9 teachers x 1 submission x 14 weeks = **126**	9 teachers x 1 post = **9**	**540**
Total	**58 teachers = 870 discussion posts, total across 5 courses**	**58 teachers = 1740 discussion post peer responses, total across 5 courses**	**58 teachers = 812 summary posts, total across 5 courses**	**58 teachers = 58, total across 5 courses**	**3450**

Survey

As it is important to gather more than one form of data, in particular given the online

nature of the PD courses, conducting a survey allowed for a further source of information to

better understand the background of each teacher-participant. Demographic information was

collected at the start of each course via a written survey completed and uploaded by each

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teacher to the online Laulima course site. The format of the survey was carefully considered, and purposefully included multiple forms of data collection, including short-answer, fill-in, and open-ended response questions. This survey consisted of 15 questions focusing on (a) personal background information (7 questions), and (b) teaching position and experience (8 questions). Part A included selecting the relevant age range and gender by placing an "X" in the appropriate box provided, writing the city/town, state, and country where the teacher-participant was born, raised, and now living (including the number of years for the latter two points), their ethnicity, knowledge of languages other than English, and details of their postsecondary education. Part B asked the teachers to provide details on their (a) current teaching position, grade level, subject(s), and class(es); (b) the number of years teaching their current grade level at their current school, the total of years teaching at the school, and the total years teaching throughout their career; (c) details on course(s) taken in reading comprehension strategies for K-12 students; (d) their proficiency in teaching reading comprehension for K-12 students (on a scale from 1-5, with 1 being not proficient, a little proficient, adequately proficient, very proficient, and 5 as extremely proficient); (e) the teacher's own proficiency in reading comprehension (using the same 5 point scale as the previous question); (f) details of the MLL teacher training they have received, including college, in-service, and other courses, workshops, or training; (g) details of their teaching career and experiences teaching K-12 MLL students; and, (h) descriptions of methods the teacher has used to teach reading comprehension to K-12 MLL students.

Care was taken regarding the form, meaning, and respondents as to the choice of questionnaire content (Brown, 2001), with the predominant scales of measurement being nominal. The questions were chosen to encompass descriptive, exploratory (including attitudes

and opinions), and explanatory purposes and allow the participants to answer in their own words (Brown, 2009). Broader questions such as these "allow for a deeper exploration of one...issue, and they generate more expansive, and often unpredicted, responses" (Brown, 2009, p. 203), as well as require at minimum several phrases, if not paragraphs. Efforts were also made to follow recommended guidelines provided by Brown (2001, 2009), including avoiding overly long questions, irrelevant questions, prestige questions, leading questions, and biased or embarrassing questions.

Surveys from all 58 teacher-participants were returned completed and, though not anonymous, were treated as confidential and were kept in a secure location accessible only to the course administrator who was responsible for ensuring the surveys were submitted and complete, and the two course instructors, of which I was one. Key data from this survey for the 58 participants is summarized in Appendices 1-3. To better make comparisons between participant demographics in the state, participants were divided into two groups based on geographic area; Appendices 1 and 2 provide teacher-participant demographics from the Outer Islands (i.e., islands other than Oʻahu; 16 teachers) and Oʻahu (the most populated island where the capital city of Honolulu is located; 42 teachers), respectively, and include details from the survey on age range, place raised (Hawaiʻi, mainland, international), ethnicity, languages fluent in, highest degree achieved, school level (at the time of participating in the PD course), position within the school (e.g., general education teacher, MLL teacher, Special Education teacher, Curriculum Coordinator), total years teaching current grade level, total years teaching, and prior ESL/ELL teacher training (e.g., college, in-service, and other courses/workshops/trainings).

Data Analysis

To manage the substantial written data of the minimum 60 written posts per teacher per week (see also Table 6), culminating portfolios were collected from all teacher-participants via the online course site at the conclusion of the course. This allowed for an organized, comprehensive collection of all written work; these Microsoft Word documents were immediately password protected to ensure confidentiality. Following this, I read through each portfolio and replaced all teachers' names with pre-determined, randomly assigned pseudonyms so as to more thoroughly ensure anonymity. In addition, through weekly reading and grading throughout the 15-week course, I kept track of teacher responses through their assignments by highlighting key words and phrases in a password-protected Word document, as well as my written feedback when grading. This process was followed for each of the five course offerings, with electronic folders created to better organize the data and all requiring a password and with pseudonyms to ensure the documents were kept in a way that maintained the teacher's confidentiality.

While having read each submission during each week of the course it was due, following the collection of culminating portfolios I re-read all written reflections to gain a better "sense of the whole" (Hatch, 2002, p. 181), and used a qualitative approach to systematic coding (Bernard, 2005) that involved "coding, interpreting, [and] reinterpreting" (Delamont & Atkinson, 2004, p. 671). This required regular, substantial time to review all written work and taking time to 'sit' with the data. As data was collected over a two-and-a-half-year period, its analysis was a recursive and dynamic process (Merriam, 2009), one which not only began from the early stages of collecting information but was also revisited over time. I completed subsequent readings of all data and coded sections of text by

assigning labels to match similar themes. As Seidman (2006) notes, "[i]n a way, quantity starts to interact with quality. The repetition of an aspect of experience that was already mentioned in other passages takes on weight and calls attention to itself" (p. 127). As such, labels were adjusted, expanded, and redefined following multiple readings, including separating several smaller written passages from one larger reflection that included several diverse themes. More specifically, data analysis was guided by Hult's (2010) theme-based approach to research, citing Halliday's notion of 'theme' as "not an object under study…but an angle, a way of looking at things and asking questions about them, where the same question might be raised with respect to a wide variety of different phenomena" (2007, pp. 358-359). Creswell (2007) further describes this as an inductive approach, progressing "from the particular or the detailed data…to the general codes or themes" (p. 224). However, as a result of the course structure, the codes or themes naturally predominantly reflected the specific topics for discussion given for each week, for example, 'First Language Use in the Classroom (Translanguaging)' or 'The Language of Math'. In other examples, themes of MLLs' linguistic and cultural backgrounds as strengths appeared without being the specific topic for that week. Quotations selected for use in this dissertation remain unaltered with the exception to remove words that might identify other individuals in the course or their schools, and with the use of ellipses to shorten quotations without altering meaning; as such, brackets were then added to ensure grammatical citations.

Conclusion

Chapter 3 began with a discussion of the methodological approaches followed by a detailed description of the research context, including the USDOE-funded grant through which the *Reading Comprehension in Math for English Language Learners* course could be offered. I

then introduced the 58 teacher-participants and their demographics (summarized in Appendices 1, 2, and 3), followed by my own positionality as a researcher and simultaneous co-instructor of the course. Further information was then provided on the methods for data collection through course assignments and survey data, and concluded with data analysis techniques used in this study to better understand the teachers' ideological and transformative learning experiences. Chapter 4 continues this discussion relevant to methodology by providing a detailed analysis of teachers' learning related to the topic of the academic language of mathematics.

CHAPTER 4

ACADEMIC LANGUAGE OF MATH

"This week, my eyes were opened…"

(Emily)

"Unfortunately, content is often taught in isolation and

connections between math and language are regularly missed."

(Laura)

This chapter presents teacher-participants' learning experiences related to the PD course's week 2 topic on the academic language of math. The chapter begins with a description of the discussion post assignment, including the required readings, discussion questions, and method of submission, followed by an introduction to the summary post assignment with a brief explanation of required content and submission format. The next section provides a summary of the readings selected for this week's theme to help better situate the reader with the resources on which the teacher-participants are providing reflection. Following this, the main content of this chapter is presented through the teachers' reflections further divided into these subthemes: (a) the academic language of math and 'is math a universal language?', (b) BICS and CALP, and (c) participation without evident transformation.

Chapter 4 concludes with a discussion section followed by concluding thoughts. The content of this chapter focuses on the transformative learning experiences related to the topic of the academic language of math and the challenges their MLLs face in learning this specialized

language; however, there are also examples provided of teachers' reflections that cannot be characterized as transformative (see section titled "participation without evident transformation"), as the participants' submissions do not reflect a change in current thinking nor how this may impact practice. This will additionally be explored in the discussion section near the end of this chapter. In all, selections from eight[48] teachers' reflections on the topic of the academic language of math have been included in this chapter.

Discussion Posts

The week 2 discussion topic was titled 'The Language of Math'.[49] There were two required readings[50]: (1) a seven-page article entitled "Jabberwocky: The Complexities of Mathematical English" (Carter & Quinnell, 2012), which introduces detailed examples across a range of linguistic challenges related to the academic language of math; and, (2) "Mathematics: The Universal Language?" (Hoffert, 2009), an article written by a high school mathematics teacher who discusses the challenges, strategies, and rewards she experienced when teaching math to MLLs. After completing these two readings, teachers were then asked to answer the following questions with a minimum of 150 words:

1. Is math a universal language? Why/why not?

2. What are some ways that you can improve communication (and understanding) for the ELLs in your classroom?

The teachers then wrote their discussion post in a textbox within the Forums tool in Laulima. The final requirement for the discussion portion of this assignment was to read and reply to at

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[48] The names of the eight teachers whose reflections are included in this chapter are: Laura, Julie, Emily, Sarah, Rachel, Sally, Diana, and Elisa.

[49] In the first course offering (Spring 2013), this week's discussion topic was titled "Is Math a Universal Language?"

[50] Additional resources and questions were asked related to the RC-Math program and 8-week case study; this information is not included in this dissertation due to a limitation of space, but the 8-week case study is explained briefly in Chapter 6 to help better situate the data and analysis.

least two of their colleagues' posts by adding to a 'thread' created below the initial post (see

Figure 2).

<div align="center">**Summary Posts**</div>

Either before or after completing their discussion post (described above)—including

reading the two articles (Carter & Quinnell, 2012; Hoffert, 2009) and answering the two

questions—teachers were also required to submit a summary reflection; however, unlike the

weekly discussion posts that were submitted into the public Forums section of the online site

Laulima, the weekly summary was submitted using the Dropbox tool and uploaded as a

Word document which was only accessible to the instructors (see Figure 3; this is the

instructor's view, with each teacher's submission uploaded in their own named folder, shown

each as ▭ in the figure).

Figure 3

View of the Drop Box folder in Laulima
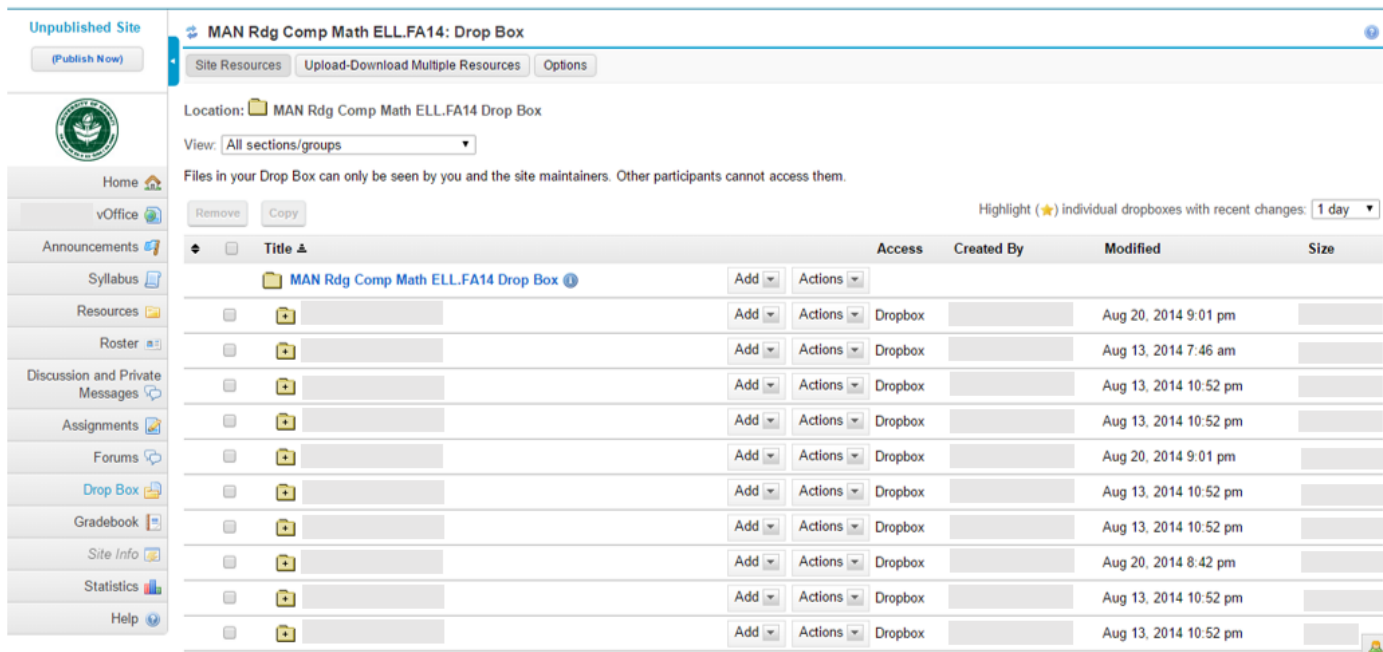
The summary instructions for this week's topic on the academic language of math were:

> Write your week 2 summary…reflecting on what you learned from the readings
> assigned for the week (the language of math). You may also add your thoughts on the
> Case Study materials. Additional thoughts on course content/format and reflections
> on other learning are also encouraged.

Providing this open-ended approach, which welcomed any additional content to be included, allowed for further relevant reflection to be made on any topic the teacher wished to share. As such, additional topics arose that were not directly solicited or related to this week's topic on academic language but were relevant to the individual teachers to share directly with their instructors. These additional topics are included in a section of their own further in the chapter.

Reading Selections

During week 2,[51] the teacher-participants read Carter and Quinnell (2012) and Hoffert (2009), articles which suggest that, although math is often considered to be a universal language, it is in fact highly contextualized, with even math symbols needing to be interpreted linguistically. These authors argue that a new perception is needed that recognizes that math does not transcend language, as this does little to support language learners in acquiring both academic content knowledge and language. In addition, it is important not to depersonalize math and for students to be allowed to negotiate meaning through discussions, continued relevant challenges, and debates. Across content areas, the need and benefits of

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[51] The majority of articles and resources chosen for inclusion in the course as teachers' reading assignments were selected from more 'teacher-accessible' journals (i.e., those intended for an audience of K-12 educators)—for example, *The Mathematics Teacher*, *Mathematics Teaching in the Middle School*, *Teaching Children Mathematics*, *The Middle School Journal*—with each article additionally framed and supported by current theories and pedagogies for the education of MLLs with a specific focus on the academic content area of math.

students explaining their ideas and drawing on previous experiences work together to help make sense of these new learning contexts (Barwell, 2008).

The language of math was chosen to be a weekly topic early in the course (week 2 of 15) to help ensure the teachers realized the complexity of math language for their MLL students. Carter and Quinnell's (2012) article does well to explain the nuances of mathematical language, including both lexical and syntactic features. Hoffert (2009) presents the challenges of teaching mathematics to MLLs followed by strategies and examples of the rewards of instructing this content area to these learners. This latter article was additionally selected because it raises the question on whether math truly is a 'universal' language, with the introduction to the article presenting the reader with an algebra problem in Farsi and asking the reader to solve it. This example and the remainder of the article challenges teachers' perceptions on whether math is a 'universal' language, as the common misconception is that anyone, regardless of language and culture, is able to understand and succeed in an academic math classroom without the necessity for concurrent linguistic support. This article by Hoffert (2009) additionally provides practical teaching strategies specific to support English language acquisition concurrent to academic math content, as well as concrete examples (with student work samples) of how such strategies can be carried out in the classroom.

Teacher Reflections

Following completion of the week's readings, many of the 58 participating teachers recognized the complexity of the academic language of math and the challenges MLLs face in acquiring this specialized language; however, there were a range of reflections provided, including those who acknowledged the challenges but made no further recommendation of how

they will change their teaching to better support their students, to those who put themselves in their students' position, recognized how confusing and difficult it must be, and then further explained how they will change their classroom practice. Examples of these reflections are included below from teachers on their learning from this week's topic and assigned readings, beginning with the themes below of 'The Academic Language of Math and "Is Math a Universal Language?"'

The Academic Language of Math and "Is Math a Universal Language?"

Teachers were asked to consider whether math is in actuality a universal language and to explore further how challenging the academic language of math can be for their MLLs in particular. Laura[52] recognized the importance of the above discussion and, referencing both readings for the week (Carter & Quinnell, 2012; Hoffert, 2009), provided comments on her raised awareness of how math does not transcend language and that knowledge of this is necessary to improve student learning:

> Upon finishing the articles I felt like I was given direction on how to help students with difficulties in math. The language of math is an interesting topic particularly because we do not use the two words in the same sentence. Unfortunately, content is often taught in isolation and connections between math and language are regularly missed.

Her choice of phrase "I was given new direction" explicitly shows where she has gained a new perspective in how she can better assist her MLLs. In addition to recognizing the inconsistency between math and language, she acknowledged that math content is treated very differently than

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[52] Laura was an elementary teacher serving as a math specialist at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual English speaker in the age range of 30-39 years old. Originally from the US mainland, Laura has a Bachelor of Education degree specializing in the Elementary years and at the time of course participation had taught at her current grade level for three years and had 16 years of teaching experience. She noted having no prior education in teaching MLLs before joining this course.

more commonly-considered 'linguistically dense' subjects, such as Language Arts or Social Studies, and she began to recognize both the significant level of language needed to succeed in math and that this must be specifically addressed. One example of this is the use of passive voice versus active voice. An additional reading for the week by Carter and Quinnell (2012) discussed the prevalent use of and the important differences between passive and active voice[53] and their effect on MLLs' understanding. Laura continued her above discussion post with: "I gleaned several insights from the article [(Carter & Quinnell, 2012)]….there exists passive and active language. At this point the light bulb went off. Passive versus active doesn't mean much to someone who understands [the] language." The metaphor of a light bulb going off signals a change in her previous thinking. She continued later in this section of her post by determining that "students who do not know the language struggle more with a problem that does not directly present the information," such as when using passive voice. Laura concluded that "suffice it to say it might be beneficial for teachers to attempt to do a math problem in a foreign language with minimal help to gain a better understanding of what our students are up against." Though not prompted in the required discussion questions, she put herself in her students' position of being challenged in the math classroom predominantly by linguistic needs and showing a critical reflection and new awareness of some of the challenges her students face related to language. She also provided a recommendation for something that could be done in a PD session to help teachers understand the challenges MLLs face understanding and acquiring academic language.[54]

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[53] Passive voice is abstract and impersonal and word order is affected, where the noun and the verb are reversed; for example, "the difference in the ages of two students is six years" (passive) versus "Sandra is six years older than Peter" (active) (Carter & Quinell, 2012, p. 6).

[54] Laura's comment here additionally recognized that PD should include not only pedagogy but also a focus on MLLs as students and individuals; for example, raised awareness on the teachers' part of their students' experiences moving from their home country, their arrival in the US and efforts to acclimate, their current home situation, how they experience school on a daily basis and in particular in an unfamiliar language, and so on.

Julie[55] explained how this week's topic and readings helped her to carefully reflect on how difficult it must be for her students in their position, including moving to a new country with a new language and being required to communicate daily in that language in order to achieve academic success:

This week we read two very interesting articles on mathematical language and it made me reflect carefully on what it is like for my ELL students to be in my class. I have a newfound respect for them and will now be much more conscious of their struggle as students learning both how to do math problems and how to understand the new language that surrounds them. The second article in particular was eye-opening for me, because I never really thought about all the different ways words are used in math and how confusing it must be for someone not familiar with our slang and multiple-meaning words to approach word problems.

Julie described her new learning as "eye-opening" and said that she had a "newfound respect" for her students and the regular challenges they face in learning academic content in an as yet unfamiliar language. Not only did Julie's understanding of her students' challenges improve, but she also showed how this new thinking has influenced her classroom practice (e.g., when she used the phrase "I…will now"), and thus demonstrated newfound awareness and learning. Like Laura above, Julie showed she took time to reflect on how she would feel in her students' situation and how much of a "struggle" it would be. She concluded by stating, rather than making assumptions that math is simply universal, that it is important and necessary for her to

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[55] Julie was an elementary teacher at the time of participating in the *RC-Math* course. She identified herself as multi-racial and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawai'i, Julie has a Master of Education degree specializing in the Elementary years and at the time of course participation had taught at her current grade level for one year and had two years of total teaching experience. She noted having in-service teaching experience with MLLs ("was part-time ELL teacher for 1 year") before joining this course.

remember these challenges and what it might feel like if she were in their position whenever she is working with her MLL students.

Like Julie, Emily[56] also noted her surprise at how challenging the academic language of math can be for her MLLs, and continued to describe how this new learning will transform her teaching practice; that is, by incorporating what she has learned from this week in the course into teaching:

> This week, my eyes were opened to just how complex math language can be, things I would never have noticed if I wasn't told explicitly. Consequently, I am paying more attention to these things when I teach and applying suggesting techniques and strategies to assist my students in better understanding math language….I have begun to increase a focus on the vocabulary of math in my classroom as suggested by this week's readings. I have begun teaching math vocabulary explicitly, just like I do in language arts class.

Emily has changed how she teaches her students by constantly being aware of when challenges with academic language can and do appear in her lessons, and subsequently is putting in practice strategies that will better help her students learn. She additionally noted specific strategies she has begun using with her students:

> We play vocabulary games, and work with flash cards. We have also practiced identifying prepositions—because prepositions play an important role in understanding a mathematical situation. We have begun to practice decomposing

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[56] Emily was an elementary special education teacher at the time of participating in the *RC-Math* course. She is of Japanese ethnicity and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawai'i, Emily has a Bachelor of Education degree specializing in Special Education and at the time of course participation had taught at her current grade level for two years and had two years of teaching experience. She had no prior education in teaching MLLs before joining this course.

sentences both in math and language arts—identifying all parts of speech in the sentence so that we can better understand *what* a problem is asking for.

Emily described these strategies she has begun using with her students to explicitly teach mathematics vocabulary in the same manner she had already been doing in her language arts class so as to better help her students access the curriculum.

In sum, Laura, Julie, and Emily came to realize that math is in fact not a universal language but is instead highly contextualized; that is, these teachers became aware of how math does not transcend language but instead that math and language should be taught simultaneously rather than in isolation. They also recognized how important it is to be cautious about having prior assumptions about math and language ability, and additionally put themselves in their students' position and noted the potential frustrations and uncertainty that can be experienced when trying to solve a word problem in an as yet unfamiliar language. While all related to the same content, these three teachers voluntarily and self-selected to share how much they are thinking beyond their learning to various levels of implementation in practice; that is, the teachers seemed to experience a range of reflection coupled with thoughts or, of actual, changes to practice: for example, Laura noted being "given new direction", Julie cited how she "will now be much more conscious" of her students' challenges, and Emily shared tangible examples of strategies she has recently begun to use in her classroom based on her participation in this week of the course.

Sarah[57] first explained how she realizes math is not a 'universal language' by first providing a recent example from working with a multilingual student:

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[57] Sarah was an elementary teacher at the time of participating in the *RC-Math* course. She is of Japanese ethnicity and a monolingual English speaker in the age range of 30-39 years old. Originally from Hawaiʻi, Sarah has a Master of Education degree specializing in the Elementary years and at the time of course participation had taught at her

Math is definitely its own language. Even if the words are English, interpreting and making sense of them takes specific strategies. I was working with one of my ELL students on a word problem and he questioned me about the word "least." This particular student moved here from the Philippines last year and is proficient in math computations. I really had to step back and think when he asked me that question. I was honestly thinking, "How can he not know what the word 'least' means?"

While not providing immediate details here in her summary on how she will help her student understand math word problems, she addressed this in her discussion post:

To improve communication and understanding among my ELL students in math, I would think about using the strategy of deconstruction discussed in [Carter & Quinnell (2012)]. It says to break down word problems by identifying nouns, verbs, and prepositions to help the students figure out how to solve a problem. This way, we are linking reading and math rather than teaching them separately.

In using such a strategy, Sarah used moments like that above—where her student may not know a word important to solving the problem—as an opportunity for further learning. It additionally raised her awareness that time spent in the United States does not necessarily equate to an understanding of English needed to succeed in the academic math classroom.

After addressing the required topics (above), Sarah provided an additional reflection on how what she learned from this week's content has changed how she approached working with MLLs; in particular, on her not knowing her students' backgrounds, including their academic knowledge and previous experience in education. In addition to addressing the summary prompt for this week related to the academic language of math, Sarah continued on

current grade level for one year and had nine years of teaching experience. She had no prior education in teaching MLLs before joining this course.

to share her thoughts on the optional topic related to the Case Study materials; this included

her reflecting on her experience completing the first Case Study[58] assignment: a profile[59] of

two-to-three MLL students[60] she has selected to tutor over an 8-week period using a protocol

created for and used as a part of this *RC-Math* course. Through the completion of this

assignment, Sarah reflected that:

> When doing my Case Study Profiles this week, I learned a lot about my ELL
>
> students. The things I learned will definitely help me work with them. Our ELL
>
> students are pulled out for services so I honestly never felt the need for this
>
> information. But now that I do know, it gives me more insight to the learning of these
>
> students, including what they have learned, how they learned, how they learn at
>
> home, and so on.

While not a requirement of the summary post this week, Sarah chose to note how she has

learned more about her students in the process and has a better understanding of where her

students come from and thus better provide for their education. In stating honestly that she

had originally "never felt the need for this information," she changed her thinking and

understood the important role this information can play in how she both works with and

teaches her MLLs. Sarah's learning is additionally reaching a more transformative

understanding, as shown through her response to a colleague in the discussion forums:

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[58] The 8-week Case Study and its related assignments and teacher-participant reflections are not included in their entirety in this dissertation due to space; however, the Final Overall Reflections included in Chapter 6 reference the case study and provide an introduction to the learning experienced by the teachers.

[59] This profile included a description of each MLL student and included the following information: (a) student's family; (b) ethnic background, cultural background; (c) first language, home language; (d) educational background, grade, number of years in school; (e) any specific learning difficulties/disabilities; (f) reading ability; and, (g) pre-test results (which could include either/both formal and informal assessments, such as statewide test results [if any], ELL placement test results, attendance records, classroom observations, and writing samples).

[60] While details of the Case Study are not included in this dissertation due to space, an introduction is provided in Chapter 6 to better contextualize teacher-participant reflection.

Hi Rachel! I completely agree that we cannot assume that a student understands "math language" just because he/she is proficient at conversational English. One of my case study students is a prime example. He can communicate very well but did not meet proficiency on the HSA for Reading or Math, which really surprised me. I think for that reason alone that he will make a good case study for me. Thanks for sharing! Sarah

The student that Sarah has chosen to work with in the 8-week Case Study is the same student she commented on above, and shows she is in the process of applying what she has been learning—a combination of critical reflection, increased consciousness, and a better understanding of theories and pedagogical strategies in teaching MLL—into practice. Thus, from engaging in the readings and discussions during this week of the course, Sarah has learned a lot about the challenges her students face regarding math language, as well as the general distinction between BICS and CALP. Through these experiences and working with him on a word problem, she "learned a lot about" her student and transformed her thinking into action; that is, selecting this student in particular to work with during the 8-week case study.[61]

BICS and CALP

As described in Chapter 2, there is a distinction made between basic interpersonal communicative skills (BICS) and cognitive academic language proficiency (CALP). This distinction (first proposed by Cummins, 1979) was made to provide teachers with a better understanding of the time it can take to acquire proficiency in a new language. During this week of the PD course there was no emphasis made in particular to the importance of

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[61] Sarah's experiences in subsequently working with her case study student are further described in her week 15 Final Overall Reflection, included in Chapter 6.

understanding BICS and CALP during this week of the course in the provided discussion questions. However, many participants took self-notice of two particular sentences in the 8-page teacher-accessible article *Mathematics: The Universal Language?* (Hoffert, 2009); these two sentences briefly explain the concept of BICS and CALP:

> Social language development occurs within a year or two, while academic language, necessary to succeed in a mathematics class, often takes four to seven years to acquire (Cummins, 1999). Although some students may be able to carry on a conversation and communicate effectively, they are not necessarily capable of comprehending the language—both English and the mathematical language—needed to complete a mathematics course. (p. 132)

Taking it upon themselves to realize this is an important concept for all teachers to know, despite such a brief except, many participants noted in their discussion posts their now-realization of how conversation ability does not necessarily correlate to an understanding of math language; as Rachel[62] summarized, "we cannot assume that because a student can communicate conversationally he or she understands the academic language specific to math fundamentals." Sally[63] also noted this brief section about BICS/CALP by saying: "The article [Hoffert (2009)] made me realize that just because a student can carry on a thoughtful conversation with ease with me does not mean they have a good grasp of academic

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[62] Rachel was an intermediate school teacher at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual English speaker in the age range of 40-49 years old. Originally from the US mainland, Rachel has a Bachelor of Education degree specializing in the Secondary Education and at the time of course participation had taught at her current grade level for 2.5 years and had 2.5 years of teaching experience. She noted her prior education for teaching MLLs as being: "college course: Multicultural Education; ELL student teaching (1 semester); SIOP workshop (3 days); WIDA workshop (4 days) before joining this course."

[63] Sally was an intermediate school teacher serving at the time of participating in the *RC-Math* course. She is of Japanese ethnicity and a monolingual English speaker in the age range of 40-49 years old. Originally from Hawaiʻi, Sally has a Bachelor of Education degree specializing in the Secondary Education and at the time of course participation had taught at her current grade level for two years and had 11 years of teaching experience. She had no prior education in teaching MLLs before joining this course.

language." Sally's comment centered around her choice of words "made me realize," after which she shared her new transformative learning experience by writing:

> I have actually made the mistake of thinking a student may have been ready to exit out of my ELL math class because he/she could carry on a normal and lengthy conversation with me, without an accent, very easily. But now I am going to be more conscientious about that.

By recognizing her "mistake of thinking," Sally then changed her previous perception to how she will begin to be more aware of this need for her students. She said she would ensure they receive a strong education focused on academic language instead of assuming linguistic ability based on everyday conversations.

In summary, Rachel and Sally recognized from a short, two-sentence description in Hoffert (2009) the distinction between their students' basic interpersonal communication skills (BICS) and cognitive academic language proficiency (CALP). This brief reference showed that a number of teachers in the PD course were ready to go beyond the BICS/CALP dichotomy to further recognize a more nuanced understanding of how conversational language fluency can be leveraged in academic discussions and how their students still need to learn the more registered, discipline-specific academic language of mathematics.[64]

Participation without Evident Transformation

While the majority of teachers recognized the challenges in learning academic math language for their students and that math is not a 'universal language', not all teachers showed a transformation of learning as evidenced in their discussion posts and summary

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[64] Inclusion of resources and opportunities for reflection and discussion on the topic of 'conversational' and 'academic' language—or what Bunch (2006) refers to as the 'language of idea' and 'language of display'—would be important additions in future PD for in-service teachers of MLLs.

reflections during this week of the course; that is, some teachers met the requirements for the week by factually answering the discussion questions but they did not go so far as to note in their reflections personal or professional connections to what they do currently in the classroom. In other words, the teacher did not choose to take their reflection a step further, thinking about how they would change current practice and/or what they plan to put into practice in their own classrooms. For example, in response to the first discussion question, Elisa[65] stated:

> Math is not a universal language. It varies from country to country with its own syntax, grammar, and rules. As was pointed out in the articles, math has its own vocabulary words. There are technical terms specific to mathematics, and some terms have meanings different from how they are used in everyday conversations.

While confirming her understanding of this week's topic, there is no evidence here in either word choice or content that suggests how this knowledge will help her and her students as she teaches mathematics to MLLs on a daily basis, nor does she extend her thinking to consider relevant teaching experiences she has experienced in the past in her classroom. In direct response to the second required discussion question "What are some ways that you can improve communication (and understanding) for the ELLs in your classroom?" Elisa listed examples, such as:

- Have the more proficient students explain difficult words or concepts to the less proficient students (in their native language).

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[65] Elisa was a high school ELL teacher at the time of participating in the *RC-Math* course. She is Chinese and a bilingual speaker of Chinese (Mandarin) and English in the age range of 50-59 years old. Born and raised outside the US, Elisa's highest education completed is a Bachelor of Science degree and at the time of course participation had taught at her current grade level for 12.5 years and had 22 years of teaching experience. She had participated in several short-term PD courses prior to joining this course—*Writing in Mathematics for ELLs* and *AVID for ELLs*—and had received a TESOL certification.

- Provide examples with illustrations or realia.

- Point out vocabulary words, syntax and/or spelling that might be a source of confusion.

- Check for understanding by asking students questions about the concept I want them to master.

- Post non-examples or errors I found in the students' work and have them tell me what's wrong with those answers.

- Post the mathematical terms on the wall and refer to them frequently.

While Elisa did well to answer the question for the week, unlike her peers, however, she does not seem to be reflecting on how she might consider putting these into practice in her classroom or relating it to experiences she has had with her students; instead, she lists ideas as they are provided in the readings. It is difficult to know from this submission whether these are new ideas or whether she has heard of them before but has simply not yet implemented them, or whether they are being listed to meet the requirements of the course and that there may not be a plan to go a step further to try putting them into practice. However, although there is no comment here of Elisa's change in her learning, it is not possible to conclude that she has not transformed her thinking and practice. Her acceptance of these ideas answered the second required discussion question and, despite it being unclear whether her actions have changed, she does well to describe and demonstrate her knowledge of what the readings were about.

Like Elisa, Diana[66] was also a high school math teacher with MLLs in her classes. Unlike Elisa, though, Diana shared her belief that math is in fact a universal language:

When I first began teaching 15 years ago I answered this question any time a student would tell me that they didn't speak the language. I would explain that math was the common language! Unlike many languages that conjugate differently or have to know if things are masculine or famine. Math is the one language that to add means to add! While the vocabulary may be challenging I have found that one student in my case study has demonstrated that he can successfully "do" the operation written in front of him.

Here Diana exhibited no change in thinking or consideration of alternative perspectives based on this week's readings and feedback from her peers and maintained her understandings she has held for at least her entire teaching career of 15 years. Of all participants, Diana was the only teacher who remained fixed in her previous thinking, while also not providing any contrasts of opinion to what she read in the weekly readings.

In response to the second question of ways to improve communication and understanding for her MLLs, Diana noted:

I have had student create Spanish/English & Portuguese/English math dictionaries. This provides students proficient in another language to share their skill of English and their first language. The math dictionaries are accessible to all students.

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[66] Diana was a high school teacher at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual speaker of English in the age range of 30-39 years old. Originally from the US mainland, Diana's highest education completed is an M.B.A. and at the time of course participation had taught at her current grade level for 14 years and had 15 years of teaching experience. She had participated in one PD course prior to joining this course ("SIOP").

Without specific prompting in the required discussion question to focus on her students using their first language to support their learning, Diana shared how she already uses this pedagogical strategy and the natural knowledge of her students in some form to support their math learning.[67]

Discussion

In this chapter, the majority of teachers demonstrated how they both learned and critically reflected on their current teaching practices. Many teachers additionally explained how what they had learned may be used in the classroom and thus impacting their teaching and learning in a positive way. Through, for example, a "critical reflection of assumptions," "planning a course of action," acquiring knowledge and skills for implementing one's plan," and "building competence and self-confidence in new roles" (Mezirow, 2009, p. 94), teachers were able to additionally experience transformative learning; that is, when teachers have the opportunity to connect theory and practice and additionally be supported through an environment allowing for critical reflection, teachers can impact their own decisions to take action and change how they teach their MLLs based on this new learning. The various learning experiences of the teachers during this week of the course will be discussed in the following section.

While not all teachers appeared to have experienced a transformation in learning, the majority came to recognize the challenges their students face in acquiring academic math language, and how these linguistic challenges in turn directly affect how well their MLLs understand the math content. As noted by Halliday (1978), the "mathematical register" includes 'everyday' language and specialized language, both of which appear in the academic

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[67] The topic of first language use in the classroom will be discussed further in Chapter 5, including further reflections by Diana.

mathematics classroom. It is important for teachers to know about the complexity of this language and how an understanding of this language can better help their MLLs succeed (Bunch, 2013).Through participation in week 2 of the *RC-Math* course, teachers came to realize how complex this language truly is for their multilingual learners. They additionally benefited from what Bunch (2013) calls 'pedagogical *language* knowledge', which is the "knowledge of language *directly related to disciplinary teaching and learning and situated in the particular (and multiple) contexts in which teaching and learning take place*" (original italics, p. 307). Through reading Carter and Quinnell (2012) and Hoffert (2009), teachers were able to more critically reflect on their current teaching methods and to consider and ideally change their pedagogical practices when teaching mathematics to MLLs. In promoting and supporting the notion of 'linguistically responsive teachers' (Lucas et al., 2008), the participants became more aware of the vocabulary, grammar, and semantics used in mathematics.

More specifically, there were varying experiences of awareness-raising and transformation on the part of the teachers. Laura and Julie cited their new learning and raised awareness about the complexities of math language for their students and the challenges their MLLs face, including choosing to put themselves in their students' positions as math learners in an as-yet unfamiliar language. However, they did not share here any specific experiences or examples of their transformative learning, which specifically involves not only critical reflection but also evidence of praxis (putting learning into action). For example, while Julie noted that she now had a new respect for her MLLs and would be much more conscious of their struggle as they work to acquire the new language of English, there is not specific, self-reported reference mentioned here to how she will (or may have already started to) change

her classroom practice. In contrast, Emily showed evidence of reflection followed by a transformation of perspective, first in the challenges her MLL students face learning the academic language of math, and then when she explicitly took it upon herself to share how this new learning had already begun to impact her classroom practice; that is, in her noting specific examples of strategies she has started using, such as trying out vocabulary games and flash cards with her students. Through putting her learning into practice, she had taken steps towards changing her understandings and practices for the long-term.

For Sarah, she initially shared that she was working with one of her MLL students on a math word problem and the student noted that he did not know the meaning of the word "least". In completing the readings for this week of the course, she came to realize that it is important for her to identify the complexities of the 'mathematical register' to better help her students know how to solve a problem, including words crucial for solving a math word problem such as the term "least". In responding to a peer's discussion post, she explained how she realized that assumptions cannot be made about a student's math understanding based on their conversational English abilities, after when she described how his social language was very good but he struggled with academic reading and math. She subsequently noted how she had selected this particular student to work with as part of the required 8-week Case Study involving at minimum bi-weekly tutoring sessions related to solving math word problems. By selecting this student and thus learning more about his background, Sarah found that she learned information about her student that will help her work with them. She additionally noted how the fact that her students were pulled out for services led her to not feel the need to have a detailed understanding of her MLLs' prior education, learning experiences, current abilities, and so on, that was required information to include in the first

Case Study assignment in the form of her MLLs' student profiles. In this week of the course she recognized that this gave her more insight into her students, both as learners and as individuals.

In sum, through the readings for this week, the discussion questions, learning from colleagues' forums posts, reflective summary post, and selecting a case study student, Sarah explained how her learning this week had transformed her thinking and actions. She had experienced, for example, "a critical assessment of assumptions" (Mezirow, 2009, p. 94) in the form of the example she provides of her student from the Philippines asking the meaning of "least", and how she had never felt the need to know any extra background information about her students because they "are pulled out for services." She additionally "plan[ned] a course of action" (Mezirow, 2009, p. 94) in choosing this student to be a part of her 8-week Case Study while additionally selecting strategies from the readings that she would like to use (e.g., "break[ing] down word problems by identifying nouns, verbs, and prepositions to help the students figure out how to solve a problem"). This teacher was also "acquiring knowledge and skills for implementing one's plan" through all of the above-mentioned activities for this week (i.e., completing the required readings; discussion questions; reading and commenting on colleagues' forums posts and the comments colleagues give of her post; the reflective summary post; and, selecting at least one case study student). As one final example that supports Sarah's transformative learning this week, she was "building competence and self-confidence in new roles" (Mezirow, 2009, p. 94); that is, as a teacher just starting her 8-week Case Study tutoring sessions with her selected MLL student, she reported already having learned a great deal about her MLL students and that, while only in the first week of putting it into practice, she was confidence what she had already learned

will be very helpful to her as she continued to work with her students. This building self-confidence and competence is an additional indication that transformative learning has taken place.

One teacher, Elisa[68], factually answered the discussion questions for the week based on the required readings, but did not go further to connect this topic with her current practice or how she provide more specific examples based on her current teaching context; that is, she didn't connect the list of strategies she selected with how she would like to put them into practice, or how she may have tried them in the past and now may want to adjust how she uses them with her students. Although all participants were not specifically asked in the prompts for this week to comment on specific changes to their learning, Elisa's colleagues took this step to in some way connect it to their prior experiences or current practice by citing an example. While there is an absence of her connecting reflection to practice and her individual teaching context in this week's postings, this does not necessarily mean her participation in the course for this week was without transformation. As there is no evidence here to say whether this is true or not—but rather simply the absence of a non-required statement about surprise (as the majority of her colleagues seemed to naturally share)—it is still possible she experienced transformative learning (i.e., connecting newly learned theory and critical reflection with a choice to change practice, followed by action). Regardless, she did complete the assignment as requested by describing and demonstrating that she understood the readings and could and did select points that held meaning for her.

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[68] Elisa's choice of using bullet points and factually answering the question only appears in the second discussion for this week only. The remainder of her answers for week 2 and all other weeks in the course were in sentence form and do well to represent reflective writing.

Diana was the only teacher-participant for this week who did not experience a change in thinking when considering whether math was indeed a universal language. While Diana had a similar background to Elisa in that they are both experienced high school math teachers of MLLs, there was a difference in their beliefs about the language of math. Diana seemed to experience no transformation of thinking based on her participation in the discussions, learning from colleagues' forums posts, and the reflective summary posts. However, while not a change in thinking, Diana seemed to show a knowledge of equitable and theoretically sound pedagogical strategies, in particular how she already incorporated her students' first languages in their learning through their creation of multilingual dictionaries (see Chapter 5 for further discussion).

Conclusion

This chapter addressed the topic of the academic language of math and its linguistic challenges for MLLs. Through engagement with readings, discussion submissions, peer feedback via a group forum, and reflective summaries, teachers came to understand the complexities of the academic language of math and that math is not a 'universal language'. Teacher-participants additionally showed their new understanding that math language should not be taught in isolation, but should instead be instructed in much the same as in the content areas of Language Arts or Social Studies. Participants also demonstrated a transformation of perspective by commenting on an increased critical awareness of the many challenges of the mathematical register, which was something they had never before considered. Teachers additionally provided evidence of new learning through a new understanding of the distinction between social and academic language (e.g., BICS and CALP). While there were few examples of this, there were teacher-participants who did well to factually answer the

required questions but did not seem to experience any evident transformation during participation during this second week of the course. However, the transformation of thinking experienced by the majority of teacher-participants is important given the widespread perception that the 'language' of math is universal and that MLLs should not experience linguistic challenges in math because of this.

Chapter 4 contributes to the scholarly literature as there is a lack of examples of teachers recognizing, many for the first time, the challenges that their MLL students face when trying to acquire the complex academic language that is regularly used in the content area of mathematics. This recognition is imperative to be included in training math teachers of MLLs (and teachers of all subjects) who then have increased awareness of these challenges and additionally pedagogical strategies to better support their students' learning. Teachers additionally shared their transformative learning, including how they connected the theories from the readings and the dialogue with peers to their either current or future plans for practice. Through such reflection and considerations on actions, teachers can make the decision to change how they work with their MLLs to ensure a more equitable education. Implications and recommendations for future study can be made from these comments, including recognition of the problems, possibilities, and advocacy for teacher education and, on a larger scale, the need to create local and national engaged language policies and practices towards equitable education for MLLs and in fact for *all* students (Davis & Phyak, in press); these points will be further addressed in Chapter 7.

Chapter 5 provides an additional example of an important topic to include in any PD course for teachers of MLLs: first language use in the classroom. Data and analyses are provided on this theme, followed by a discussion on how many of the teachers' learning for

this week of the course were particularly transformative and included ideological awareness

and becoming.

CHAPTER 5

FIRST LANGUAGE USE IN THE CLASSROOM

"This is one of those situations where I think and say to myself,

how did I not know that?'"

(Laura)

"I learned that there are important benefits of allowing or

encouraging students to use their native language in the classroom."

(Anne)

This chapter explores teacher-participants' transformative learning experiences and ideological becoming related to the topic of first language use in the classroom and an introduction to the pedagogical strategy of translanguaging. Chapter 5 begins with a brief introduction to the summary post assignment with a short explanation of required content and submission format. The next section describes the discussion post assignment, including an overview of the required readings, discussion questions, and method of submission; this is followed by a summary of the readings selected for this week's theme to help better situate the reader with the resources on which the teacher-participants are providing reflection. The main content of this chapter is then presented through the teachers' reflections further divided into these subthemes: first language use in the classroom; first language use already in practice; the impact of international experience and language learning; hesitation about first language use; participation without evident transformation; and, a counter-narrative. The chapter then

continues with a discussion section followed by concluding thoughts. The content of this chapter focuses on the teachers' ideological becoming and transformative learning experiences related to the topic of first language use in the classroom, collaboration, and an introduction to translanguaging. In all, selections from eleven[69] teachers' reflections on these topics have been included in this chapter.

Summary Posts

Identical in format to the summary posts described in Chapter 4—with the only exception of a change in question on which to reflect and submit—teachers again posted their summaries in the Drop Box tool in Laulima. Each teacher uploaded their submission as a Microsoft Word document that was only accessible to and read by the instructors (see Figure 3, Chapter 4 for a view of the Drop Box folder in Laulima). The directions for this summary topic were to "write your Week 7 Summary…focusing on what you learned about the power of collaboration for your ELL students. Additional reflections on the readings and discussions are encouraged after." As described in Chapter 4, this format allowed for an open-ended approach in submission content; that is, it allowed for any additional relevant reflections to be made on any topic related to teaching and working with MLLs that the participant wished to share. Additional topics were brought up which were not directly solicited or necessarily related to this week's summary topic of collaboration for their MLLs, and even went either beyond the additional topics for this week on first language use in the classroom and an introduction to translanguaging, or provided the teachers with a space to further reflect on these themes. As all summary content was only made available to and read by the instructors, it allowed an additional, more personal or 'private' space

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[69] The names of the eleven teachers whose reflections are included in this chapter are listed here: Laura, Anne, Kate, Layla, Helen, Caroline, Elena, Naomi, Nora, Diana, and Elisa.

for teachers to share their reflections they may, for whatever reason, not wish to share with their colleagues.

Discussion Posts

The Week 7 Discussion topic was titled "Collaborative Peer Groups and First Language Use." There were four required readings[70]: (1) a one-page summary[71] of the realities and myths of first language use in the classroom compiled by me citing significantly from Ofelia García (from Celic & Seltzer, 2011, pp. 1−6). This document briefly introduces the term translanguaging to the teacher-participants; (2) a six-page selection from the same document—*Translanguaging: A CUNY-NYSIEB Guide for Educators* by Celic and Seltzer (2011)—on multilingual collaborative work in the content areas (pp. 62−67) divided in three tiers of grade-level: elementary, middle, and high; (3) "Bridging the Language Barrier in Mathematics" (Winsor, 2008); and, (4) "The Home Language: An English Language Learner's Most Valuable Resource" (Genesee, 2012).

After completing these four readings, teachers were then asked to answer the following questions with a minimum of 150 words:

1. What are some of the benefits and challenges of collaboration (vs. individual work) for ELLs?

2. What are the advantages to comprehension (or disadvantages) of encouraging students to use their native language in the classroom?

3. Putting yourself in their slippers, how might it be helpful for your students to discuss math concepts in their first language? What strategies have you used or would you like to

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[70] Additional resources and questions were asked related to the *RC-Math* program and 8-week case study; these are not included in this dissertation.

[71] See Appendix 4 for the one-page summary of the myths and realities of "First Language Use in the Classroom – Translanguaging."

try?

The final requirement for this assignment was to read and reply to at least two of their colleagues' posts by adding to a 'thread' created below the initial post (see Figure 2 for an example).

Reading Selections

During week 7, the teachers read four required readings, two of which were sections taken from a document written by Celic and Seltzer (2011) entitled *Translanguaging: A CUNY-NYSIEB Guide for Educators*. This resource was selected because it provided a teacher-accessible introduction to the importance of teachers supporting the use of the students first language in the classroom; in particular, six pages (Celic & Seltzer, 2011, pp. 1−6) were chosen that were written by leading bilingual education scholar and author on first language use in the classroom and translanguaging, Ofelia García. This document was further reduced to a one-page introduction to several myths and realities in working with MLLs as well as briefly introducing the term translanguaging to the teacher-participants (see Appendix 4). This reduced version presents the following commonly believed myths followed by quotes from García explaining the realities: (1) Myth: Students speak the home language at home, the school language at school, and they don't mix; (2) Myth: Teachers can't teach academic content to students who use their first language in the classroom; (3) Translanguaging doesn't fit with the Common Core State Standards; (4) No student will benefit from translanguaging as a learning strategy; and, (5) I don't speak my students' languages so I can't encourage translanguaging in my classroom. The last bullet point asks the question "What is the difference between referring to students who are developing

English as emergent bilinguals, rather than English language learners?" followed by an explanation by García.

The *Translanguaging: A CUNY-NYSIEB Guide for Educators* also included sections on multilingual collaborative work in the content areas divided in three tiers of grade-level: elementary, middle, and high. To keep the amount of readings and resources required for reviewing during this week of the course manageable, six specific pages were selected for the teachers to read related directly to multilingual collaborative work in the content areas (Celic & Seltzer, 2011, pp. 62–67). These pages begin with an explanation of how teachers can think "more flexibly about how both English AND the home language could strategically be used during collaborative work in the content areas to support…bilingual students" (p. 62). Celic and Seltzer (2011) then provide tangible examples of how teachers can do this, including expanding on the following examples: (a) "brainstorm in any language and write in English" (p. 62), (b) "preview in [the] home language and then collaborate in any language" (p. 62), (c) "listen in English and discuss in any language" (p. 63), and so on.

The third reading required for week 7 of the course was "The Home Language: An English Language Learner's Most Valuable Resource" (Genesee, 2012). Genesee provides a brief introduction to home language use in the classroom as well as citing the importance of ensuring all students "in the US with high quality educational programs that promote competence in additional languages" (Genesee, 2012, n.p.). The final resource to be read was "Bridging the Language Barrier in Mathematics" (Winsor, 2008), a teacher-accessible article written for an audience of teachers. The author was a bilingual Spanish-English high school mathematics teacher of MLL students, teaching solely in English and without any prior knowledge in teaching English to MLLs. His goal was to "look at research regarding both

how one learns a new language and how one learns mathematics, thinking that [he] could use any similarities between the two bodies of research to come up with a teaching method" (Winsor, 2008, p. 373). Winsor's article explores this learning and provides examples of how he put into practice with his own students some of the multilingual strategies he learned, such as bilingual journals, bilingual word squares, and bilingual group work (with figures included in the article of actual student work samples). He additionally briefly addresses the question "What if you do not speak the language [of your students]?" (p. 377). These readings were intended to provide the teacher-participants with an introduction to the benefits of first language use in the classroom, collaboration, and an overview of translanguaging.

Teacher Reflections

Teacher-participants recognized the importance of first language use and translanguaging in the classroom as an important strategy and equitable pedagogical tool for supporting their MLLs' learning. There were, however, a range of reflections provided, including experiences of ideological becoming and transformative learning, where some teachers initially thought an English-only classroom was the best environment in which to educate their MLLs but then had their perspectives change after reading the articles assigned for that week of the PD course. There were also other examples of teachers who already encouraged the use of students' first languages and were appreciative of the confirmation during this week's discussion and readings that it was a very important resource in the education of MLLs. There were additional examples provided by teachers who had experience learning a language other than English and/or who had studied abroad and felt they could relate well to the question of "Putting yourself in their slippers, how might it be helpful for your students to discuss math concepts in their first language?" Further, there were a few teachers who didn't allow their students' first languages in

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their classroom and who also remained unsure about the benefits of any language other than English to aid learning. Finally, one teacher provided a critical reflection but simultaneous absence of ideological becoming and/or transformative learning related to the topic of first language use to support MLLs learning English; in particular, perceiving an English-only environment to be the only appropriate language for classroom use. Each of these examples will be presented here through excerpts from eleven teachers' reflections related to first language use in the classroom, collaboration, and an introduction to the pedagogical resource of translanguaging.

First Language Use in the Classroom

Teacher-participants provided comments and cited their initial raised awareness that students' languages are a valuable resource to classroom learning and that there are both academic and personal benefits of encouraging first language use. Laura[72] described her change in perspective and acceptance of the inclusion of first language use in her classroom: "I was not in favor of students using their first language during class. However, I realize now that by restricting the use of their first language I actually took away an important processing tool." By recognizing that "I realize now" the importance of first language use in the classroom, Laura has introduced an extremely valuable tool into her classroom and builds on the skills her MLLs bring with them to school. Her emphasis through the use of "actually" showed a raised awareness in how she previously thought and how she had changed her approach to students' use of their linguistic resources to help in their own learning. Laura's experienced here reflects the efforts of

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[72] Laura was an elementary teacher serving as a math specialist at the time of participating in the *Reading Comprehension in Math for English Language Learners* (*RC-Math*) course. She is Caucasian and a monolingual English speaker in the age range of 30-39 years old. Originally from the US mainland, Laura has a Bachelor of Education degree specializing in the Elementary years and at the time of course participation had taught at her current grade level for three years and had 16 years of teaching experience. She had no prior education in teaching MLLs before joining this course.

language education scholars who for decades have been advocating for and showing through

their own research the benefits of promoting students' linguistic resources (Bravo & Garcia,

2004; Cummins, 2010; Freedman & Ball, 2004; García, 2011; García & Flores, 2013; García &

Kleifgen, 2010).

A subtopic for this week's theme was the combination of translanguaging with

collaboration as playing a key role in improving mathematics content knowledge and language

proficiency simultaneously. Laura shared her critical engagement with this content, citing a

critically reflective example of how such opportunities for first language use and collaboration as

raised through this PD course can result in ideological becoming and transformative learning and

practice.

> This is one of those situations where I think and say to myself, "how did I not know
>
> that?" I think we forget that English is not the only important language….I have been
>
> very quick to stop students from talking in their native language with the rationale that
>
> we cannot understand what they are saying. Well, what about students not being able to
>
> understand their teacher? Should that same principle apply?

Like Laura's previous comments, this showed key phrases through the use of self-questioning,

such as "how did I not know that?" Her recognition and open acknowledgement in her post

described her initial actions toward the use of her MLLs' first languages in her classroom.

Through self-questioning, she again put herself in her students' position which provided the

opportunity for additional transformation of thinking and learning.

> After reading that article [(García, 2011)] I think very differently about student
>
> collaboration. I will encourage my students to speak in their native tongue. I cannot
>
> imagine going to a foreign place and trying to understand a second language. The

materials provided this week did an excellent job of providing specific strategies that

encourage students to use the language that is comfortable in order to work toward

understanding a language not so familiar.

Laura's insightful comments showed an increased awareness and ideological becoming in the

importance of first language use and collaboration for her MLLs. She juxtaposed her previous

understandings with this new learning, and clearly described how she now has tangible resources

and support for her students maintaining their first language in her classroom to support their

learning of academic math content in English.

Anne[73] first shared a reflection on the topic of first language use in the classroom during

a previous week[74] in the course, noting:

"[One] problem I encounter in my teaching is the persistent use of the first language. In

this case I develop a classroom management plan where students are forced to speak

English and only English in my class. I give productive punishments to violators of our

English rule—having them share a story they read [or] watch to the whole class orally."

Now in week 7 of the course, Anne responded to the second question—"What are the advantages

to comprehension (or disadvantages) of encouraging students to use their native language in the

classroom?—by beginning:

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[73] Anne was an elementary teacher at the time of participating in the *RC-Math* course. She is of Filipino ethnicity and a speaker of Ilokano, Tagalog, and English in the age range of 50-59 years old. Originally from outside the US, Anne has a Master of Arts degree specializing in teaching English and at the time of course participation had taught at her current grade level for 11 years and had 25 years of teaching experience. She listed her prior education in teaching MLLs before joining this course as the following: "PDE3 courses: ACE Reading for ELL; PDCP: Digital Storytelling; Online: Improving Reading in the Content Areas."

[74] This reflection was posted during week 6 of the 15-week course on the topic of "Problem-Solving, Comprehension Strategies, and Differentiation." This response was addressing the discussion question: "What are some of the challenges an ELL teacher faces in instruction that involves problem-solving and new language development? Reflect on personal experiences."

I am guilty of having [an] English only rule in my class with the thought of having my

ELL students learn English faster. After reading the assigned readings this week, I

thought of making important adjustment [sic] as far as my English only rule is concerned.

At first I thought that having [the] English only rule will eradicate division and

exclusivity in my classes and promote acceptance and tolerance instead.

Anne first noted her support of an English-only learning environment, and her use of the

descriptor "guilty" suggests in itself that she realized here that English-only is not an equitable

teaching strategy for MLLs. She continued her reflection by noting her original justification for

her English-only rule, in that it was intended to "eradicate division and exclusivity" and instead

"promote acceptance and tolerance". However, she explained that the readings for this week

gave her further insights into why an English-only environment in fact *promotes* "division and

exclusivity" and lead to her experience of ideological becoming. Anne did this by continuing on

to share her understanding of the advantages of supporting students' first languages in their

learning:

Yet, I learned that there are important benefits of allowing or encouraging students to use

their native language in the classroom. For one, it was found out that students will

progress at a quicker pace if the mother tongue is allowed in the classroom particularly in

translating difficult concepts in their mother tongue to make the connection

clearer. Allowing [the] mother tongue in the classroom will also develop the confidence

of the students. Added to this, using the first language will also help students increase

their vocabulary when such words are translated in their native tongue.

Here Anne explained that using their "mother tongue" would allow the students to not only learn

content, including vocabulary, "at a quicker pace", but also help the middle school students she

teaches become more confident (a finding also reflected in her peers' comments). Anne later explained how she had changed her classroom practice, noting that "After learning how the students' first language helps in developing English as a second language, I have modified my English-only rule by allowing my students to speak in their native tongue when in their cooperative learning groups." Anne did well to explain here her change in understanding and recognition that English monolingualism is in fact harmful to her MLL students rather than helpful; in sum, she transformed her understandings from having an English-only environment to now recognizing the significance of "making important adjustment[s]" to her English-only rule by now allowing her students to use their home languages during cooperative group-work.

Kate[75] described her experiences of ideological becoming and transformative learning related to the topic of first language use and its benefits for her MLLs as follows:

> In the past, I've never considered translanguage strategies, but after reading the articles, I can see how allowing bilingual students to read, write and talk in their native language would facilitate their learning growth. It just makes sense to me….I've never provided reading materials in foreign languages before to my bilingual students because I always just expected everything to be in English, so this week's readings definitely gave me some new, great ideas. The Word Squares vocabulary activity mentioned in the NCTM [Winsor, 2008] article was my favorite. The bilingual students wrote their mathematics vocabulary terms in both English and their native language. I think that is a great idea, but I'd never thought of it before.

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[75] Kate was an elementary teacher at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual English speaker in the age range of 40-49 years old. Originally from the US mainland, Kate has a Master of Education degree in Curriculum Studies and at the time of course participation had taught at her current grade level for eight years and had 15 years of teaching experience. She noted her prior education in teaching MLLs before joining this course as the following: "at least two ESL/ELL DOE PD classes under Joe Laturnea."

Kate used the words "I've never considered…" followed by "but after reading the articles, I can see…" to show how her perspective is changing to further show how she will modify her classroom practice, for example, through the use of multilingual Word Squares.

Layla[76] provided a summary of the importance of first language use in the education of her students:

> This week's readings opened my eyes to how important their home language is in learning English. We often try to emerge [sic] them entirely and tell them to only speak English in class. This does not help them. We need to have a good balance of both English and their native language so that they can take what they already know, express it in their own language, then match the English words that go with it.

While in the first-person plural ("we"), Layla grouped herself among teachers who try to immerse their students entirely in English and allowing no other language in the classroom. Layla showed her new learning and ideological becoming by using the term "opened my eyes," and in particular "how important their home language is in learning English." Although not speaking only for herself, she did experience a new recognition of needing "a good balance" between English and first language use. Layla continued on to provide a metaphor for translanguaging that shows her understanding of the benefits of this strategy for her MLLs:

> I thought of it like teaching someone how to swim. Emerging [sic] them entirely in a new language is like shoving someone who cannot swim in the deep end of the pool. There is no support or skills for them to use, therefore they may "drown". Translanguaging

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[76] Layla was an elementary teacher at the time of participating in the *RC-Math* course. She is of Japanese ethnicity and a monolingual English speaker in the age range of 30-39 years old. Originally from Hawaiʻi, Layla has a Bachelor of Arts degree specializing in psychology and at the time of course participation had taught at her current grade level for eight years and had eight years of teaching experience. She described her prior education in teaching MLLs before joining this course as being "SIOP (twice)."

provides "water wings" for students to help them become more comfortable before

swimming on their own. They can use the strategies of having a choice of doing part of

the lesson in their native language and part of the lesson in English to help guide them.

They can achieve more with the comfort and support of their home language.

Through the use of this metaphor and powerful choice of words, Layla here critically connected

first language use in the classroom as a life-or-death situation for her multilingual students. In

relating language restrictions with drowning, Layla does well to explain how critical first

language use and translanguaging strategies are for MLLs.[77]

First Language Use Already in Practice

While many participants experienced ideological becoming and transformative learning

related to the topic of first language use in supporting teaching MLLs—that is, these teachers

had never before known or realized that using the first language would be a resource for their

students but now they do—several teachers were aware of its benefits and already putting the

first language into practice for their multilingual students. For example, Helen[78] was already

supportive of her students using their first languages and, despite needing to remind herself that

her students "are helping each other when speaking in their native language," she still recognized

the benefits:

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[77] Layla was the only teacher-participant who chose to use a metaphor to explain her new, critical understandings throughout the course.

[78] Helen was an elementary teacher at the time of participating in the *RC-Math* course. She is Hawaiian/part-Hawaiian and a monolingual English speaker in the age range of 30-39 years old. Originally from Hawaiʻi, Helen has a Bachelor of Education degree specializing in elementary education and at the time of course participation had taught at her current grade level for less than one year and had five years of teaching experience. She described her prior education in teaching MLLs before joining this course as follows: "Teaching ELLs in a K-6 Classroom (online course); writing and ELLs; CCSS for English Language Arts and Literacy in the Content Areas: Writing ("class that focused on the 3 pieces of writing that all students need to write under CCSS, with an emphasis on teaching ELLs")."

In my classroom, I encourage my students to use their native language. I have students that speak Mandarin and Chuukese, these students sit next to each other in the class. At times I need to remind myself that they are helping each other when speaking in their native language….Putting myself in their slippers, I think that it will be helpful for my students to discuss math concepts in their first language. They will be able to understand what concepts that are being covered and then they can focus on translating it to English….A strategy that I would like to try is having my students write their language next to vocabulary words that are learned. I also want to continue using images to show my students what I am talking about, possibly having them add a column to their notes, to help them understand in their own language.

Helen already notes allowing her students' languages in the classroom but here also provides explicit examples of how she would like to further support her students' use of their first languages, including "having my students write their language next to vocabulary words that are learned" and "add[ing] a column to their notes, to help them understand in their own language."

Prior to participating in this week of the course, several teachers were already allowing their students to use their first languages in the classroom in various ways. While it may not be to the extent of comprehensive support and not without occasional self-doubt on its effectiveness (for example, Helen's comment to remind herself her students are helping each other when using their first language in an activity), these teachers have already been encouraging the use of their students' first language in positive ways in a whole class setting. This in turn creates an effective learning environment for their multilingual learners and demonstrates to all students that multilingual abilities are something to be proud of.

Impact of International Experience and Language Learning

Several teacher-participants responded to the topic for this week of the course by sharing their own language learning experiences (Elena) and stories travelling in non-English-speaking countries (Caroline and Naomi). Elena[79] shared her personal experience in learning Spanish as an adult and how she could both empathize with her students' challenges but also tangibly support their learning by "allowing them to discuss in their native language." She explained:

I love the idea from the CUNY[80] article of discussing content in [the] native language, then sharing out in English. I remember when I was taking Spanish classes in college, I was not fluent, but I was good at translating. I would translate the content into English, digest and form an opinion in English, then translate to share in Spanish. This article solidified for me that students do that same thing. Allowing them to discuss in their native language helps them really understand the content. By pairing non-English speakers with students of their same native language who are more proficient at English, they have a model with language support. And the more proficient student is still cultivating their native language. It's a win-win for all.

Elena described her positive understandings on first language use by beginning with the phrase "I love the idea" followed by her sharing a personal example of language learning. She additionally noted that the CUNY article for this week "solidified" for her that her students learn

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[79] Elena was an elementary teacher at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual English speaker in the age range of 30-39 years old. Originally from the US mainland, Elena has a Master of Education degree specializing in teaching and at the time of course participation had taught at her current grade level for 1.5 years and had ten years of teaching experience. She described her prior education in teaching MLLs before joining this course as follows: "GLAD; Focused Approach to ELD (Susana Dutro) training; Language Acquisition and Development; Historical and Legal Foundations for Educating ESOL Students; Strategies and Materials for Teaching Content and Literacy to ESOL Students (heavily focused on SIOP model); Fun to Teach ESL workshop."

[80] Select pages (pp. 62-67) from *Translanguaging: A CUNY-NYSIEB Guide for Educators* by Celic and Seltzer (2011).

much the same way that she does, and as such should be allowed to use their first language to help them acquire English. Elena further showed her learning and personal experience with her peers by sharing more details on this language learning experience with her colleague, Caroline, in response to her thread (see below).

While not having experienced learning an additional language, Caroline[81] was able to relate to challenges in being immersed in an unfamiliar language while travelling internationally:

> I have experienced not understanding another language when I traveled to foreign countries. I try to learn simple phrases but I get to ashamed to even say it aloud because I'm unsure if I sound correct. I know what it feels like to not understand another language and it's very challenging. It is sometimes even hard to infer what they are saying because both cultures have different background knowledge. I remember going to Japan and pointing at signs and pictures helped minimize the language differences.

Caroline also noted in an earlier part of her discussion post that "I find that allowing students to use their native language is a good thing. I have let students use their native language to speak with their peers about an assignment or I have them work together." As Caroline posted these above comments in her discussion post, they were made available for all course participants to read and respond to. Elena, who also explained (above) about her personal language learning experience in her own discussion post, responded to Caroline's reflection with the following:

> Hi Caroline, I agree with you that allowing students to use their native language helps them feel more comfortable in the classroom. I can relate with taking Spanish classes in

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[81] Caroline was a general classroom elementary teacher at the time of participating in the *RC-Math* course. She is Filipino and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawai'i, Caroline has a Bachelor of Education degree specializing in the elementary years and at the time of course participation had taught at her current grade level for one year and had four years of teaching experience. She had participated in one previous PD course called *Project GLAD*.

college for my minor. I was not fluent and my teacher and classmates knew it. I was terrified of saying the wrong thing! I'm usually a very bubbly and talkative person, but in those classes, I would shy away and try not to be noticed. Many of my ELL students are shy and do not want to speak, for fear of failure or ridicule. Helping them feel supported and comfortable is our first step to helping them learn! –Elena

Here Elena explained further about how self-conscious she became during her Spanish classes, despite being a "very bubbly and talkative person" when speaking English. She additionally made the observation that supporting her students using their first language while acquiring English "helps them feel more comfortable in the classroom" and that "helping [her students] feel supported and comfortable is our first step to helping them learn."

Like Caroline, Naomi[82] shared her understanding of her students' challenges acquiring English-only by relating it to her time visiting Japan:

Allowing students to use their native language has been very beneficial for my students. Because all of my students are newcomers, their English proficiency levels are low. When they are able to use their native language with English, they are able to build connections and activate prior knowledge. They are also able to get answers to questions they may have and peers are able to help them understand new concepts. When I went to Japan, I had a hard time communicating with people because I didn't understand or speak Japanese. After this experience, I was able to see how important it is for students to use their native languages in class. Allowing students to use their first language not only

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[82] Naomi was an intermediate school ELL teacher at the time of participating in the *RC-Math* course. She is of Japanese, Chinese, and Caucasian ethnicity and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawai'i, Naomi has a Bachelor of Arts degree specializing in Art and at the time of course participation had taught at her current grade level for four years and had five years of teaching experience. She had noted having the following prior education in teaching MLLs before joining this course: "college, in-services, workshops, and PD courses; 15 ESL PD credits."

helps them understand academic vocabulary and concepts more, but it also helps students feel more comfortable. When students learn a new word or concept, I have them tell me what it is in their first language. This way, they can make connections and hopefully retain the information better. In addition, I have students write notes in their first language next to the English notes to help them remember what they learned.

Through this international experience in a non-English environment, Naomi could relate to the importance of supporting her students' use of their first language to aid in their acquiring English in her classroom. She also provided tangible ways she already supported first language use with her students; for example, "when students learn a new word or concept, I have them tell me what it is in their first language" as a way to help them make further "connections" and better "retain the information." She additionally described how she had her "students write notes in their first language next to the English notes to help them remember what they learned." As this is a discussion post, colleagues read and responded to Naomi's reflection providing details of what they learned from the main post and/or points from the original reflection that were particularly meaningful to them. For example, Nora[83] responded to Naomi as follows: "[Y]our personal experiences help you to have empathy for your ELLs. We all should "walk in their slippers" like you did when you went to Japan. We can understand and relate to the comfort level of resorting to our home language while trying to learn a new language and culture." While Nora has not learned an additional language or international experience in countries where English isn't the dominant language, she could still relate to Naomi's experiences by recognizing how important

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[83] Nora was an elementary teacher at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual English speaker in the age range of 50-59 years old. Originally from Hawai'i, Nora has a Master of Arts degree specializing in teaching and at the time of course participation had taught at her current grade level for four years and had 18 years of teaching experience. She had noted having the "ACE Reading for ELLs" course as her prior education in teaching MLLs before joining *RC-Math*.

it is for a teacher to be able to empathize with her students' challenges and then work to improve the current situation.

Hesitation about First Language Use

Several teachers noted in their reflections a hesitancy to allow their students to use their first language in their classrooms. Diana[84] explained:

> I am torn on letting my students have discussions in their native language. I typically take it on a case by case basis. There have been times where the ELL student took advantage of using their native language. In class the student would never speak in English (small group or class discussions). When she and I would have conversations a friend would insist on translating for her. One day at lunch I heard her talking in English. My next steps became how to increase her comfort level and wean her of the translator friend. Currently, in my Algebra 1 class I will catch my students using Spanish. I do not speak Spanish but can tell if the conversation is on or off task. If it is on task I will sit down with them and listen. I will not understand what they are saying but I can determine my students' level of understanding of the mathematics being discussed. If the conversation is off topic, I redirect them to the task and ask that they use English.

Diana began by stating "I am torn" suggesting indecision on her part about whether or not she should allow her students to discuss school-related topics in their first language. While not completely against the idea—noting that "I typically take it on a case by case basis"—Diana noted specific examples where she found her students "took advantage" of being permitted to

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[84] Diana was a high school teacher at the time of participating in the *RC-Math* course. She is Caucasian and a monolingual English speaker in the age range of 30-39 years old. Originally from the US mainland, Diana has a Master of Business Administration degree and at the time of course participation had taught at her current grade level for 14 years and had 15 years of teaching experience. She noted her prior education in teaching MLLs before joining this course as "SIOP."

use their first language in the classroom. In the first example she notes about one student wanting to have a friend translate for her despite the teacher hearing this same student speaking English during a lunch break one day. In her second example, Diana described how she will "catch" her students using Spanish and explaining that if she determines they are off-task she will "ask that they use English" instead.

Counter-Narrative

While teachers experienced new learning or felt in some way that the use of students' first language could be a positive resource and provide strategies to further support MLLs' learning, one teacher believed that it would not be helpful for her students and provided her explanations (below).

Elisa[85] first reflected on the theme of first language use in the classroom and began by sharing her personal experience of learning English as an additional language (EAL) while a student in public school: "As an immigrant myself, I have firsthand experience of what it's like to have to learn the academic language of math in English. I see my students face the same challenge, too." While several other participants had also learned EAL as youth and found translanguaging to be beneficial, Elisa maintained a differing perspective on its benefits. Her post began with the topic of collaboration:

> The benefit of collaboration for ELLs is that those students who are unsure of how to solve a problem or don't understand the "English part of the math" can get help from their friends to solve the problem. The disadvantage is that if students are all low

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[85] Elisa was a high school ELL teacher at the time of participating in the *RC-Math* course. She is Chinese and a bilingual speaker of Chinese (Mandarin) and English in the age range of 50-59 years old. Born and raised outside the US, Elisa's highest education completed is a Bachelor of Science degree and at the time of course participation had taught at her current grade level for 12.5 years and had 22 years of teaching experience. She had participated in several short-term PD courses prior to joining this course—*Writing in Mathematics for ELLs* and *AVID for ELLs*—and had received a TESOL certification.

level ELL students (as in the case with most of my students), they have a hard time

writing/verbalizing their ideas in English.

Here Elisa shared her recognition that using the first langauge can help students learn the

math content in whatever language is most comfortable to them before transferring this

knowledge into the more unfamiliar language of English. However, Elisa continued:

Contrary to what the article "Multilingual Collaborative Work: Content Areas"

suggests, I don't think it's advantageous to have ELL students use their native

language in the classroom. I have a class where all but one student are from the

Philippines. The only time they feel there is a need to speak English is when they

have to respond to me. Other than that, they do not see the necessity to speak English

when they can understand each other in their vernacular. I strongly feel students

should be encouraged to use English in the classroom, especially because this might

be the only time/place they can practice English. The only instance when it might be

beneficial to allow students to speak in their home language is when one student

needs another student to interpret for him.

Elisa's belief that her students should speak only English is based on her perception that her

class may be "the only time/place they can practice English". She explained:

I feel if students already have a working knowledge of math in their native country,

it's important for them to focus on learning the English terms for those concepts. It

would be a waste of time and counterproductive to discuss the concepts in their first

language. From my experience with the Chinese students who have just immigrated

here, they usually have no problem competing with the regular students in math,

because they already have the math concepts and they just need to learn the English

vocabulary/syntax used in math. (There was no discussion using the first language because there was only one of them in the class.) On the other hand, I have students from other ethnic groups who are constantly "discussing" problems in their native language with their peers and adult tutors, but have not progressed much in either English or math.

Elisa emphasized the importance of her perception that it is "important for [her students] to focus on learning the English terms" if they already have a strong understanding of math in their first language. For her students who do not have as strong of a math background, Elisa found that their "'discussing' problems in their native language", even with peers and adult tutors, did not have a positive impact on their acquisition of either English or mathematics content.

Discussion

The majority of teachers in this chapter showed an understanding of the importance of first language use in the classroom, collaboration, and the pedagogical strategy of translanguaging. Many teachers additionally provided critical reflections on their current teaching practices and explained how what they had learned may be used in the classroom and thus impacting their teaching and learning in a positive way. The following sections discuss a number of key themes and how they may or may not be representative of ideological becoming and transformative learning: first language use in the classroom, first language use already in practice, impact of international experience and language learning, hesitation about first language use, participation without evident transformation, and a counter-narrative.

Experts in bilingual education and applied linguists support and promote the need for MLL education that includes using the students' home language as a resource in addition to learning the local language (García et al., 2011; García & Kleifgen, 2010). However, like many countries worldwide, the United States widely believes in the ideology that 'the more English, the better' and that the use of any other languages while learning English will adversely affect this process. Evidence of this ideology was noted by a number of teachers in this course; for example, "I have been very quick to stop students from talking in their native language with the rationale that we cannot understand what they are saying" (Laura), "I am guilty of having [an] English only rule in my class with the thought of having my ELL students learn English faster…[and] that having [the] English only rule will eradicate division and exclusivity in my classes and promote acceptance and tolerance instead" (Anne), and "I've never provided reading materials in foreign languages before to my bilingual students because I always just expected everything to be in English" (Kate). However, these teachers were able to become aware of and begin to change their previously unrecognized ideologies, resulting in what can be called 'ideological becoming' (Bakhtin, 1981). Laura came to realize that she was taking away an "important processing tool" when her students' linguistic resources are restricted. She then self-questioned "how did I not know that?" by juxtaposing her prior knowledge and language ideology with her new learning or experience of ideological becoming; that is, that her thinking changed after reading the articles for the week and that she would now encourage her students to use their home languages in their learning. Anne's ideological becoming was in her new realization of the importance of multilingualism permitted and supported in her classroom for her MLL students, including (but not limited to) students "progress[ing] at a quicker pace" when their

home languages were supported in the classroom, that it will increase her students' confidence, and that it will positively impact their vocabulary acquisition. Kate's new understanding of the ideology of monolingualism and its detriment to her students was evidenced in her comments that first language use was an idea she had never before considered, but now realizes the benefit for her students in facilitating their oral and literacy skills.

In contrast, Diana shared during this week of the course that she was hesitant to allow her students to use their native language to discuss in the classroom; however, it needs to be noted that her reflection here only includes oral/aural use of her students' home languages. In her posting cited in Chapter 4, Diana self-reported tangible examples of how she already used literacy strategies in practice, such as having her students create bilingual math dictionaries. While the reasons for her allowing some language skills in her class and hesitancy about others is not clear, her comments about her students speaking their first language in class suggest that she was not aware of the distinction between language used in everyday conversations and the academic language used in her high school math class (e.g., BICS and CALP), thus reflecting a possible underlying belief that all language is the same.

Long-established ideologies in education such as monolingualism of the dominant/national language can have a significant impact on teachers' personal and professional beliefs and classroom practice (Farr & Song, 2011, O'Brien, 2011). While many of the above teachers came to recognize and understand that providing an English-only environment for their students is actually detrimental and instead promotes education *in*equality, not all teacher-participants experienced this 'ideological becoming.' In particular, despite learning about the benefits of using the students' first language in their learning—and

explicitly mentioning that "as an immigrant myself, I have firsthand experience of what it's like to have to learn the academic language of math in English," one participating teacher experienced no change in her understanding of a monolingual ideology in education and thus had no impact on classroom practice. After reading the six-page article titled "Multilingual Collaborative Work: Content Areas" from *Translanguaging: A CUNY-NYSIEB Guide for Educators* (Celic & Seltzer, 2011), Elisa explicitly noted "I don't think it's advantageous to have ELL students use their native language in the classroom" and cites her current situation of students only using English "when they have to respond" to her, otherwise using "their vernacular." Elisa explained her thinking for the benefits of an English monolingual classroom because "this might be the only time/place they can practice English." She additionally cited her experience that Chinese students are able to understand the math concepts, they simply need to learn the "English vocabulary/syntax used in math," while her students "from other ethnic groups" use their first language often and have not progressed in their learning of either English or math.

While there is an important place for English in the mathematics classroom within the context of the United States, scholarly literature (García et al., 2011; García & Kleifgen, 2010) reports on student success when the students' first languages are used to support English acquisition, and students might be more motivated to learn English and include it in their learning if both languages were used. By insisting that "the only instance when it might be beneficial" as being student-to-student simultaneous interpretation limits all participating students' abilities to use their linguistic and cultural funds of knowledge to support their own learning.

Elisa's comments above on the differences between her Chinese students and those from "other ethnic groups" reflected the diversity of her classroom, which included students from across the Asia-Pacific region, where MLLs of various nationalities naturally had extremely varying experience in English language education, academic math content, and regular school attendance in general. It cannot be assumed, for example, that a student from an Asian country known for having high achievement in academic mathematics (as Elisa herself was) will have the same academic and linguistic background, resources, and funds of knowledge as a student from, for example, a small Pacific Island nation, nor can it be assumed that all students from China know math well. However (in)accurate this assumption may be based on Elisa previous comments, her insistence on maintaining English-only in her classroom suggests that she may assume all students can learn math in the same way (this will be discussed further in the following section).

Despite the evidence provided in the required readings and the experiences and perspectives provided by her peers, Elisa's reason for being more resistant to the idea of first language use in her classroom may be two-fold: (1) her position as a high school math teacher to entirely MLL students and the added pressure of time constraints and teaching rigorous content to prepare the students for high-stakes standardized assessments; and, (2) her self-reported lack of success in having her students work collaboratively. In regards to the first point, at the beginning of the PD course, all teachers were asked to complete a short survey, with one question asking participants to share their teaching experiences with K-12 MLLs. Elisa noted: "In the past 5 years, I've noticed the educational background of the students coming to the State has gotten lower and lower to the point where I had to use K-2 materials to teach the high school students" and in her introductory autobiography, she wrote:

My students have always been ELL students; however, in recent years, I've noticed the amount of formal education the newcomers are bringing with them has been minimal to none. I have a student who is already 14 years old but he doesn't even know how to write in his native language or count numbers. His older brother knows a little more than he does in that he can read and write in his native language, but he doesn't know his multiplication table and finds division quite challenging.

These challenges to meet the required secondary school education standards may have limited her willingness to take on new pedagogical strategies such as first language use. In regards to the second point on supporting her students to work collaboratively, Elisa explained in her summary post:

The articles we were asked to read for this week seem to suggest it's a good idea to have ELL students collaborate in group discussions, with special attention paid to having them use their native language. I have not been successful in getting students to work collaboratively. I've tried different groupings: same language groups and heterogeneous groupings both in language and abilities. When I group students together, they tend to socialize instead of staying on task. This is especially true if the students in the group all speak the same language. That's why I do not favor having students discuss math concepts in their first language….

Considering Elisa has a "Professional Diploma in Teaching English as a Second Language"[86] from the University of Hawaiʻi at Mānoa, 22 years of teaching experience, "students [who] have always been ELL students," as well as her own multilingual background, these factors

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[86] Elisa completed the 'Post-Baccalaureate Certificate in Secondary Education' program with a specialization in teaching English as an additional language. This program is offered through the College of Education at the University of Hawaiʻi at Mānoa (https://coe.hawaii.edu/sites/default/files/pdf/ESLProgramofStudy.pdf).

have not seemed to influence her personal and professional monolingual ideology. To explicitly state her position, Elisa concluded her summary reflection as follows:

> I feel, if the goal is to have students learn the academic language of math (in English), then we shouldn't be encouraging discussions in students' first language. Bilingual education that was introduced in California long time ago is no longer practiced because it doesn't work!

Elisa's reference here to California's anti-bilingual legislation in the form of Proposition 227 passed in 1998 reflects a monolingual ideology that has been well-endorsed in media coverage and by political leaders. Unfortunately voices and efforts which counter this ideology have not received as much vocal public support; for example, while there have been attempts to criticize Proposition 227 before it was enacted up until the present day, the common misperception is that MLLs should be taught with nearly all instruction in English (Hass & Gort, 2009) and through sheltered/structured English immersion programs before transferring into mainstream English-language classrooms. Thus, these experiences have influenced Elisa's decision to maintain her personal and professional ideology of monolingualism.

Conclusion

This chapter engaged the teacher-participants in a better understanding of the position of the dominant language ideology of English monolingualism and its negative impact on their MLL students' equitable education experience. Through this process, teacher-participants became aware of the importance of first language use in their teaching and the significance in promoting linguistic diversity in their schools. In seeing this diversity and language ability as a resource, teachers came to recognize that the predominant English-only

ideology promoted in large-scale policies are continuing to contribute to a deficit perspective

of students and in fact limiting their educational success. In sum, this critical reflexivity on

the part of the teachers-participants both "challenge[d] the dominant ideology that views

multilingual practices as deficient pedagogical practice and creates a transformative space for

[teachers of] multilingual learners to utilize existing linguistic…resources" (Davis & Phyak,

in press). This additional lack of ideological and pedagogical awareness on the part of the

teacher-participants also reflects an absence of equitable MLL pedagogy being provided in

pre-service teacher education programs as well as other in-service professional development

courses. This and other more critical courses of action are further discussed in Chapter 7.

The following chapter explores the Final Overall Reflections of six teacher-

participants who also had their reflections included in Chapter 4 and/or 5, further

documenting the teachers' ideological awareness and engagement and self-reported

transformative learning experiences over the full 15-weeks of the course.

CHAPTER 6

FINAL OVERALL REFLECTIONS

"I've always struggled with teaching ELL students, but

after this course, I finally feel that I have

strategies in order to help my students be successful in math."

(Sarah)

"I feel now that I know better, I can do better."

(Caroline)

Chapter 6 explores the teacher-participants' Final Overall Reflections (FORs), further

documenting their self-reported transformative learning experiences over the full 15-weeks of

the course. This chapter also provides and explores examples of ideological becoming during

participation in this professional development program in the more general context of teachers

recognizing their MLLs as intelligent students who want to succeed, but need support; this

support comes through MLL pedagogy provided by their teachers to help these students gain

confidence simultaneously with the acquisition of academic language and content. In particular,

this chapter addresses the second question that frames this study: "How do in-service teachers'

beliefs—including ideologies and practices—change during participation in a long-term

professional development course focused on strategies for teaching mathematics to multilingual

learners?" Five[87] teachers' FORs who additionally provided comments in Chapters 4 and/or 5 are

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[87] The names of the five teachers whose reflections are included in this chapter are listed here: Caroline, Carly, Julie, Melinda, and Sarah.

included in this chapter. These teachers represent diverse grade levels, prior education, urban/rural school district, as well as individual diversity, such as ethnicity, age range, and additional language abilities.

Final Overall Reflection: Description

The Final Overall Reflection is included in the final pages of the culminating portfolio which is submitted in week 15, the final week of the course. The following instructions are provided for the teacher-participants as guidelines for submission:

Final Overall Reflection (FOR)

After compiling and reviewing your Portfolio, please reflect on your overall experience throughout this course specifically related to the following points:

1. Improvement you have made in teaching ELL students

2. Your Case Study students' improvement

Then write your FOR showing thoughtful reflection and learning from beginning to end.

The FOR was required to be a minimum of 450 words and was awarded at most 5 out of the 20 points for each teacher's overall portfolio submission.

8-Week Case Study: Overview

One key component of the *RC-Math* course included an 8-week case study. While not a specific focus of this dissertation due to a limitation on space and not directly relevant to the selected two main questions that frame this study, the teachers included comments on their and their student(s)' experiences with the case study in their FORs. In order to better put the content of this chapter into context, a brief description of the case study will be provided here. The *RC-Math* syllabus explains the case study as follows:

C)   Case Study (30% of total grade):

You will do a Case Study implementing methods on 2-3 ELL students that you select over an 8-week intervention period. Your Case Study will consist of the following 6 Assignments:

<u>Important:</u> Parental consent must be obtained and a pseudonym (false name) used for each student.

1) Profiles of your selected ELL:
- Pseudonyms, stated as such: "Mary (pseudonym) is a Chuukese student …."
- Description of each student: grade, subject, language and cultural backgrounds, reading and math skills, etc.
- Pre-test results (both formal and informal assessments: e.g., SAT results, ELL placement test results, attendance records, classroom observations, and writing samples). Audio and video clips are welcomed

2) RC-Math Lesson Plan 1, stating and targeting a long-term instructional goal for your ELL students using a word problem-solving task

3) RC-Math Case Study Data Collection Plan, describing both summative and formative assessments/work samples that you will use to document growth in academic achievement. The plan should include both quantitative and qualitative data.

4) RC-Math Lesson Plan 2, targeting the same long-term instructional goal incorporating at least one technology strategy (e.g., a game or app to increase math fluency).

5) RC-Math Lesson Plan 3, targeting the same long-term instructional goal and using story-based literature to teach a math concept.

6) Pre-Post Case Study Data and Summary on ELL
- Progress notes on your ELL students (include sample protocols and weekly student data and graphs)
- Post-test results (both formal and informal assessments)
- At least 6 selected student work samples total (at least 2 pre and 2 post with a caption explaining growth)
- Summary of your ELL students' outcomes
- Lessons you learned from your Case Study

These six case study activities were completed in the following weeks of the course:

(1) profiles of the 2-3 selected MLL students (week 2);

(2) lesson plan 1 (week 4);

(3) data collection plan (week 5);

(4) lesson plan 2 (week 8);

(5) lesson plan 3 (week 10); and,

(6) pre-post case study data and summary on MLLs (week 14)

The main component of the 8-week case study, however, was to select two-to-three MLL students and ideally conduct 40 tutoring sessions over an 8-week period (coinciding with weeks' 5-13 of the *RC-Math* course). While 40 sessions were recommended—involving 30-minute sessions four times a week—30-minute sessions two-to-three times a week were accepted due to potential time constraints of the teachers and completing other course requirements. Although the details of the case study and included tutoring sessions[88] are not directly relevant to the content and focus of this dissertation, the act of conducting the weekly tutoring sessions—while simultaneously implementing the various strategies learning from the required weekly readings and online discussions with their colleagues in the Laulima course site—were highly relevant to the teachers and are present in their self-reported experiences of the case study here in their FORs.

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[88] The tutoring sessions included use of strategies from the *ACE Reading* program, such as repeated reading strategies (unison, echo, and independent reading to help build fluency skills), praise (no focus on errors in order to build self-efficacy), the Memory Game (used to help students learn and reinforce academic vocabulary, concepts, definitions, etc.), technology (apps available on computers or tablets to help students build math fluency and problem-solving skills), and audio/video self-modeling (feedforward; this is a short, error-free audio or video sample of the target skill showing and promoting the students' future success) (Hitchcock, 2014, n.p.). For formative assessment, the teachers used the *Reading Comprehension in Math for English Language Learners* Curriculum-Based Measure. Through watching training videos provided by the course creators and reading training materials, teachers became familiar with using the *RC-Math CBM Assessment* with their students in their tutoring sessions.

The teachers' Final Overall Reflections (FOR) are organized by theme, which include: (a) recognition of limited knowledge of MLL pedagogy before joining this course and then their knowledge of new strategies for teaching; (b) awareness of their students' experiences from their implementation of MLL pedagogy and recognition of the effects of the new strategies on their students' learning; (c) opinions of the PD course design and specific areas that aided their learning; (d) evidence of professional reflection and growth; and, (e) the continued application of learning to current and future students.

Knowledge of New Strategies for Teaching

Through participation in this PD course, teachers noted their significant learning of much-needed MLL pedagogical strategies. Carly[89] began her FOR by first describing how she used to teach her MLL students before participating in this course:

> Prior to this course I knew a very minimal amount of techniques to work with ELL
>
> students. In fact, most times I would differentiate instruction only by rereading
>
> instructions or simplifying worksheets. At that time, that was the best way I knew how to
>
> work with ELL students.

Carly provided examples of strategies commonly used by teachers who have received no training in teaching MLLs, such as simplifying the resources given to MLLs and rereading passages in an effort to better improve understanding. Her concluding sentence of this section that "that was the best way I knew how" showed she was trying to help her MLL students but didn't have any

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[89] Carly was an elementary teacher at the time of participating in the *RC-Math* course. Her ethnicity is Hawaiian/part-Hawaiian and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawaiʻi, Carly has a Bachelor of Education degree and at the time of course participation had taught at her current grade level for three years and ad three years of teaching experience. She had listed her prior MLL training as "ELL Culturally Responsive Sheltered Instruction" before joining this course.

training or prior knowledge related to MLL pedagogy by which her students could benefit. She continued:

> Now that I look back upon it, it wasn't the most effective technique. Luckily now I have an ample amount of resources, knowledge and training to be successful teaching ELL students in the future. Now that I have completed this course I have learned lots of new information and new techniques of how to effectively work with ELL students. Through the readings provided, I learned information about ELL students that I never knew before. Things such as how they learn best, difficulties that they come across being new to the States, ways to best provide them with new knowledge, and the importance of connecting their new language and culture to their native language. Now that I have gained all of this useful information, I have various useful techniques to use to make sure that I'm being successful with my ELL students.

Like Carly, Melinda[90] also began her FOR by sharing how she felt her abilities were in teaching MLLs both before the course and then following its completion:

> Prior to this course, I had taken a few ELL courses to help me support ELL students into my classroom. I had the basic strategies and techniques and it was working for me. However after taking this course, I was able to use new strategies that I had never even thought of using in my classroom.

While Melinda began by noting her prior participation in courses focused on MLL pedagogy and knowledge of basic skills and strategies in teaching language learners, she continued that she was

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[90] Melinda was a high school math teacher at the time of participating in the *RC-Math* course. She is of Japanese ethnicity and a bilingual Japanese-English speaker in the age range of 30-39 years old. Melinda has a Master of Education degree specializing in secondary mathematics and at the time of course participation had taught at her current grade level for seven years and had seven years of teaching experience. She had participated in the *ACE Reading* course (created and offered under a previous grant to the current *NB-ELL* grant and is the foundational program for the *RC-Math* course that is the foundation for this study) and also reported having attended "in-school workshops" as prior teacher training related to MLLs before joining this course.

able to gain new skills from this course; she additionally describes her learning in forthcoming sections.

Effects of the New Strategies on Students' Learning

Caroline[91] chose to begin her Final Overall Reflection by describing the benefits of the *RC-Math* course and 8-week case study for her students:

> The RC-Math program not only helped the ELL students in my classroom progress in reading comprehension but also built their confidence. For one student in my case study, I noticed how much he thought he could not do things because he did not understand English. Prior to implementing the program, this student often expressed "I can't do it" or "I don't understand" and they would give up without even trying. I feel having the one-on-one time equipped the student with the tools and strategies to succeed. The tutoring program showed the student that they can do and allowed the student to be successful. The student after participating in the program is now an active participant in the classroom. They share ideas, volunteer to demonstrate how to solve problems, and meets proficiency in problem solving. Although this course is over, I will continue to use the strategies and tutoring protocol with my students because of the many benefits the students gain from this program.

In providing this personal experience of working with this particular student over an 8-week case study and tutoring sessions[92], Caroline demonstrated how she had put into practice the strategies

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[91] Caroline was a general classroom elementary teacher at the time of participating in the *RC-Math* course. She is Filipino and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawaiʻi, Caroline has a Bachelor of Education degree specializing in the elementary years and at the time of course participation had taught at her current grade level for one year and had four years of teaching experience. She had participated in one previous PD course called *Project GLAD*.

[92] Caroline worked with two MLL students throughout the 8-week case study: "I spent 30 to 45 minutes with each student twice per week for 8 weeks. So the students spent at least 240 minutes during the program" (Caroline). This information was provided by each teacher participant in week 15 of the course through the completion and submission of a document titled the "RC-Math Case Study Implementation Debrief Survey" (this survey was not

and skills she learned in the *RC-Math* course related to multilingual learner pedagogy. It additionally shows how her student had consequently transformed their own learning; they had become confident, active participants in class, sharing ideas, readily volunteering their suggestions on how to solve a word problem, and succeeding in problem-solving where initially there were significant struggles.

Carly chose to share her experiences with her case study student, whom she first mentioned in her discussion on the content learned in week 2 of the *RC-Math* course (discussed in Chapter 4 of this dissertation). As was shown in Chapter 4, Carly described the challenges a teacher (and she herself) can feel without having adequate prior training when working with multilingual students: "I have a student who just came from the Philippines and I know nothing about him, his culture, what he already knows or how to teach him." While having this lack of knowledge, she noted how the content of the weekly readings provided her with skills for how she could begin bringing about change. Through these tangible strategies acquired in week 2 of the course (and others learned over the duration of the course), Carly now in week 15 summarized the progress she and her Filipino case study student have made:

> My case study student had made tremendous improvements over the past eight weeks. He increased his reading records level by three levels, he has made significant gains with math fluency and reasoning, and most importantly he has gained confidence in his reading fluency. These are all tremendously big gains for an ELL student who has just moved to the United States eight months ago. As a teacher it is very rewarding to see the

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graded and served only to provide important information helpful to include in, for example, grant reports). The first question in the survey asked: "How many ELL students did you serve during the course? Of these ELL students, please state the number in your Reading Comprehension in Math program and the number of hours/minutes you spent with each. E.g., Reading Comprehension in Math – 1 student (20 minutes x 3 times x 8 weeks = 480 minutes)" (Hitchcock & Gum, 2013, n.p.).

new confidence and gains my case study student has made. He is thriving in the

classroom and is much more comfortable adjusting to his new environment. I plan to

continue using the techniques that I learned in the Reading Comprehension in Math

course to see how much more he can improve by the end of the school year. I believe that

he will be able to exit the fourth grade near proficient.

Here Carly came to recognize—in particular through one-on-one time spent with her student

implementing the case study—the benefits of incorporating MLL pedagogy and the significant

positive impact it has had on her students' learning. Such confirmation of knowledge has

transformed her perceptions and teaching practice, resulting in her choosing to continue using

these strategies with future students.

Like her peers, Julie[93] cited an example of the positive effects this course had on her case

study student's learning:

Before the start of this case study, my chosen student, Avery, (pseudonym) could barely

read through a simple math problem, let alone know what to do to solve the problem.

Now, he knows what he needs to do when he reads a math problem. He understands the

importance of re-reading the passage closely for meaning before beginning to solve the

problem, and he now has specific steps he can take to solve these problems successfully.

He has made gains in all content areas, specifically math and reading. His confidence has

improved and he has a better attitude toward learning new things.

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[93] Julie was an elementary teacher at the time of participating in the *RC-Math* course. She identified herself as multi-racial and a monolingual English speaker in the age range of 20-29 years old. Originally from Hawaiʻi, Julie has a Master of Education degree specializing in the Elementary years and at the time of course participation had taught at her current grade level for one year and had two years of total teaching experience. She noted having in-service teaching experience with MLLs ("was part-time ELL teacher for 1 year") before joining this course.

Here Julie shared not only her case study student's academic growth, but also Avery's (pseudonym) increased confidence and more positive attitude in his own learning.

Sarah also explained her experiences with her case study students and the positive effects the new strategies have had on their learning:

> When one of my case study students passed the HSA on the 2nd round, I almost cried. I was so proud of him and what he accomplished. My other case study student did not pass but she made a huge gain, which also almost brought me to tears. I see how hard these students work and I am just so proud of them. It gives me such great satisfaction as a teacher to know that I could offer the help and guidance they needed in order to be successful.

Sarah shared her professional pride of her students' accomplishments, and her recognition that by putting into practice strategies centered on providing effective, equitable education for MLLs, her students could succeed and, in turn, encourage her to use such MLL pedagogy with her future students.

PD Course Design

Teachers additionally explained how specific aspects of the PD course impacted them in positive ways. For example, Sarah described one particular aspect of the course she found significant to her learning:

> I really appreciated the Weekly Discussions that this course offered. I have always found that collaboration is one of most effective strategies to enhance learning. I believe this with my students, as well as with myself. As teachers, we need new and innovative ideas now and everyday [sic]. And I need to hear them from people who are actually using these ideas in their classrooms. I need to know the ins and the outs, what works and what

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doesn't, and the how-to's [sic]. The Weekly Discussions allowed for this on a weekly or even daily basis.

Sarah explained how the format of the PD course—and in particular the weekly discussion assignments—allowed her to learn in a way that is most effective for her: through collaboration with peers and learning directly from her fellow teachers "who are actually using these ideas in their classrooms." Having the opportunity to ask her colleagues questions or learn what worked best for them, for example, in using a particular strategy provided her valuable feedback that can then have a positive impact on her teaching.

Melinda also shared aspects of the course that were significant to her learning; for example, peer collaboration and support:

I enjoyed the collaboration and support from other teachers, who provided me with great insight and additional ideas to use in my classroom. I was intrigued by this course because this was the first ELL course that was tailored towards math. It allowed me to see relevant examples in math and how it could be applied to my classroom.

Melinda also explained how a PD course for MLLs in the academic content area of math was not an option she was aware of before learning about this course offering. She continues:

When I was first participating in the weekly discussions, I was a little skeptical. However each week provided a different technique and outlook on what we needed to focus on. Although at times there were a lot of articles, I did enjoy reading them because it provided me with insight and supported the importance of incorporating various strategies to help students. I was able to understand better the obstacles and challenges that my ELL students face and understand better the frustration that my students go through in trying to learn a new language and using that language to learn math.

Melinda shared honestly about her initial impressions of the course, including her skepticism and personal opinions about the required weekly workload. However, she noted not only her enjoyment when completing the readings but also how they provided her with insights and the significance of MLL pedagogical strategies on her students' learning.

Julie described how specific components of the course were beneficial to her learning and how these have positively impacted her being able to implement the MLL strategies acquired in this course in her own classroom:

> I have also been given specific research-based strategies that I can use with all my struggling students to help them succeed in my classroom. The weekly articles have taught me so much about my students and made me a more knowledgeable teacher overall. The discussion board allowed me to share my learning process with other individuals in my profession, which has given me so much insight and new ideas that I have been able to apply to my classroom.

As noted by other participants, the format of the course—for example, that the discussion posts in the Laulima Forums tool allowed for peer interaction and learning from each other—had a positive effect on how she further put strategies into practice with her students. She then described the case study as an integral part to her learning:

> The case study has been the most valuable component for me, because I was taught a specific process to increase my students' reading comprehension. The RC Math Program gave me a step-by-step approach to use, showed me how to support my students in their learning process, and showed me various motivational techniques to use with my students, such as video and audio feedforwarding.[94] I know that I will be able to continue

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[94] Video and audio feedforward was the topic of week 11 of the *RC-Math* course. "Feedforward (future) shows a sample of [reading] skills not yet attained (but aimed for), which is <u>above</u> your student's current level. This [audio

to use this process in my classroom, and the huge progress my students have made will encourage me to do so.

The case study was cited by teacher-participants as a significant positive learning experience for them and further helped transform and solidify their understandings of MLL pedagogy and how it can be tangibly put into practice.

Evidence of Professional Reflection and Growth

Teachers additionally took it upon themselves to note how their participation in this PD course led to substantial learning and important connections being made between themselves and their students. For example, Julie shared:

> This course has been a very valuable and eye-opening experience for me. I have been given the opportunity to get to know my ELL students on a more personal level and understand more thoroughly how their culture affects their school experience. Before this process, I was struggling to build strong personal relationships with my students and their families, because there were many barriers that prevented me from getting to know them as individuals. Now, I understand how my students' unique home lives and background experiences may affect the way they view school, their peers, and their teachers. This has helped me to make the personal connections with them that have led to their increased success in reading and math.

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and/or visual recording]…could be used for both motivating and teaching new target skills for the student." The teachers were required to "create a short 30-45 second [audio]/video feedforward clip" as a way to simply show their first attempt at learning the feedforward process and their "learning of the filming and editing techniques. [The] subject can be [the teacher], a colleague or other adult (with consent), [their] children, or [their] nieces/nephews (with parent consent)" (*RC-Math* Laulima course site, under the Forums tab for week 11).

Julie chose to first note how—through her learning in this course and completing the student case studies—she had a new understanding of her students and stronger relationships with them and their families, an important component for effective teaching.

Julie also reflected on her own increasing self-confidence as a general education teacher of MLLs:

> My own confidence as a teacher in general has improved as well, because I have seen the difference my instruction has made on my students. It has motivated me to continue this process in all areas of my classroom. I am now a more thoughtful and reflective teacher, overall, and am better able to tackle the challenges of teaching ELL students.

While this PD course was focused on math, Julie shared her understanding that these strategies can be applied across content areas and is something she is "motivated…to continue…in all areas of [her] classroom." She concluded how her learning has transformed her over the duration of the course and how it had positively affected her thinking and action, including her self-reporting becoming "a more thoughtful and reflective teacher" with improved confidence in teaching MLLs.

Melinda also noted feeling that a significant aspect of her learning was gaining a better understanding of her students' challenges and obstacles and in particular as they are attempting to learn English concurrent to academic language and content. While she had explained examples of her learning during the course, Melinda's comments did not yet show evidence of how this new knowledge has transformed her previous understandings. However, she continued to explain:

> Throughout this whole process I was able to reflect upon my teaching strategies and what I can do to assess my students and help them to grow academically. In this process I too

was able to grow professionally as a teacher, reflecting upon my practices and what I needed to change in terms of my teaching to help my students.

Here Melinda explained that she was able to experience professional growth through her participation in the course, including from reflexive activities and peer discourse. She further writes:

I did enjoy the variety of teachers in this class not only from different grade levels, but islands as well. It provided a rich peer discussion because we all have different teaching beliefs and practices that we bring to the table as well as different times in our careers and experiences. Although I have been teaching for several years, this class has taught me the importance of adapting curriculum and the instruction constantly to help our students. It allowed me to better see just how some small changes into my classroom could have such a big impact on my students learning (in a great way).

Melinda commented on the benefits of having colleagues from various Hawaiian Islands, as well as across grade levels (K-12), years teaching, and with naturally differing life experiences. She also concluded by explaining that, though she already had several years of experience, her thinking and learning related to teaching MLLs had transformed her thinking in that she now recognized, for example, the "importance of adapting curriculum and…instruction;" she additionally explained how her learning confirmed for her that even "small changes" added to how she teaches her MLLs can have a "big impact" on their learning and in a positive way. She concluded: "Overall this was a very enlightening experience. I had such a great time in this class, learning about new and different strategies to help my students become successful and confident learners… [and]…I can implement [these] into my classroom not only for my ELL students, but for all my students as well." Melinda's new knowledge had been shown to be "a very

enlightening experience" and one where she had gained the skills to help her MLL students in particular succeed in their learning.

Caroline concluded by explaining her professional transformative learning in her role as a classroom teacher:

> Completing this case study really made me look at what I'm doing as a teacher to help these students. I have reflected on my instructional strategies and gained a better understanding of the struggles and challenges ELL students have when they are learning in my classroom environment. I have more patience and new ways to differentiate my instruction to help these students. I will continue to use what I learned in the course in the future. I feel now that I know better, I can do better.

Here Caroline explained how being critically reflexive and participating in the hands-on approach of implementing the 8-week case study had a significant impact on her teaching and learning, and how her new understandings had now transformed her into a confident, patient teacher who had better knowledge of effective pedagogical practices for her students. She concluded by stating "now that I know better, I can do better," a succinct description of how she will continue using these strategies to the benefit of all students in the future.

Unlike her peers, Carly noted an additional impact of her transformation, as evident in the conclusion of her FOR:

> Finally, I'm excited to continue to use my new knowledge for future ELL students in my class. I plan to train another tutoring coach so that I am able to have an extra set of hands to help me….I am also encouraging my colleagues to take this course so that as a grade level we are all able to reach and successfully teach ELL students.

Having entered this course with self-acknowledged limited education on working with MLLs, Carly finished the course with excitement and enthusiasm to encourage her colleagues to participate in this PD course specifically focused on teaching MLLs, and in effect herself becoming an advocate for MLL-specific pedagogy among her peers.

As the concluding example of teacher-participants professional reflection and growth, Sarah[95] provided a brief summary of what she had learned through her participation in the course:

> Overall, this course has provided learning, insight, experience, and satisfaction. I learned about myself, my teaching, and most importantly, my students. The things that I learned through the course readings and discussions with my colleagues are of value to me now and will be for the rest of my teaching career. The things I learned through implementing the NB-ELL [RC]-Math program with my case study students benefit them now and will continue to benefit all the students I teach.

Sarah described her learning experiences as impacting her positively both personally and professionally, using the descriptors "provided…insight," "provided…experience," and "provided…satisfaction." She further noted that this new knowledge is "of value" to her in her present teaching context and will stay with her throughout her career as a teacher. She additionally explained, like her peers, how her hands-on implementation of the eight-week case study benefited her and has made her confident to continue using these strategies with all of her students.

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[95] Sarah was an elementary teacher at the time of participating in the *RC-Math* course. She is of Japanese ethnicity and a monolingual English speaker in the age range of 30-39 years old. Originally from Hawaiʻi, Sarah has a Master of Education degree specializing in the Elementary years and at the time of course participation had taught at her current grade level for one year and had nine years of teaching experience. She had no prior education in teaching MLLs before joining this course.

In the subsequent section of her FOR, Sarah changed the content's focus to then reflect on her learning from the PD experience as a whole:

To be honest, I always took the term "Professional Development" lightly. As I am now finishing my 9th year as a teacher, I only now understand what it means for develop professionally. My previous years were spent just keeping my head above water in the classroom. Now that I have more of a handle on everyday classroom business, I now feel that I can grow professionally. It was through this class that I finally "felt" myself grow.

Here Sarah shared honestly her understanding of what the notion of professional development had always signified to her, taking the term "lightly" and thus without not necessarily recognizing the potential it has to bring about positive, effective change in teaching practice and subsequent student learning. Now that she feels more confident in her teaching abilities, she decided to join this course and through such participation experienced professional growth.

Toward the end of her FOR, Sarah then shared: "I cannot express how much I appreciate the NB-ELL [RC]-Math program. Working with ELL students has always been my 'Achilles heel' and I have never felt successful with them, until now." While explaining succinctly that teaching MLLs has been her 'Achilles heel'—that is, referring to something that is a weakness or a vulnerable quality—and that she had never felt her efforts in teaching MLLs has been successful, she added two words that show her transformation in learning: "until now."

Finally, Sarah concluded her FOR by reflecting back on previous courses addressing MLL pedagogy and how what this course provided was unique to these other experiences:

I've taken a number of classes to learn strategies to help my ELL students. This was the first course to offer something different. This was the first course to actually put something in my hands that I could get right to in my classroom.…I wish that the NB-

ELL [RC]-Math program would be offered to all ELL and inclusion ELL teachers, like

myself. I can see a lot of frustration being eliminated on teachers and students. These are

the types of strategies that are needed to help teachers and students. I am grateful that I

took this course.

Sarah summarized the practicality of the course; that is, having tangible, effective strategies that

she could immediate use in her classroom and subsequently see results. Her active participation

and engagement in the PD course led to her own personal and professional learning experiences

which she in turn wants her colleagues to experience and "that are needed to help teachers and

students."

Continued Application of Learning to Current and Future Students

Through participation in the various aspects of this course, teachers became more

confident and comfortable in working with their MLLs. Caroline explained how her knowledge

of teaching MLLs has changed over the duration of the course with practical, tangible results:

I would like to continue the RC-Math classroom project in my classroom. This course

improved my teaching by equipping me with more effective strategies and identifying

their needs to help ELL students. It is a good way to differentiate instruction for ELL

students and help them meet proficiency in grade level standards and benchmarks….

In addition to the above real-world example of her case study student's academic growth and

increased confidence due to Caroline applying the MLL pedagogy she learned in this course,

Similarly, Carly explained: "I plan to continue using the techniques that I learned in the

Reading Comprehension in Math course to see how much more he can improve by the end of the

school year. I believe that he will be able to exit the fourth grade near proficient." As Carly

attended a fall offering of the course, she was further motivated to continue this process with her

case study student in particular for the remainder of the school year. Like her colleagues here, Julie also noted: "I know that I will be able to continue to use this process in my classroom, and the huge progress my students have made will encourage me to do so." Here she explained her desire to continue including these MLL strategies not only in her math teaching, but that "it has motivated me to continue this process in all areas of my classroom."

Discussion

Chapter 6 presents the Final Overall Reflections (FORs) of five teacher-participants. These reflections provide examples of self-reported transformative learning[96] over the full 15-weeks of participation in the *RC-Math* PD course. They additionally include examples of ideological becoming in the more general context of working with MLLs; that is, these students are intelligent and able to succeed but simultaneously lack the much-needed support as can be provided through the use of MLL-specific pedagogy. These reflections address the second question that frames this study: "How do in-service teachers' beliefs—including ideologies and practices—change during participation in a long-term professional development course focused on strategies for teaching mathematics to multilingual learners?" In particular, teacher comments can be sub-divided into the following themes: (a) recognition of limited knowledge of MLL pedagogy before joining this course and then receiving much-needed MLL pedagogical strategies; (b) positive outcomes seen in their students from their implementation of MLL pedagogy; (c) opinions of the PD course and specific areas that aided their learning; (d) evidence

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[96] Elisa's FOR did not include reference to any substantial professional learning on MLL pedagogy. She noted that "this is my first time taking an online course and it has been challenging all the way through," and that the online course site and format was "very confusing." However, she continued: "Despite all the difficulties I faced with the course, I have accomplished the goal I had set out to do—to improve my case study student's math achievement. The one-on-one tutoring helped my student get better at thinking about the process of solving word problems…and she made great gains in her computation assessment scores form a grade of 2.4 to 5.2." After noting her student's improvement, Elisa wrote: "My own growth is not as obvious. I find it challenging to differentiate instruction, even though I have been doing it every year (on a small scale)….Hopefully, I will witness the fruit of my labor and see the students do better in math."

of personal and professional reflection and growth; and, (e) the continued application of learning to current and future students.

Teacher-participants whose FORs were included in this chapter recognized and openly acknowledged their limited knowledge of MLL pedagogy before joining this course, but then gained valuable strategies for working with their multilingual students. They additionally noted how they gained new understanding of their students' experiences. For example, Carly shared how the techniques she used to differentiate instruction were to simply reread instructions or simplify worksheets and summarizing: "at that time [prior to the course], that was the best way I knew how to work with ELL students." Through participation in this long-term PD course, however, participants noted their significant learning of much-needed MLL pedagogical strategies. Like Carly, Melinda also was unfamiliar with MLL pedagogy, explaining: "Prior to this course, I had taken a few ELL courses to help me support ELL students into my classroom. I had the basic strategies and techniques and it was working for me." However, basic strategies and techniques are not enough, and a more comprehensive education is needed for teachers of MLLs. Teachers themselves also may have received little effective preparation for teaching MLLs in specific content areas, and so there is a lack of true understanding about what the best pedagogical tools are to meet the learning needs of their MLL students. This requires on-going opportunities for comprehensive continuing education through long-term PD courses such as the one providing the foundation of this study (Karabenick & Noda, 2004). On completion of the PD course, Caroline explained how she (and in turn her student) was given the "tools and strategies to succeed," noting how "this course improved my teaching by equipping me with more effective strategies and identifying their needs to help ELL students." Carly shared how she now has "an ample amount of resources, knowledge and training to be successful teaching ELL students in

the future," and that through participation in the course she additionally "learned information about ELL students that [she] never knew before." Her new understanding of the challenges her students face when first arriving in the US, their challenges accessing the English-only curriculum in an as-yet unfamiliar language, and the important role all teachers hold in providing equitable instruction significantly impacted her learning. Melinda also noted: "after taking this course, I was able to use new strategies that I had never even thought of using in my classroom."

The benefits of participating in this PD course are cited by the teachers' reflections in this chapter and further support much-needed scholarly literature on the importance of teacher education in MLL pedagogy and the positive impact it can have on their students' learning. In turn, teachers shared how they saw the effects of the new strategies learning in this course having a positive influence on student confidence. For example, Caroline shared how her case study student felt at first like "I can't do it" and had a lack of confidence in his abilities to learn the challenging academic math curriculum in a new language. Following her implementation of the 8-week case study and simultaneous MLL pedagogical strategies, Caroline described this same student as "an active participant in the classroom. They share ideas, volunteer to demonstrate how to solve problems." Like Caroline, Carly also provided a summary of the benefits she and her case study student (who moved to the US eight months earlier) has experienced firsthand when MLL pedagogy is included: "As a teacher it is very rewarding to see the new confidence and gains my case study student has made. He is thriving in the classroom and is much more comfortable adjusting to his new environment." Julie also shared the growth her case study student has made: "Before the start of this case study, my chosen student, Avery, (pseudonym) could barely read through a simple math problem, let alone know what to do to solve the problem. Now, he knows what he needs to do….He has made gains in all content areas,

specifically math and reading. His confidence has improved and he has a better attitude toward learning new things." Through holding high expectations for academic achievement for their students (Banks & Banks, 2004; Bravo & Garcia, 2004; Coady et al., 2008; Meltzer & Hamann, 2004; Olsen & Land, 2007; Walqui, 2006), both teachers and students experienced positive results. For example, Caroline shared how her student came to "meet proficiency in problem solving" and that her MLL students "meet proficiency in grade level standards and benchmarks." Carly also provided an example of her student's academic success following the implementation of MLL strategies: "He increased his reading records level by three levels, he has made significant gains with math fluency and reasoning, and most importantly he has gained confidence in his reading fluency." These positive outcomes the teachers see in their students after they have incorporated MLL pedagogical strategies into their teaching can have a lasting impact on student academic achievement and success.

In this chapter, teachers also shared their opinions of the PD course and how specific areas in the course stood out to them as positively impacting their learning. In recognizing this course as one focusing specifically on MLL pedagogy in the context of academic mathematics content, Melinda shared: "I was intrigued by this course because this was the first ELL course that was tailored towards math." As noted earlier, long-term PD courses for MLLs with a math focus are lacking not only in the state of Hawai'i but nationwide. Even in-service PD courses for MLL teachers—which are not focused on math specifically—are lacking, and in particular those that are long-term and locally situated (Gándara et al., 2005; Menken & Antuñez, 2001; Takeuchi & Esmonde, 2011; Youngs & Youngs, 2001). On a related point, it has additionally been noted that, even though PD courses are offered, it does not necessarily mean such opportunities will be taken seriously or welcomed by teachers.

Sarah reflected honestly about the prior assumptions she made about the importance—or lack thereof—of PD in her role as an educator. By taking the term PD "lightly" she did not recognize the important place such training can have in providing positive, effective, and equitable change to her teaching practice and subsequently to her MLL students' education. Additional factors which can lead teachers to take PD "lightly" may be past experiences that did not have a positive impact on teacher learning. Participation in PD courses does not necessarily equate to effective learning on the part of teachers and subsequent efforts and commitment to put into practice. Additionally, prior trainings may not have supported negotiating and challenging teachers' current ideologies, attitudes, and beliefs in working with MLLs. This in turn can result in a possible absence of transformative learning that could have brought about more equitable MLL education. However, in the context of this study, Sarah's participation and critical reflexivity reflected her growing confidence in her teaching abilities and need for growth, thus placing her in a better position to experience transformative learning.

Sarah also noted well that all MLL teachers (and I would add, all teachers in general) need education in teaching MLLs. It is well-cited in the scholarly literature that the majority of K-12 mainstream teachers are ill-trained and thus unprepared to teach MLLs (Costa et al., 2005; Ladson-Billings, 1999; Menken & Antuñez, 2001). In addition, it is also recognized that there are few professional development opportunities in teaching mathematics to MLLs, and those that are available across subjects vary significantly in content, scope, and depth; that is, from one-day workshops to semester-long graduate-level courses, and from those with a simple overview or introduction to MLL teaching strategies to those that focus specifically on MLL pedagogy and provide opportunities for subsequent, supported application of this new knowledge. Further, it is important to note that Sarah's comments here additionally reference the need of education not

only in the form of comprehensive, long-term, PD programs for in-service teachers, but also for more opportunities for substantive education on the part of pre-service teachers to be better prepared to education MLLs[97].

Teachers provided examples of specific sections of the PD course that were helpful in their learning. Julie provided an overview of areas in the course from which she benefited most, including research-based strategies, the weekly articles, and the online discussion forums. Like Julie, other teacher-participants noted that the collaborative aspects of the course and on-going support from their peers aided their own learning. For example, Melinda shared: "I enjoyed the collaboration and support from other teachers, who provided me with great insight and additional ideas to use in my classroom." As noted by education scholars, PD, which encourages collaboration, supports teachers as they participate in, reflect on, and link knowledge relevant to their own experiences and teaching contexts (Butler & Schnellert, 2012; Garet et al., 2001). PD can additionally provide opportunities for shared meaning-making (Hord, 2009) and create spaces for critical thinking and dialogue aimed to further improve teaching and provide subsequent methods to advance student learning (Hord, 2009).

Melinda noted her positive impressions of working with teachers from across the state and across grade levels,[98] and that this diversity allowed for richer discussions due to the variety of teaching and life experience. This collaborative space further allowed the participants to build on what they as teacher-learners bring to the PD course and provide effective spaces for new ideas to be learned (Zwiep & Benken, 2012). Sarah explained the power of collaboration in her own learning, in that it is imperative that teachers need new and innovative ideas on a daily basis, and that they come best from practicing teachers who already have experience

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[97] Pre-service teacher education in the area of MLL pedagogy will be discussed further in Chapter 7.
[98] Her peers represented three Hawaiian Islands and across K-6 and 9-12 grade levels.

implementation the various strategies into their teaching. In particular, Sarah noted that the weekly discussion posts in the online group forum allowed for a sharing of this knowledge among all teacher-participants. Sarah's comment here is significant in that it connects to the question of what makes effective PD. Additionally, learning and receiving feedback from fellow teachers can validate newly acquired practices with others in similar positions. Sarah's reflection here also cites the importance of relating learning in a PD course to each teachers' context rather than maintaining a one-size-fits-all approach. This latter method simply focuses on a more general or superficial approach (Díaz-Maggioli, 2004; Little, 1993; Nishimura, 2014; Wilson & Berne, 1999) rather than one which recognizes and attempts to address the specific needs of the teacher-participants and their local circumstances (Butler & Schnellert, 2012).

Sarah's reflection additionally cites the benefits of online asynchronous PD courses. The online Laulima course site was accessible to all teacher-participants day and night for the entire 15 weeks of the course. This provided the teachers with the opportunity to go into the course site whenever convenient and allowed them to reread and access all previous submissions. This flexibility in access additionally allowed the teacher-participants to post their weekly written reflections and subsequent peer responses in the Forums' section at any time throughout the week; thus, this allowed Sarah and her colleagues to potentially experience on-going learning on a daily basis as posts were made, rather than simply during a single scheduled meeting during the week that is more common with in-person/real-time PD courses. This PD format can also provide and support deeper levels of reflection in contrast to face-to-face meeting, as more time is available for personal reflection (Lee et al., 2011). In addition, this online asynchronous learning environment maintains a written record that the teacher-participants can revisit, thus

allowing for further critical thinking and a greater depth of reflection and potential impact on teaching practice (Carey et al., 2008; Russell et al., 2009).

In addition, having access to on-going peer feedback and concurrent learning experiences and reflections can have a positive impact on teachers' practice and encourage teachers to try new strategies while receiving support from peers; in particular, from peers who: (a) may have had previous experience in what another teacher may be trying out for the first time; (b) are trying it out simultaneously and can serve as a co-support system; and/or, (c) can serve as a resource at a teacher's grade level and content area who are from across the state and with whom they would otherwise not have met or shared experiences. It has been noted that online, asynchronous courses can provide more critically reflective responses than real-time courses (Hara et al., 2000). In addition, online asynchronous learning environments go beyond simply the challenges associated with distance and time constraints, and instead support the possibility of simultaneous threads of conversation such as was possible in this PD course's Forum section in Laulima. This written dialogue also allowed the potential for more thought-out reflections and detail that allowed for a more in-depth exploration of a topic (Groth & Burgess, 2009). As noted by these authors, "multiple simultaneous conversations in a face-to-face-setting" may create a situation where important information may be missed (Groth & Burgess, 2009, p. 225). As Sarah summarized: "The things that I learned through the course readings and discussions with my colleagues are of value to me now and will be for the rest of my teaching career."

In connection with appropriate PD comes the potential for personal and professional reflection and growth. Teachers explained the importance of the PD experience in their learning, with Caroline citing the case study in particular as having been significant to the transformation of her learning. Here she shared how she gained a better perspective of her students' challenges

to their learning; however, in addition to noting the various practical strategies she has learn, she also cited herself as having become a more patient teacher of MLLs.

The goal of any effective professional development opportunity is to experience "a *learning process* resulting from *meaningful interaction* with the context (both in time and space) and eventually leading to changes in teachers' *professional practice* (actions) and in their *thinking about that practice*" (original italics, Kelchtermans, 2004, p. 220). PD also necessitates teacher learning that is tangibly evidenced in two key ways: (a) through changes that are evident in classroom practice (e.g., differentiating instruction), and (b) through changes in teacher thinking that relate to the "how and why of that practice" (Kelchtermans, 2004, p. 220). In addition, sharing this new-found knowledge with colleagues is an important outcome of effective PD; for example, from her experiences in the course, Carly shared her excitement about what she has learned and her plans to continue applying this learning. She additionally wanted to share what she had learned with colleagues and encourage them to also participate in this particular course; that is, that she wanted to train another tutoring coach so that the many strategies she learned during participation in this PD could benefit more students in achieving grade level success. Professional learning is also evidenced in Julie's FOR, where she explained how her understanding had transformed since she joined the course. She initially shared how she struggled to build strong relationships with her students and get to know them as individuals; however, through her participation in this course and the 8-week case study, she shared that she now has a better understanding of them, with tangible results evident already in their successes in reading and math.

These FORs additionally show how teachers' perceptions and attitudes changed from having a superficial understanding of the challenges and barriers MLLs face to a better

knowledge of both the struggle and potential involved in student learning. While teachers noted their students' increased confidence through participation in the case study, the teachers themselves also built their confidence; as Julie summarized: "My own confidence as a teacher in general has improved as well, because I have seen the difference my instruction has made on my students….I am now a more thoughtful and reflective teacher, overall…."

While this implementation is on a small scale—either in single classrooms or working with individual case study students—the teachers became more confident and comfortable with implementing MLL pedagogy and cite their desire and commitment to continue using MLL pedagogy in the future; for example, Caroline reflected: "I will continue to use the strategies…with my students because of the many benefits the students gain from this program" and concludes "I feel now that I know better, I can do better." Similarly, Carly explained: "I plan to continue using the techniques that I learned in the Reading Comprehension in Math course to see how much more he can improve by the end of the school year. I believe that he will be able to exit the fourth grade near proficient." As Carly attended a fall offering of the course, she was further motivated to continue this process with her case study student in particular for the remainder of the school year. Like her colleagues here, Julie noted: "I know that I will be able to continue to use this process in my classroom, and the huge progress my students have made will encourage me to do so." Here she explained her desire to continue including these MLL strategies not only in her math teaching, but that "it has motivated me to continue this process in all areas of my classroom."

Conclusion

This chapter explored teachers' critical reflections on their teaching practices, personal and professional beliefs related to working with multilingual learners, and participation in this

15-week PD course. These participants then shared examples of their current teaching practices and how what they learned has already impacted how they work with their students in a positive way. As evidenced in their FORs, teacher-participants recognized their initial limited knowledge of MLL pedagogy before participating in this course and then, based on work completed in this course, received much-needed strategies for the equitable education of their multilingual students. Teachers also shared the positive outcomes they observed in their students based on their work implementing the 8-week case study and MLL pedagogy. Additional topics explored in the FORs included teachers' opinions of the PD course and specific areas that aided their learning, their providing evidence of personal and professional reflection and growth, and lastly how they would continue applying this learning to the benefit of their current and future students. Professional development is a highly prevalent research area in academic educational literature, though to a much lesser degree of focus on teachers' opportunities for how PD can in turn be critical, transformative, and consequently empower teacher-participants by providing spaces for in-depth engagement. This is particularly relevant and needed in the content area of math and the subsequent education of multilingual learners. The following chapter concludes the dissertation, revisiting the two main questions that frame this study, presenting the implications on in-service teacher PD and connections to the conceptual framework (Chapter 2), and concludes with recommendations for future study.

CHAPTER 7

CONCLUSION

"One of the most important things that

mathematics teachers can do is to

be aware of their role as language teachers."

(Brown, Cady, & Taylor, 2009, p. 538)

What is needed is "a pedagogy of the possible[,] [which]

builds on critical awareness of teachers, students, parents and others concerned about

sociopolitical inequalities, marginalizing ideologies and their own agency and

activism towards transforming hegemonic ideologies and practices."

(Davis & Phyak, in press)

Chapter 7 provides concluding comments based on the content of the preceding chapters, and is divided into the following sections: discussion, implications, and recommendations for future study. The discussion section centers on this study's work with in-service public school teachers in three key areas: (a) recognizing the complexities of the academic language of math and then adjusting instruction accordingly to better support all students, but in particular multilingual learners (MLLs); (b) promoting and supporting students' first language use in the classroom; and, (c) providing long-term professional development (PD) for in-service teachers with MLLs in their classrooms, and more specifically in the content area of mathematics.

The second section explores implications of the following four points relevant to this study: (a) recognition of the role *all* teachers play in the education of MLLs and that critical teacher training is needed, both in-service and pre-service; (b) that *all* in-service teachers benefit from long-term PD that is not one-size-fits-all but that is instead focused on the local context, with math teachers of MLLs serving as the exemplar in this study; (c) better support for and recognition of teacher education courses (both in-service and pre-service) benefiting from pedagogy promoting use of students' first languages; and, (d) education which raises ideological awareness of all involved in the education of MLLs, and addressing locally prevalent misconceptions such as English monolingualism. Chapter 7 then concludes with recommendations for future study.

Discussion

The following discussion section begins with a revisit to the focus of this study's work, followed by a presentation of the two main questions that frame this study introduced in Chapter 1. More specifically, this study focused on work completed with in-service public school teachers that had threefold potential outcomes: (a) to provide examples of mathematics teachers' discourse and how it changed over time—more specifically, during an online, long-term PD course—in relation to teaching math to their MLLs; that is, demonstrating how the teacher's attitudes and beliefs changed from having a more superficial perception of the challenges and barriers their MLL students face to instead recognize their abilities and potential; (b) to discover how this potential recognition subsequently influenced and/or will influence their teaching of MLLs and overall classroom practice; and, (c) to further explore possible ideologies in the local education context of one US state, Hawai'i. These outcomes were further refined into the two questions provided in Chapter 1:

- What are in-service teachers' beliefs about language in content learning (e.g., the challenges of acquiring academic mathematics language; first language use as an equitable and effective classroom practice), and what role do they see themselves playing in supporting the teaching and learning process?
- How do in-service teachers' beliefs—including ideologies and practices—change during participation in a long-term professional development course focused on strategies for teaching mathematics to multilingual learners?

These questions and the broader areas of focus of this study described above will be explained further in the following sections.

Teachers' Beliefs about Language in Content Learning: Mathematics

Teacher-participants provided their reflections about language in the content area of math across two main topics: (a) the academic language of math, and (b) first language use in the classroom.

Teachers responded to the first question of "Is math a universal language?" by honestly sharing their opinions and initially noting that they had always thought that it was universal and that, regardless of what language known, it would not adversely affect one's understanding of math. However, teacher-participants came to realize that, contrary to common understanding, the academic language used in the K-12 math content area is far more complex than first thought. This new awareness on the part of teachers reflects what has been noted by mathematics and linguistic scholars: that math is not a 'universal language' and instead that academic linguistic complexity is highly contextualized and requires strategies to support simultaneous language acquisition and learning of academic content. In doing so, participants commented on the importance of having this realization and the positive impact it will have on their understanding

of their MLLs and, consequently, on improved teaching practices including a focus on language as well as content; as Brown et al. (2009) note, "one of the most important things that mathematics teachers can do is to be aware of their role as language teachers (Brown, 2007)" (p. 538). The findings and self-reported raised awareness on the part of these educators provides tangible support of teachers' initial assumptions, openness to consider alternative understandings, and willingness to change old ways of thinking based on this new knowledge. As a result, teachers showed a transformation of thinking and noted how they would tangibly change their teaching practice in recognition of this new learning and the benefits it will have on their MLLs. In addition, this transformation demonstrates that teachers have not received appropriate training in their pre-service teacher education and/or adequate PD opportunities in their content area in teaching MLLs despite the increasing number of MLL students in the state (to be further discussed in the implications and recommendations for future study sections, below).

In response to the topic on first language use in the classroom, teachers had not realized that not including their students' first language in their education—and for some teachers, banning the use of any language except English—was in fact detrimental to their students' learning. However, in this study, teachers came to recognize (see Chapter 5) this monolingual ideology as harmful and that instead support for first language use is beneficial; through this process, teachers reached their own decisions about whether this is a practice they would change and, if so, in what ways they would begin to implement this natural resource into their classroom. Through this process, teachers achieved a sense of ideological becoming (Bakhtin, 1981) and transformative learning, citing their change in thinking and examples of new ways for its inclusion in their teaching. In sum, it is well understood by language education scholars that

rejecting "students' home language is tantamount to rejecting the students themselves" (Au, 2006, as cited in Au, 2008, p. 66); however, educators need to be provided the opportunity to learn of these equitable pedagogies, be encouraged in their use, and recognize the positive role they play in providing effective instruction for their MLL students by engaging in the use of MLL pedagogy.

Throughout the 15-week PD course, teacher-participants shared their past understanding and current new learning about the role they see themselves playing in supporting the teaching and learning process. Participants came to recognize the important role they play as language teachers in addition to serving as math teachers; that is, they benefited from gaining awareness of 'pedagogical *language* knowledge' or "knowledge of language *directly related to disciplinary teaching and learning and situated in particular (or multiple) context in which teaching and learning take place*" (original italics, Bunch, 2013, p. 307). Additionally, teachers came to recognize that teaching MLLs is not the sole responsibility of the "ESL" teacher (or whoever is responsible for their teaching when they "are pulled out for services" [Sarah]), but is instead a shared responsibility among all educators.

In response to the question "how do in-service teachers' beliefs change during participation in a long-term professional development course focused on strategies for teaching mathematics to multilingual learners," many teachers' beliefs changed across several key areas, in particular, related to (a) their empathy and understanding of the challenges their MLL students face every day; (b) the ideology of English monolingualism and a place for first language use in their classrooms; and, through exploration of these topics, and (c) experiencing transformative learning.

Teachers noted having English-only rules and that, for example, having an English-only rule was thought to "eradicate division and exclusivity in my classes and promote acceptance and tolerance instead" (Anne). However, teachers were able to put themselves in their students' positions to realize that there needs to be empathy for their MLLs so "we can understand and relate to the comfort level of resorting to our home language while trying to learn a new language and culture" (Nora). As one teacher summarized in their Final Overall Reflection, "I have…gained a better understanding of the struggles and challenges ELL students have when they are learning in my classroom environment" (Caroline).

Despite being a highly linguistically diverse state and legally the only US state to be officially bilingual, the local education context of Hawaiʻi continues to experience the impact of the ideology of English monolingualism. As noted in Chapter 2, language ideologies such as monolingualism result from what has been referred to as an 'unconscious assumption' that seems to be common-sense; that is, rationalizing particular actions or policies that in fact sustain or promote inequalities (Tollefson, 1991; Wiley, 2000). Language ideologies are seen on a global scale among immigrants arriving in a new country and being assimilated into the local ideologies, such as learning the dominant language and having little support to maintain the home language(s). While immigrants themselves can believe these ideologies—and support them by, for example, insisting on speaking English in the home to better help their child acquire English in school—these ideologies are also perpetuated in policies, media, and local language practices.

Through written reflections on the week 7 topic of first language use in the classroom (Chapter 5), teacher-participants shared both their personal and professional beliefs but also their new awareness of the importance of the students' first languages in their learning and resulting in

the teachers experiencing ideological becoming. This new ideological awareness is relevant to teachers as a means to help them recognize and compare their own personal and professional ideologies to the daily lived experiences of their MLL students. With the increasing linguistic and cultural diversity in US schools, educators need to be aware of both persuasive and pervasive discourse that needs to be addressed through ideological becoming. It is necessary to note that 'to know is not enough' (Ball, 2002), and that equitable educational change requires substantial critical reflection and increased metacognitive awareness on all participants' parts, both personally and professionally; that is, recognizing varying "ideological points of view, approaches, directions and values" (Bakhtin, 1981, p. 346) is imperative if positive lasting change is to take place.

Recognizing that harmful ideologies do exist (sub-consciously or not) on the part of the teachers—often through no fault of their own but instead due to larger mainstream influences such as national media and public campaigns (e.g., English-Only legislation in California, Arizona, and Massachusetts)—it is important to provide teachers with education on evidence-based pedagogical practices and thus alternative perspectives to the more often prevalent mainstream voice. This includes opportunities to challenge prevalent ideologies and attitudes in the teaching of MLLs, such as English monolingualism versus first language use in the classroom to support learning, as this new knowledge has the potential to bring about lasting equitable and successful educational change. In this study, the majority of teachers experienced transformative learning which both supported and was impacted by their critical personal and professional reflections and resulting ideological becoming.

Mezirow (1990) explains transformative learning as a process during which a person becomes "critically aware of how and why our presuppositions have come to constrain the way

we perceive, understand, and feel" (p. 14). In the context of this study, many teachers experienced a significant, new understanding on the importance of first language use for their MLLs to support learning English. Teacher-participants reflected on how and why they felt they had come to believe that English-only was the best way to help their students learn, and going so far as to not allow any other language but English to be used in the classroom to help their students learn English faster. In recognizing that this perception was actually detrimental to their MLL students, teacher-participants instead personally decided to "reformulat[e] these assumptions to permit more inclusive, discriminating, permeable, and integrative perspectives" (Mezirow, 1990, p. 14). Teachers then provided examples of how they would now begin to incorporate their students' first languages into the classroom, with some teachers going further to provide examples of already successfully incorporating it into their teaching with positive student feedback and tangible results. Mezirow (1990) notes this to be the final part of what makes learning transformative: "making decisions or otherwise acting upon these new understandings" (p. 14).

Implications

This section presents key implications from this study which center around four main points: (a) recognition of the role that *all* teachers play in the education of MLLs and that critical teacher training is needed, both in-service and pre-service; in particular, it is important to note the significant position the College of Education, University of Hawaiʻi at Mānoa, holds in ensuring the preparation of future teachers to meet the needs of *all* students across language, cultures, and content areas, as well as the provision of in-service teacher training across the state (see Afterword for further discussion); (b) that *all* in-service teachers benefit from long-term PD that is not one-size-fits-all but that is instead focused on the local context, with math teachers of

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MLLs serving as the exemplar in this study; (c) better support for and recognition of teacher education courses (both in-service and pre-service) in the better provision of education for MLLs; and, (d) education which raises ideological awareness of all involved in the education of MLLs, and addressing locally prevalent misconceptions such as English monolingualism.

It is well-cited in the US educational context that there are significantly increasing numbers of MLLs in mainstream classes. In order to effectively meet the demand for every student to receive an equitable education, *all* teachers play a role and thus need to be trained in simultaneously teaching academic content and language to MLLs, both in-service and pre-service. In addition, *all* in-service teachers benefit from specialized PD; more specifically, PD that is long-term, not one-size-fits-all but that is instead focused on the local context (i.e., the learning can be applied to their specific teaching environment) and that engages participants in critical reflection. As further discussed in Chapter 6, effective PD which involves identifying and negotiating ideologies as well as providing space for transformative learning is needed among all in-service teachers. To provide such critical, reflective, and transformative learning requires that it connect to each participants' teaching milieu, rather than the often superficial or general one-size-fits-all approach (Díaz-Maggioli, 2004; Little, 1993; Nishimura, 2014; Wilson & Berne, 1999). Such learning further entails a focus on recognizing and addressing the immediate challenges teachers face and so are grounded in the local situation and the specific needs of the teacher and their individual circumstances (Butler & Schnellert, 2012). As noted by Díaz-Maggioli (2004), the traditional approach to PD—"top-down decision-making, a 'fix-it' approach, lack of program ownership among teachers, prescriptive ideas, one-size-fits-all techniques, fixed and untimely delivery methods, little or no follow-up, [and] decontextualized programs" (p. 6)—is not effective; in its place, however, should be PD which includes "inquiry-

based ideas, tailor-made techniques, varied and timely delivery methods, adequate support systems, [and] context-specific programs" (p. 6). It is through this latter approach and learning environment that teachers can then be more likely to positively change their thinking and practice and for the long-term.

In regards to this effective PD learning environment, reflection on both practice and personal beliefs are important components of such courses. It is imperative that teachers critically reflect on every aspect of their participation in the course, including their "discussions, their readings, their observations, their interactions between students or peers, and the different contexts in which these events occur" (Saavedra, 1995, p. 109). In the context of this study, teachers were supported in their critical reflections through a number of experiences, including guided questions, discussions with peers in the online forums section of the Laulima course site, the provided readings and resources, participating in an 8-week case study where they put into practice various strategies and skills they had been learning in the course and then providing their observations and critical reports on their experiences, and 'private' summary reflections submitted directly to the instructor. These multiple opportunities to think critically about multiple topics related to teaching math to MLLs over the 15-weeks of the course provided the teacher-participants more in-depth learning experiences and opportunities for growth; these are exemplified both in the weekly discussion and summary reflections, but also in the Final Overall Reflections (FORs) self-reported by the teachers on completing of the course. The comments provided in the FORs show that the teachers took the time and energy to put significant thought into their responses and that being critically reflective was both worthwhile but also necessary in order to bring about substantial, effective, long-term change in their teaching practice (Saavedra, 1995). It should be additionally noted that, while this study centered on math teachers of MLLs,

it can additionally serve as an exemplar for providing other in-service PD courses engaged in providing MLL teachers across the content areas with a more comprehensive education to better support the learning outcomes of their students.

With this recognition of the role that *all* teachers play in the education of MLLs and that *all* in-service teachers need to benefit from long-term, critically reflective PD (rather than, for example, a one-size-fits-all approach) to teacher education, it is further important to realize the significant role teacher education courses play (both in-service and pre-service) in the better provision of education for MLLs. In regards to teacher education, it has been noted in large-scale surveys that the majority of teachers had no training in working with MLLs (Reeves, 2006; Walker et al., 2004), but that almost half of the participants in both Reeves' (2006) and Walker et al.'s (2004) studies had no interest in receiving training despite the majority of teachers surveyed reporting feeling unprepared to effectively teach MLLs (Reeves, 2006). This lack of interest and awareness of the needs of MLLs can have a detrimental impact on both teacher efficacy and students' academic success. However, in this study, all teachers chose to participate and were completing all requirements on their own time, as well as showing sincerity in their wanting to learn more about how to provide a more equitable and effective education for their MLL students. Examples of self-reported positive outcomes are provided in Chapter 6, where teacher-participants currently working with MLLs reported higher confidence in their ability to instruct math and help scaffold language development. This also reflects back to the importance of PD, which places the teacher "*at the center* of their own learning" (original italics, Taylor, 2000, p. 155). Through this sincere wish to learn more about MLL pedagogy[99] to help their students'

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[99] The teachers in this study voluntarily chose to participate in the *RC-Math* course, which was offered for free, but also involved no remuneration from their employers. The teachers additionally had the option of selecting a number of diverse courses on the HSTA website, including those across content areas for all students, as well as those that focused on MLL pedagogy in particular.

achieve, teachers were able to confront long-standing assumptions (e.g., related to the pros/cons of English-only; Chapter 5) and expectations (e.g., understanding the complex academic language of math without scaffolded support, Chapter 4) and choosing new actions based on these reflections (Chapter 6) (Adams & Brooks, 2011; Saavedra, 1995; Stoddart et al., 2002). In turn, positive attitudes among MLL students are more likely to be found among teachers who have received substantial quality formal training in MLL theory and pedagogy (e.g., teachers citing their students' increased confidence, Chapter 6). For example, Byrnes et al. (1997) conclude that "formal training gives teachers skills and knowledge to work effectively" with MLLs and that "empowering teachers can help attenuate the development and maintenance of negative language stereotypes" (p. 641). This formal training naturally involves not only in-service PD courses (as described above) but also the need for comprehensive pre-service teacher education. This pre-service teacher education, in turn, must provide student teachers with similar opportunities to acquire knowledge of MLL pedagogy, to explore prevalent ideologies in education, and to be supported in environments allowing for ideological awareness and transformative learning to occur.

Teachers are influenced by both personal and professional ideologies that can have a harmful impact on MLL students' success. One example of much needed focus and dialogue relates to the ideology of monolingualism and dominant/national language use in education. While not a new topic for discussion—indeed, it is an ideology common across many nations—this view still equates language diversity as "essentially something imported as a result of immigration" (Ricento, 2008, p. 45) and therefore a problem, rather than recognized for what it actually is: a resource. This ideology is perpetuated in mainstream media and in top-down policies promoting the dominant language as "the language of success." This ideology of

monolingualism, however, equates to considering MLL students as "limited proficient" (in the often-used term "limited English proficient") or deficient. This devaluation of student ability based on non-dominant language use further legitimizes the dominant language and allows for the public limiting and even banning of any other language. However, with this comes the misconception that a strictly monolingual learning environment in the dominant/national language is best, a common belief that allowing students' first languages will somehow slow down the learning process and, conversely, that learning through English-only would help increase their MLL students' learning processes. However, teachers' attitudes and monolingual ideology are significantly influenced by government reports and actions (further perpetuated in the media), such as a teacher thinking English-only education is best because of legislation passed in the state of California. As noted by teachers in this study, monolingualism does not lead to inclusion and integration but instead to exclusion and failure. With many teachers unaware of the research associated with MLL pedagogy and prevalent ideologies associated with MLLs, teachers must therefore be provided with substantive training which allows for dialogue about relevant ideologies in education and subsequent support toward ideological becoming.

Recommendations for Future Study

This section provides recommendations for future study and action related to the following four main points: (a) using math as an exemplar towards promoting equitable multilingual education in other content areas and among multiple actors; (b) the need for pre-service education in MLL pedagogy; (c) the need for more comprehensive PD courses for in-service teachers across content areas, and in particular those which support and promote ideological awareness; and, (d) engagement of multiple actors—including teachers, students, parents, administrators, community members, policymakers—in ideological awareness and

transformative learning, and the subsequent promotion of multilingual policies and practices that will benefit not only MLLs but all students.

While the academic content area of math has served as the context for this study, it serves as an exemplar for more studies which are needed in the area of teacher education. This includes expanding this context to further promote equitable education on MLL pedagogy, as well as going further still to explore the possibilities of multilingual education across content areas. This additionally includes the involvement of multiple actors; while this study focused specifically on teachers of MLLs, there is the need for further engagement of key actors, such as other teachers, students, parents, administrators, community members, and policymakers. Engaging these individuals in dialogue on the importance of MLL pedagogy and the potential for multilingual education is a much-needed area of future study.

As noted in Chapter 1, the context for this study is the state of Hawaiʻi. Despite the University of Hawaiʻi system having an excellent pre-service teaching training program, it is still lacking in its provision of certification for teaching MLLs across grades K-12. As the largest pre-service teacher licensure program in the state, the College of Education at the University of Hawaiʻi at Mānoa has the potential to offer exemplary pre-service teacher courses[100] and certification in the education of MLLs, which in turn could have only a positive impact in providing equitable education for this diverse and growing population. Future study is needed in documenting the situation to-date regarding the need and sustained provision of MLL or bilingual/multilingual teacher education programs (Davis & Phyak, 2015), and current and on-going dialogue with all affected parties in what plans can be made regarding changes to current

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[100] As of Fall 2016, efforts are currently underway to implement a pilot cohort program in the College of Education for an MLL licensure in connection with graduates earning their elementary teaching credential. While in the early stages, this pilot program and certification will ideally continue to be supported and expanded so as to better address the education needs of the significant increasing enrollment of MLL students in Hawaiʻi's schools.

policies and practices. Documentation and publication of this work can be a valuable resource to all those involved in the process, as well as serve as a model for those in similar positions.

In relation for the need of pre-service education in working with MLLs and research into both the challenges and possibilities for potential change, in-service teachers subsequently suffer in their lack of preparation to teach MLLs across content areas. Further studies are required exploring the needs of teachers and how such professional development programs can best support their local context. While not the ideal, as teachers should have this knowledge before having their own classrooms, future study is needed to better understand the in-service teachers' context, the amount of support they receive and in what form they need it most, and in turn try to provide examples of what equitable multilingual teacher education can be. While there is a dearth of scholarly literature on PD for math teachers of MLLs, there is the additional need for studies on comprehensive PD courses for in-service teachers from across the content areas, and in particular those which support and promote ideological awareness.

Studies are also needed which engage multiple actors in ideological awareness related to the education of MLLs. It is important for students, teachers, parents, administrators, community members, and policymakers to engage in conversations that promote an understanding of relevant dominant language ideologies and "their dehumanizing impact on social and educational experiences" (Davis & Phyak, in press). These multiple actors must learn not only how to "gain critical awareness of schooling injustices" but also "collaborate in developing policies that address linguistic and sociocultural marginalization reflected in schooling practices" (Davis & Phyak, in press). While Chapter 5 centers on a report of teachers' ideological awareness related to first language use in the classroom in particular, further and more comprehensive engaged ideological analyses would include a "critical investigation of sociopolitical inequalities,

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historical oppression, and linguistic discrimination" (Davis & Phyak, in press) as played out in the language policies and practices in the national context of the US and the local context of Hawai'i. Further study in this area is needed not only to raise awareness of these ideologies and to investigate how they play out, but to additionally create "a pedagogy of the possible[,] [which] builds on critical awareness of teachers, students, parents and others concerned about sociopolitical inequalities, marginalizing ideologies and their own agency and activism towards transforming hegemonic ideologies and practices" (Davis & Phyak, in press). This critical movement from awareness to transformative action promotes multilingual policies and practices that can see "local multilingualism and cultures as resources for education" (Davis & Phyak, in press).

In summary, further work is needed in documenting the current practices in the COE through pre-service teacher education and the DOE with in-service teachers in order to better understand the current situation and, from this, recognize what (in)equitable practices and policies are impacting MLL education. Once determined, this knowledge must be followed by an understanding of how further change can be "shaped, planned and implemented" (Davis & Phyak, in press). There is a substantial need to better understand the current broader situation of education across the state of Hawai'i, and that through learning these processes, all involved can be provided "with ideological, pedagogical and equity policy tools that can inform situated and community policy making" (Davis & Phyak, in press) and immediate classroom practice for the benefit of all students.

AFTERWORD

This study focused on three key areas in working with in-service public school mathematics teachers with multilingual learners (MLLs) in their classes: (a) providing examples of these teachers' discourse during an online, asynchronous 15-week professional development (PD) course, in particular focusing on teaching mathematics to MLLs; through exploring this discourse, it provides evidence of how teachers' attitudes and beliefs can change from a more superficial understanding of the needs and struggles of their MLLs to recognition of their strengths and potential; (b) learning more about how this potential new-found recognition in turn may impact how the teacher-participants teach their MLLs and general classroom practice; and, (c) discovering further ideologies that may be present in the education context of Hawai'i. While these conclusions are detailed in Chapter 7—including implications and recommendations for future study—it was further determined that a summary discussion on how and why engaging teachers in dialogue and action towards the inclusion of MLL pedagogy and more effectively embracing diversity in Hawai'i is of great need and may be made possible; this afterword attempts to address these questions.

It has been noted consistently and with strong evidence through scholarly publications that teachers face challenges when attempting to provide equitable education for their MLLs, and in particular in a context where both the medium of instruction and dominant language in society is English (Batt, 2008; Farr & Song, 2011; Hollins & Guzman, 2005). As such, teachers need opportunities to effectively learn and put into practice MLL pedagogy through both pre-service and continued in-service PD. In addition, engaging teachers in dialogue regarding long-established ideologies in education settings is a significant need, as such ideologies can become commonsense (Farr & Song, 2011), normalized (Blommaert, 1999), and have a significant

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impact on teachers' professional and personal beliefs as well as classroom practice (Farr & Song, 2011; O'Brien, 2011). It is thus imperative to engage teachers—including pre-service teacher candidates, in-service teachers, and educators at the post-graduate level—in conversation to raise awareness about prevalent ideologies impacting the local education context in order to bring about equitable change. The following sections look at the two most relevant contexts related to teacher education in the state—the College of Education at the University of Hawai'i at Mānoa and the Hawai'i Department of Education—and provide recommendations that arose from this study.

College of Education

While self-opted participation in an education program or certification in teaching MLLs is a start, having *all* teacher candidates with knowledge of planning and implementing MLL pedagogy should ideally become the requirement. Given the well-cited large (and continually increasing) numbers of MLLs in K-12 schools across the state, this training should in future be made a requirement across all education programs.

Recommendation 1. All pre-service educators in primary and secondary (including those in general education [such as math, science, and social studies], MLL education, bilingual education, and special education programs) should have expertise in their subject areas, and a common foundation in the education of MLLs. This can be achieved through completing a required set of courses in the College of Education towards effective schooling for all students. This additionally allows for an integrated approach to teacher education that provides for richer learning experiences on the part of all teachers. Course content should ideally include methods for teaching MLLs (including a simultaneous focus on content area methods with MLL pedagogy), development of curriculum and related materials (with practical application and on-

going reassessment on their benefits to students' learning), an understanding of applied linguistics and second language acquisition (while rare, ideally taught by applied linguists who also have knowledge of and experience in K-12 education), cross-cultural awareness and communication, and methods of formative and summative assessments for MLLs.

Recommendation 2. All pre-service educators should participate in multiple field experiences in schools with substantial and diverse MLL populations throughout their education program so as to be better prepared to effectively teach linguistically diverse students. All teachers can benefit from direct, on-site experience in public school classrooms, and can also additionally include tutoring sessions and interacting with MLLs' families (e.g., in the form of conversations, case studies, etc.). These experiences further allow pre-service teachers to tangibly plan, put into practice, and then evaluate lessons and units directly focused on the education of MLLs.

Recommendation 3. All College of Education pre-service educators should be offered the means by which they can gain experience in how to most practically and effectively get to know members of the community (including parents and others who in particular can serve as linguistic and cultural experts), and learn how parents and the community play key roles in the education of MLLs. This includes hiring cultural consultants from target communities who can provide advice on curriculum development; for example, these experts have invaluable knowledge about the students' backgrounds and, in particular by engaging in critical dialogue with teacher educators (e.g., College of Education, Department of Education) towards the equitable education of language minority students and *all* students. With this knowledge, teachers could not only better address the learning needs of their students, but also be well-informed educators showing respect for the wealth of diversity in their classrooms and schools,

and role-models for all students on the importance of such knowledge and diversity in their lives. This valuable resource is rarely acknowledged and acted upon; however, having this initial experience during pre-service training would allow for a greater likelihood these connections would continue once College of Education teacher-candidates graduate and have their own classes, as well as allow for more equitable curriculum development and practice.

Recommendation 4. Just as all teachers are responsible for the education of MLLs, all faculty taking on the role of educators and mentors for pre-service teachers should be provided with on-going professional development in MLL pedagogy. In addition, it is important to create and maintain strong, collaborative partnerships with other university departments. While a range of courses from various fields (e.g., applied linguistics, local geography, histories, and science) could contribute time and resources for K-12 education, the majority of faculty do not necessarily have K-12 experiences themselves. Yet cooperative efforts can be made to collaboratively create equitable pre-service teacher courses related to MLL pedagogy with the on-going support of additional professional learning opportunities for all involved.

Recommendation 5. All educators should be engaged in dialogue to better understand ideologies prevalent in the education of MLLs; for example, it is important to identify with educators why there is such a need for MLL pedagogical awareness and, connected with this, relevant ideologies that may be hindering progress. For both faculty and pre-service teacher candidates, it is imperative they confront the attitudes, beliefs, and ideologies they hold both personally and professionally of MLLs and MLL education in general. This is especially important for these groups of educators because these ideologies can significantly impact how the pre-service teachers teach and interact with students once they have their own classroom[101].

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[101] As noted above, ideologies can become normalized (Blommaert, 1999) and commonsense (Farr & Song, 2011), and this includes among both pre-service teachers and their professors, as the latter are also responsible for

Even before creating and putting into practice sustained professional development opportunities for faculty, it is important that ideologies and attitudes on the part of faculty be explored and confronted, should they negatively impact the subsequent inclusion of equitable education for minorities in pre-service teacher training programs.

In sum, it is necessary that all those who are responsible for the education of MLLs—not only MLL specialists but also mainstream teachers and the faculty who instruct them—must have the foundational knowledge to teach diverse student populations. As Menken and Antuñez (2001) note, "state licensure requirements are currently the primary gatekeeper to ensure the quality of new teachers for English language learners in our public schools" (p. 5). Thus, pre-service education programs play a pivotal role in providing all future teachers with the knowledge and skills needed to ensure the effective and equitable education of all students in their classrooms.

Department of Education

Hawaiʻi's Department of Education (DOE) plays a significant role in the continued education of in-service teachers and all students who attend K-12 public schools statewide. As presented in Chapter 3, the DOE is challenged with meeting the education needs of a diverse range of students, including varying languages, ethnicities, and socioeconomic status, and in a wide-range of geographic areas. In meeting the needs of the approximately 25,000 MLL students in the state, the DOE relies on continued in-service teacher training to continually improve the education of its students, including MLLs. PD courses such as the one in which this study is situated are openly advertised and supported by the DOE, who hold high standards of success in

determining, creating, and implementing pre-service teacher education courses and yet may hold ideologies detrimental to the instruction of MLL students. It is additionally possible that they may simply not be aware that pre-service teachers need to differentiate instruction related to MLLs in particular, and thus cites the importance of faculty training as well.

such courses through the submission of teacher-participants' comprehensive, cumulative portfolios. However, as evidenced in the critical reflections among the in-service teachers participating in this course, these educators come to PD with little-to-no knowledge of MLL pedagogy. As such, the following sections provide several recommendations that may help continue to improve the education of not only in-service teachers but subsequently their multilingual students in particular.

Recommendation 1. All in-service educators (including those in general education, MLL education, bilingual education, and special education programs) across all K-12 grades should have a common foundation in the education of MLLs. This can be most effectively achieved through College of Education commitment to providing highly qualified content and teacher education focused on MLL pedagogy. This additionally includes the completion of long-term, locally situated PD programs. By continuing to allow in-service teachers to participate in courses such as the one framing this study, this will better provide in-service teachers with the knowledge they need across a variety of key areas; for example, knowledge of methods for teaching MLLs across the content areas, curriculum and materials development, a foundational understanding of applied linguistics, and cross-cultural understanding.

Recommendation 2. All in-service educators should have access to PD for MLLs. Given the geographic nature of the state, online courses such as the one framing this study can provide such opportunities. In addition, while Hawaiʻi has formal PD standards and requires school areas to align PD with local priorities and goals, the state does not require schools to set aside time for PD (NCES, 2012c). However, allowing more time for training would provide in-service teachers with much-needed, effective, theoretically and pedagogically grounded resources and an

understanding of how best to use this information in practice with their students. This approach, however, depends on the expertise of those providing PD services.

Recommendation 3. More sustainable PD opportunities provided locally need to be made available to in-service teachers and the DOE plays a key role in supporting the creation and continuation of such courses. Outside contractors[102] who come to provide PD with pre-prepared materials and have a lack of local contextual knowledge of what teachers in Hawaiʻi experience is not an effective long-term solution as they provide a seemingly 'fix-it' approach and do little-to-nothing in supporting the teachers as they put the MLL pedagogy they have learned into practice. Instead, long-term courses are needed by local PD providers with K-12 MLL pedagogical knowledge.[iv]

Recommendation 4. All in-service educators need to be aware of prevalent ideologies impacting their professional practice, such as recognizing their critical role in the education of MLLs using MLL pedagogy rather than simply relying on the 'ideology of common sense'; that is, educators of MLLs can hold misconceptions, such as "teachers don't need specialized ESL training; common sense and good intentions work fine" (Walker et al., 2004, p. 145). In response, engaging teachers and DOE personnel in critical reflection and dialogue related to MLL pedagogy and ideologies impacting multilingual students must be explored, negotiated, and

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[102] One-to-two day workshops by hired presenters from large-scale companies (such as WestEd) are both highly expensive and result in little change if only due to their short duration and one-size-fits-all format. For example, WestEd offers a course called *Making Mathematics Accessible to English Language Learners*, which is a very important topic for all teachers of MLLs since math is often misunderstood to be a universal language, and so perceived to be free of the challenges of language learning (see below, and Chapter 2). However, while a non-profit company, WestEd outlines the fees and format for this single course as follows: *"Two-day* professional development workshop with flexible dates are available for school or district teams of *up to 35 people*. The teacher workshops, including all accompanying materials and facilitator travel and expenses, *cost $8,000 per site for up to 35 participants*. Participants also receive a 40% discount off the price of *Making Mathematics Accessible to English Learners: A Guidebook for Teachers*" (emphasis added, WestEd, 2016, n.p.).

challenged in PD courses. Such a focus can result in more sustainable and effective improvements to classroom practice.

Conclusion

The COE and DOE are well-positioned to bring about educational change across the state. However, while efforts have been made there has yet been no sustainable support for the education of pre-service and in-service teachers of MLLs. What is needed then is a more comprehensive understanding of the current situation and critical reflective dialogue among all affected persons. This includes engaging all involved in the education of teachers of MLLs (and thus those also indirectly responsible for the education of MLLs themselves, such as DOE personnel or university faculty). These key people must become more conscious of current MLL pedagogy and in particular counter-ideological pedagogical practices, such as permitting and supporting students using their first language as a resource in their own learning. Faculty training and teacher education in MLL pedagogy can be done, for example, as exemplified in the successful, on-going work in New York City as reported by language education scholar Ofelia García, and others who clearly and effectively demonstrate best practices in how MLL pedagogy can be taught in the mainstream context. The provision of equitable education for MLLs *is* possible and the positive effects on not only MLLs but all students' learning is immeasurable.

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APPENDIX

Appendix 1. Participant Demographics: Outer Islands

Appendix 2. Participant Demographics: Oʻahu

Appendix 3. Description of the Participants: Outer Islands and Oʻahu

Appendix 4. First Language Use in the Classroom

Appendix 1. Participant Demographics: Outer Islands (*N* = 16; 28%)

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Allison	40-49	Mainland	Caucasian	English (N/A)	M.Ed.	Elementary	Teacher	>1(13)	One course during M.Ed.
Carla	30-39	Hawai'i	Japanese	English (N/A)	B.A. Psychology	Elementary	SPED Teacher	2(11)	PD courses
Colleen	20-29	Hawai'i	Japanese	English (N/A)	M.Ed. SPED	Intermediate	SPED Teacher	4(4)	Guided Language Acquisition Design (GLAD)
Cora	30-39	Mainland	Latina	English (N/A)	M.A. Educational Administration	Elementary	Teacher	6(14)	SIOP; Thinking Maps; ELL Practicum [on the US Mainland]
Diana	30-39	Mainland	Caucasian	English (N/A)	M.B.A.	High	Teacher	14(15)	SIOP
Donna	20-29	Mainland	Caucasian	English (N/A)	M.Ed.	High	Teacher	1(3)	ESL courses on making curriculum accessible (only in English content area)

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Elena	30-39	Mainland	Caucasian	English (N/A)	M.A. Teaching	Elementary	Teacher	1.5(10)	GLAD; Focused Approach to ELD (Suana Dutro) training; Language Acquisition and Development; Historical and Legal Foundations for Educating ESOL Students; Strategies and Materials for Teaching Content and Literacy to ESOL Students (heavily focused on SIOP model); Fun to Teach ESL workshop
Erin	40-49	International	Korean	Korean (English)	M.Ed. SPED	Elementary	SPED Teacher	3(7)	ELL Culture-Based Learning
Heather	30-39	Hawai'i	Japanese	English (N/A)	B.A. Speech Communication	Elementary	SPED Teacher	10(10)	Other PDE3 courses

Pseudonym	Age Range	Place Raised (Hawaiʻi, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Laura	30-39	Mainland	Caucasian	English (N/A)	B.Ed. Elementary Education	Elementary	Math Specialist	3(16)	[left blank]
Layla	30-39	Hawaiʻi	Japanese	English (N/A)	B.A. Psychology	Elementary	Teacher	8(8)	SIOP (twice)
Lillian	30-39	Mainland	Caucasian	English (N/A)	M.Ed. Elementary Education	Elementary	Curriculum Coordinator	2(12)	GLAD 6-day workshop
Martha	40-49	Mainland	Caucasian	English (N/A)	B.A. Elementary Education	Elementary	Teacher	5(10)	Mandatory ESL/ELL classes in university; ELL Success course through HI-DOE; school-run yearly training workshops

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/trainings)
Melanie	40-49	Hawai'i	Japanese	English/ Japanese (N/A)	M.Ed.	Elementary	ELL Resource Teacher (part-time)	>1(5)	ACE Reading for ELLs (PDE3); English Language Arts: Building Foundation Reading Skills for Diverse Learners (PDE3); Individual Differences: Learner (UH Hilo); Education of Ethnic Groups in Hawai'i (UH Hilo); Advanced Instructional Strategies (UH Hilo)
Nora	50-59	Hawai'i	Caucasian	English (N/A)	M.A. Teaching	Elementary	Teacher	4(18)	ACE Reading for ELLs
Penny	20-29	Mainland	Caucasian	English (N/A)	M.Ed. Reading and Literacy	Elementary	Reading Coach K-5	2(5)	College ESL endorsement

Appendix 2. Participant Demographics: Oʻahu (*N* = 42; 72%)

Pseudonym	Age Range	Place Raised (Hawaiʻi, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Aida	30-39	Hawaiʻi	Japanese	English (N/A)	M.Ed. Elementary Education	Elementary	Teacher	2(2)	None
Anne	50-59	International	Filipino	Ilokano/ Tagalog (English)	M.A. Teaching (English)	Intermediate	Teacher	11(25)	PDE3 courses: ACE Reading for ELL; PDCP: Digital Storytelling; Online: Improving Reading in the Content Areas
April	30-39	Mainland	African American	English (N/A)	M.Ed. Elementary Education	Elementary	Teacher	1(2)	Reading Comprehension for ELL course; "the course mainly taught us how to adjust our thinking and lesson planning to promote success for ELL"

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Betty	20-29	Hawai'i	Chinese	English (Cantonese)	B.Ed. Elementary Education	Elementary	Teacher	2(3.5)	Reading and ELLs (for English Language Arts and Literacy in Content Areas: Reading; Writing and ELLs (for English Language Arts and Literacy in Content Areas: Writing
Carly	20-29	Hawai'i	Hawaiian /Part-Hawaiian	English (N/A)	B.Ed.	Elementary	Teacher	3(3)	ELL Culturally Responsive Sheltered Instruction
Caroline	20-29	Hawai'i	Filipino	English (N/A)	B.Ed. Elementary Education	Elementary	Teacher	1(4)	Project GLAD
Chelsea	30-39	Hawai'i	Japanese	English (Japanese)	B.Ed.	Elementary	SSC	4(16)	College, in-service, workshops
Christina	40-49	Hawai'i	Japanese	English (N/A)	B.A. Art and American Studies	Elementary	Teacher	8(14)	SIOP; AVID; Reading Comprehension in Science for ELLs

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Deanna	40-49	Hawai'i	Hawaiian /Part-Hawaiian	English (N/A)	B.A. Deaf Education	Elementary	RTI Coach	2(25)	PD Classes: Culturally Responsive Sheltered Instructional ELLs and the CCSS; ELLs in the Mainstream; Technology to Support Literacy for ELLs
Deborah	30-39	Mainland	Hawaiian /Part-Hawaiian	English (N/A)	M.Ed. Elementary Education	Elementary	Teacher	6(8)	4 ELL/ESL PD courses; 1 ELL course during the M.Ed.
Eileen	40-49	Hawai'i	Japanese	English (N/A)	B.Ed.	Elementary	Curriculum Coordinator	4(17)	Advancing Instruction to Support Language Development; Thinking map training for Language Learners; Math Concepts and Vocabulary for ELL students

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/trainings)
Elisa	50-59	International	Chinese	Chinese (English)	B.Sc. Dietetics	High	ELL Teacher	12.5(22)	TESOL certification; Writing in Mathematics for ELLs; AVID for ELLs
Emily	20-29	Hawai'i	Japanese	English (N/A)	B.Ed. Elementary Education/ SPED	Elementary	SPED Teacher	2(2)	None
Evelyn	30-39	Hawai'i	Japanese	English (N/A)	M.Ed. Educational Technology; M.Ed. Elementary Education	Elementary	Teacher	5(6)	SIOP; WIDA (both courses "in-service done during faculty meeting"); Functional Writing for ELLs
Genevieve	30-39	International	Chinese	Chinese (English)	M.Ed. Secondary Education	High	Teacher	11(11)	TeenACE Reading and Writing
Hannah	20-29	Mainland	Filipino	English (N/A)	B.Ed. Elementary Education and SPED	Elementary	Teacher	2(3)	Reading and ELLs; Math and ELLs; practical implementation of ELL strategies

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Helen	30-39	Hawai'i	Hawaiian /Part-Hawaiian	English (N/A)	B.Ed. Elementary Education	Elementary	Teacher	N/A(5)	Teaching ELLs in a K-6 Classroom (online course); writing and ELLs; CCSS for English Language Arts and Literacy in the Content Areas: Writing ("class that focused on the 3 pieces of writing that all students need to write under CCSS, with an emphasis on teaching ELLs")
Jackie	30-39	Hawai'i	Hawaiian /Part-Hawaiian	English (Hawaiian)	"Education Teaching"	Intermediate	Teacher	7(7)	Blank
Jane	30-39	Hawai'i	Japanese	English (Japanese)	M.Ed. Educational Leadership	Intermediate	Math Teacher/ Coach	2(12)	SIOP; Math in ELLs

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Judith	40-49	Hawai'i	Japanese	English (Japanese)	B.A. History	Elementary	SPED Teacher	2(2)	PLI-Phase XIIa Practical Implementation of ELL Strategies; Project GLAD (K-5) with follow-up series
Judy	40-49	Mainland	African American	English (N/A)	M.A. Human Resources	Elementary	Teacher	3(6)	WIDA training
Julie	20-29	Hawai'i	Multi-racial	English (N/A)	M.Ed. Elementary Education	Elementary	Teacher	1.2(2)	In-service ("was part-time ELL teacher for 1 year")
Kate	40-49	Mainland	Caucasian	English (N/A)	M.Ed. Curriculum Studies	Elementary	Teacher	8(15)	"…taken at least two ESL/ELL DOE PD classes under Joe Laturnea"
Linda	40-49	International	Chinese	Chinese (English)	M.Sc. Mathematics	High	Teacher	0(3)	ACE
Loretta	40-49	Hawai'i	Hawaiian /Part-Hawaiian	English (N/A)	M.Ed. SPED	Elementary	Inclusion Resource SPED	8.5(8.5)	In-service workshops
Lynn	30-39	Hawai'i	Caucasian	English (N/A)	M.Ed. Educational Technology	Elementary	SPED Teacher	4(5)	"1 PD course (2 years ago)"

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Madeleine	20-29	Mainland	Caucasian	English (N/A)	M.Ed. SPED	Elementary	SPED Teacher	2(2)	"…taken several courses from UH Manoa that introduced strategies on working with ELLs"
Mary Ann	20-29	Mainland	Caucasian	English (N/A)	M.Ed. Early Childhood SPED	Elementary	SSC/small group intervention	0(5)	SIOP Academy: Culturally Responsive Sheltered Instruction for ELLs
Maureen	20-29	Hawai'i	Japanese	English (N/A)	M.Ed. SPED	Elementary	SPED Teacher	2(4)	Imagine Learning
Melinda	30-39	International	Japanese	English (Japanese)	M.Ed. Curriculum Studies (Specialization: Secondary Math)	High	Math Teacher	7(7)	ACE; in-school workshops

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Meredith	50-59	Mainland	Caucasian	English (N/A)	B.Ed. Elementary Education	Elementary	Teacher	4(15)	PD Course 1574 – Effective Practice for Micronesian Students: Connection Between Theory and Practice; SIOP (20-hr training); PD Course 1415 – SIOP workshop; Interdisciplinary Certificate in Disability and Diversity Studies; Hawai'i Content and Performance Standards, Hawai'i English Language Proficiency Standards, and LAS Links English Language Proficiency Assessment Alignment Training

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/trainings)
Miranda	20-29	Hawai'i	Filipino	English (N/A)	M.Ed. SPED	Elementary	Teacher	3(7)	"5-6 hire trainings from []district office; PREL trainings for math, science and math; PREL sheltered instruction; Orton Gilingham in-service; strategies in reading and writing in-service"
Naomi	20-29	Hawai'i	Japanese/ Chinese/ Caucasian	English (N/A)	B.A. Art	Intermediate	ELL Teacher	4(5)	College, in-services, workshops, and PD courses; 15 ESL PD credits
Rachel	40-49	Mainland	Caucasian	English (N/A)	B.Ed. Secondary Education	Intermediate	Teacher	2.5(2.5)	College course: Multicultural Education; ELL student teaching (1 semester); SIOP workshop (3 days); WIDA workshop (4 days)

Pseudonym	Age Range	Place Raised (Hawaiʻi, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/trainings)
Rebecca	40-49	Hawaiʻi	Japanese	English (N/A)	B.Ed. Elementary Education	Elementary	Teacher	13.5(15.5)	Reading Comprehension in Science for ELLs
Renee	20-29	Hawaiʻi	Caucasian	English (N/A)	M.Ed. Secondary Mathematics	Intermediate	Teacher	0(4)	College course: "one ELL speciality course during M.Ed."; "one DOE ELL in-person training"
Sally	40-49	Hawaiʻi	Japanese	English (N/A)	B.Ed. Secondary Mathematics	Intermediate	Teacher	2(11)	None
Sarah	30-39	Hawaiʻi	Japanese	English (N/A)	M.Ed. Elementary Education	Elementary	Teacher	1(9)	None
Sharon	20-29	Hawaiʻi	Japanese	English (N/A)	M.Ed. SPED	Elementary	Teacher	1(5)	College course: Cultural Education
Sophie	30-39	Hawaiʻi	Japanese	English (N/A)	M.Ed. Secondary Mathematics	High	Inclusion Teacher; Content Specialist	3(5)	None
Susan	20-29	Hawaiʻi	Filipino	English (N/A)	M.Ed. Secondary Mathematics	Intermediate	Math Teacher	1(4)	None

Pseudonym	Age Range	Place Raised (Hawai'i, Mainland, International)	Ethnicity	First Language (Second Language)	Highest Degree	School Level	Position with School	Total years teaching current grade level (years teaching)	Prior ESL/ELL Teacher Training (e.g., college, in-service, and other courses/workshops/ trainings)
Teresa	30-39	Mainland	Caucasian	English (N/A)	B.Sc. Mathematics	Intermediate	Teacher	2(10)	Post-Baccalaureate (PBCSE) course: Multicultural Education

Appendix 3. Description of the Participants: Outer Islands and Oʻahu (*N* = 58)

Characteristic		Outer Island (*N* = 16; 28%)	Oʻahu (*N* = 42; 72%)
Ethnicity	African American	0	2 (4.8%)
	Caucasian	9 (56.25%)	8 (19)
	Chinese	0	4 (9.5)
	Filipino	0	5 (12)
	Hawaiian/ Part Hawaiian	0	6 (14)
	Japanese	5 (31.25)	15 (36)
	Korean	1 (6.25)	0
	Latina	1 (6.25)	0
	Multi-racial	0	2 (4.8)
Language Ability	English as first language	14 (87.5)	38 (90.5)
	First language other than English	2 (12.5)	4 (9.5)
Age Range	20-29	3 (18.75)	14 (33.3)
	30-39	8 (50)	14 (33.3)
	40-49	4 (25)	11 (26.2)
	50-59	1 (6.25)	3 (7.20)
Placed Raised	Hawaiʻi	6 (37.5)	28 (66.7)
	Mainland	9 (56.25)	10 (23.8)
	International	1 (6.25)	4 (9.50)
Position with School	Curriculum Coordinator	1 (6.25)	1 (2.38)
	ELL Teacher	1 (6.25)	2 (4.76)
	Math Teacher/Specialist	1 (6.25)	4 (9.52)
	SPED Teacher	4 (25)	6 (14.3)
	Teacher	8 (50)	26 (61.9)
	Other	1 (6.25)	3 (7.14)
School Level	Elementary	13 (81.25)	28 (66.7)
	Intermediate	1 (6.25)	9 (21.4)
	High	2 (12.5)	5 (11.9)

Appendix 4. First Language Use in the Classroom

First Language Use in the Classroom - Translanguaging

❖ **Myth: Students speak the home language at home, the school language at school, and they don't mix.**
Reality: People who speak more than one language often use each of these languages on a daily basis. "If you've ever been present in the home of a bilingual family, you will notice that many language practices are used. Sometimes the children are speaking one language, and the parents another, even to each other! Often both languages are used to include friends and family members who may not speak one language or the other, and to engage all….[Each person makes] flexible use of their [language] resources to make meaning of their lives….[This] is what we call translanguaging" (p. 1). "All teaching uses language to communicate concepts and to develop academic uses of language….Translanguaging affords the opportunity to use home language practices, different as they may be from those of school, to practice the language of school" (p. 2).

❖ **Myth: Teachers can't teach academic content to students who use their first language in the classroom.**
Reality: "If students do not understand the language in which they're taught, they cannot possibly understand the content and learn." Translanguaging is a pedagogical strategy that combines direct methods for teaching high-level content while simultaneously developing academic language. "By using collaborative group work and multilingual partners, translanguaging extends and deepens the thinking of students. The expansion of available multilingual resources for teaching opens up worlds, experiences, and possibilities. And the ability to read and write multilingual texts enables students to gain different perspectives. Translanguaging simply has the potential to expand thinking and understanding" (p. 2).

❖ **Myth: Translanguaging doesn't fit with the Common Core State Standards.**
Reality: "Translanguaging provides a way of ensuring that emergent bilingual students receive the rigorous education that will allow them to meet Common Core State Standards, even when their English language is not fully developed….Translanguaging offers…students the possibility of being able to gather, comprehend, evaluate, synthesize and report on information and ideas using text-based evidence; engage with complex texts, not only literary but informational; and write to persuade, explain and convey real or imaginary experience, even as their English is developing" (pp. 3-4).

❖ **Myth: No students will benefit from translanguaging as a learning strategy.**
Reality: "All students would benefit….For students who speak but one language at home, these translanguaging strategies would "awaken" them to language diversity, and would build the linguistic tolerance the world needs, and the linguistic flexibility that would enable them to learn additional languages throughout their lives. For students who speak languages other than English, besides English, at home, these translanguaging strategies would validate their home language practices, even when there is no instruction in their home languages" (p. 4).

❖ **Myth: I don't speak my students' languages so I can't encourage translanguaging in my classroom.**
Reality: "Just as translanguaging strategies would be beneficial for all students, they can be carried out by all educators….[All] teachers can carry out translanguaging strategies if they consider the bilingualism of their students a resource for teaching and learning. All that is needed is a bit of good will, a willingness to let go of total teacher control, and the taking up of the position of learner, rather than of teacher. The beauty of translanguaging strategies is that they can be carried out by…teachers in [any]…classroom context" (p. 5).

❖ **"What is the difference between referring to students who are developing English as emergent bilinguals, rather than English language learners?"**
"Translanguaging…makes us understand that it is impossible to simply be a learner of any language, without incorporating features of the new language into one linguistic repertoire. Thus, language learners are not simply "adding" a "second" language. Instead, new language practices are emerging as students become bilingual. Speaking about emergent bilinguals reminds us that by developing the new language features that make up English, students who are learning English are indeed becoming bilingual" (p. 5).

Source: García, O. (2011). Theorizing translanguaging for educators. In C. Celic, & K. Seltzer, *Translanguaging: A CUYN-NYSIEB Guide for Educators*. New York: CUNY-NYSIEB. Retrieved from http://www.nysieb.ws.gc.cuny.edu/files/2012/06/FINAL-Translanguaging-Guide-With-Cover-1.pdf

The chain of islands which comprise Hawaiʻi represent the most remote area of the world, with "present-day native Hawaiians descend[ed] from Polynesian settlers who crossed the Pacific to the islands as early as the eighth century AD" (Sato, 1985, p. 255). For the next one thousand years these immigrants succeeded in maintaining a relatively isolated existence beyond the regular routes travelled by early explorers (Nordyke, 1989). Although the arrival of Captain James Cook in 1778 subsequently led to an influx of Western contact, there was no immediate change, with Hawaiian remaining "the language of government, commerce, religion, the media, and education" (McCarty, 2002, p. 296). (There was no immediate change to language, however, Cook's arrival began British influence, including his giving the island chain a new name, the Sandwich Islands; this name "was widely accepted and commonly used by foreigners and foreign governments for well over fifty years after his arrival" (Clement, 1980, p. 50). Clement (1980) additionally notes that the name 'Sandwich Islands' was used "up to about 1840 when the name 'Hawaiian Islands' gradually became to take precedence" (p. 50).) The Westerners who came to the Kingdom of Hawaiʻi following Cook's visit, however, brought with them a dramatic change to life in the islands, including American-desired control over commerce and business that forced the government to accept a constitution in 1887, which led to the overthrow and imprisonment of Queen Liliʻuokalani in 1893. The monarchy was replaced with a provisional government and in 1894 the islands were renamed the Republic of Hawaiʻi. In 1899, the Republic of Hawaiʻi was then annexed as a US territory and in 1959 was designated the 50th US state.

The most significant event in the creation of Western-style formal education in Hawaiʻi before American takeover began in the 1840s occurred when government-sponsored schools were first established. With growing business transactions occurring in English, there was a further motivation for education to be offered through English in all schools, rather than only for mission schools and Caucasian children. Starting on a trial basis, the government created schools which offered instruction in English, and economic incentives being provided to English-speaking teachers. With this support came the disappearance of vernacular schools. During this time there was strong debate about whether these English-medium schools—which focused on the education of a Westernized middle class—would have a negative impact on Hawaiian culture and, more specifically, the Hawaiian language (Kawamoto, 1993). Following the installation of American control over the government, there was a swift and severe loss of Hawaiian as the first language. (The loss of an Indigenous language can have significant impact on the Indigenous peoples' psychological and emotional well-being. (While the following example specifically cites the challenges for Indigenous languages in Australia, the content of this quote could be equally applied to Indigenous languages worldwide, including Hawaiian: "For the Indigenous peoples whose languages are affected, the loss has wide ranging impacts on culture, identity and health. Cultural knowledge and concepts are carried through languages. Where languages are eroded and lost, so too is the cultural knowledge. This in turn has potential to impact on the health and well-being of Indigenous peoples. There is now significant research which demonstrates that strong culture and identity are protective factors for Indigenous people, assisting us to develop resilience" (Social Justice Report, 2009, p. 58). As another example, while focused on MLLs, the following study shares similarities to the psychological, social, and cognitive effects when a student's home language (whether Indigenous or other) is denied in education: For example, Parra, Combs, Fletcher, and Evans' (2014) study explores *The Psychological Impact of English Language Immersion on Elementary Age English Language Learners*. Their central questions include: "What happens when the native language is not allowed to be used in the school setting? Is the denial of the child's innate, though legally abstract right to speak their native language harmful to their psychological, social and cognitive development?" and "Does subjecting children to roughly six and a half hours of classroom instruction per day in a language they do not understand harmful to their self-esteem and confidence and to their ability to interact well with others?" (p. 33). In-depth interviews were conducted with 18 Spanish-speaking parents and 10 Spanish-speaking students, the latter of whom participated in a Structured English Immersion classroom in Arizona between 2005 and 2010. The results of this study report that students' psychological, social, and cognitive development, self-esteem, and confidence all suffered in this English-only environment and for some children were consistent with symptoms the authors argue equates to child maltreatment and, in some cases, abuse.)

Heightened by the installation of English-language schools, the general population was pressured to use English on a daily basis in schools, and teachers insisted on the use of English-only in the students' homes, going so far as to make community and home visits to argue its benefits and to ensure compliance (Wilson, 1998). This coercion in schools reflected the larger community and political situation, resulting in additional punishment should any language other than English be used by the students (Wilson, 1998). English was officially accepted as the

medium of instruction in all Hawaiian schools in 1894 (Sato, 1985) and because of this forced linguistic assimilation, the Hawaiian language was not passed down to the next generation of speakers for the first time in its history (Warner, 1999). (The one exception is on the isolated and privately owned island of Niʻihau, where Hawaiian remains the mother tongue of all of the approximate 70 permanent residents and serves as the language of daily communication (Niʻihau Cultural Heritage Foundation, 2009; Warner, 1999).)

There is a long history of Pidgin (also referred to as Hawaiʻi Creole English [HCE]) in Hawaiʻi. (Pidgin is "a creole language known by linguists as Hawaiʻi Creole, Hawaiʻi Creole English, or Hawaiʻi English Creole" (Drager, 2012, p. 61). In this study, Pidgin will use an upper-case "P" to make the distinction between a "pidgin (a contact variety that is not a first language of any speaker) and Pidgin (a creole language spoken as a first language by many people in Hawaiʻi)" (Drager & Grama, 2014, p. 3).) Pidgin is recognized as having been used by at least the late 1700s when local merchants traded with visiting outsiders to the Islands (Day, 1987). The Hawaiʻi Department of Education (HIDOE) has been cited as explicitly acknowledging that, while the first language of many students is Pidgin, its linguistic uniqueness has not been accepted, promoted, or developed in education so as to not disrupt the smooth running of administrative operations or pedagogical practices (Sato, 1985). For example, the HIDOE conducted a survey in 1977 of Hawaiʻi's public school population in which Pidgin speakers were included simply as English speakers rather than receiving their own category; thus, as Pidgin was not considered its own language, separate from English, Pidgin speakers were excluded from consideration in the planning of bilingual and bicultural programs (Sato, 1985). While attempts were made to address this exclusion of Pidgin-speaking students from bilingual programs, this does not substantiate ignoring an entire population of language speakers. In particular, Sato (1985) has noted that many Pidgin speakers—because of its unique language status from English—find listening, speaking, reading, and writing in Standard English to be challenging and thus are left at a disadvantage when placed in a solely academic English-speaking learning environment.

In contrast to speakers experiencing psychological and emotional effects when their languages are in subjugated positions, including Pidgin, it has been noted that there are positive effects when languages are supported. An example related to Pidgin in education is described by Davis, Bazzi, Cho, Ishida, and Soria (2005) as follows: "Reading and studying local [Pidgin] literature had the effect of helping some students adopt a previously rejected identity of 'reader'. An academic English teacher described one such transformation as follows: 'Up until today I would have characterized Bruce as a reluctant reader. But now, Bruce thumbs through the Pidgin short story book *Da Word* by Lee Tonouchi, the self-proclaimed "Pidgin Guerilla". I am so pleased I try to ignore him sneakily reading it under the table after reading time. At the end of the class, eyes wide open, he proclaims, "Miss, I can read *this*. It's in *my* language!"'" (pp. 14-15).

Attempts have been made to address the gap in the provision of equitable education for Pidgin speakers. In 1979, for example, the House of Representatives approved a resolution, which asked the HIDOE to review its conclusion that Pidgin-speakers were not at an educational disadvantage due to English language ability, and that they instead may qualify for inclusion in bilingual education programs. A year later, the HIDOE responded to the resolution by explaining that Pidgin-speaking students were not 'limited English proficient' and that Pidgin was instead a 'dialect' of English rather than its own language. Sato (1985) notes this conclusion meant that Pidgin "was explicitly judged a language that one could not be bilingual in" (p. 267) and where the HIDOE simply acknowledged that teachers should have a positive attitude toward Pidgin as a means of 'handling' their Pidgin-speaking students but that the HIDOE would make no further efforts (Sato, 1985). In 1987, the Hawaiʻi Board of Education put forward an effort to ban Pidgin from classroom use with the outward intention of helping Pidgin-speaking students better acquire Standard English (Tamura, 2008). The banning of Pidgin for its position as a non-standard language and the reactions of the media and the public demonstrate an overall lack of awareness of and respect for non-standard languages, despite the numerous scholarly publications published on them over the past six decades (Tamura, 2008). For example, in broader society in Hawaiʻi, Eades, Jacobs, Hargrove, and Menacker (2006) have noted how the media has reported on this monolingual/English-only ideology within the state and in some cases even adding further tension, sharing perspectives from the general population; for example, a 2001 *Honolulu Advertiser* Letter to the Editor writes: "Hawaiian Creole [i.e., Pidgin] is a kind of shadow language, without a fully developed grammar and vocabulary that seductively undermines and corrupts the study of Standard English" (Georgia M. Helm). As Sato (1985) concluded: "It is not enough to endorse the rhetoric of educational equality by recognizing the legitimacy of a minority language. There must also be serious attempts to empirically describe the minority language and its relationship to the larger sociolinguistic context, the practical goal being the implementation of culturally [and I would add, linguistically] appropriate pedagogy" (p. 270).

In contrast, scholarly research has shown the benefits of maintaining the minority and heritage languages on, for example, academic achievement. Romero-Little, McCarty, Warhol, and Zepeda (2007) explain that significant, long-term studies of "Navajo and Hawaiian immersion show that students in these programs not only

develop age-appropriate fluency and literacy in the native language; they also outperform their peers on standardized tests of English reading, writing, and mathematics (Arviso & Holm, 2001; McCardle & Demmert, 2006a, 2006b; Romero-Little & McCarty, 2006; Wilson & Kamanā, 2001)" (p. 615). Thomas and Collier (1997) report on the results of "one of the largest longitudinal studies of language minority student achievement involving 700,000 students representing 15 languages," where it was found that found that "the most powerful predictor of academic success was schooling for 4 to 7 years in the native language, even for children…who were dominant in English and losing their heritage language" (p. 15; as cited in Romero-Little et al., 2007, p. 615). In smaller-scale studies, other examples can be cited supporting similar findings, including "long-term studies of the Hualapai programme [which] show significant student gains on standardised and local assessments, as well as improvements in student attendance and graduation rates (Watahomigie & McCarty, 1994, 1996; Watahomigie & Yamamoto, 1987)" (McCarty, 2003, p. 152).

ii Hawai'i has experienced more than a century of English language influence and Americanization ideologies, in particular in schools. Several English-only schools, established as early as the 1830s by missionaries and merchants in Honolulu, "began as an experiment in teaching 'half-whites' the English language" (Dotts & Sikkema, 1994, p. 19). In 1841, Punahou was created as a 'select' school for mission children, to provide an "excellent English education under the best moral guidance, and where they [the students] may be kept apart from the contaminating influence of ignorant and vicious natives…" (Polynesian, July 3, 1841, as cited in Stueber, 1964, p. 62). Education in English continued, with the replacement of Hawai'i language textbooks in the 1870s in favor of American texts. In addition, public school administration focused their efforts on hiring teachers who spoke only English and who lived by the US moral standards of the day; as a result, all other cultures and languages not only went unrecognized but were also devalued (Benham & Heck, 1998). English was additionally taught in isolation, and Pidgin, the common language used among all non-Caucasian students, was publicly criticized for blocking the desired Caucasian influence of Americanization, of which this latter term became synonymous with being able to fluently speak standard English (Dotts & Sikkema, 1994).

English Standard Schools were created in the early 1920s to address "the English problem," which "was considered the most difficult of academic problems in Hawai'i" (Benham & Heck, 1998, p. 148). These schools were in demand due to Euro-American contempt for the use of Pidgin by public school students, and as such were considered a 'best-for-the-majority' policy (Benham & Heck, 1998; Hughes, 1993); admission was decided based on English proficiency, which excluded many minority students. In addition to intentionally instilling middle-class American values, most teachers were Euro-American and hired from the continental US to ensure an English-only learning environment. English Standard Schools also tracked students by their linguistic ability, which further separated the students by race. Lincoln Elementary School, for example, was the first English Standard School opened in the state (1924), and had 572 Caucasian, 27 Chinese, and 19 Japanese students (Benham & Heck, 1998). Further work by local scholars provides an extensive history of local language and education ideologies influencing practice since Westerners first arrived in the Islands in the 18th century (Benham & Heck, 1998; Dotts & Sikkema, 1994; Haas, 1992; Logan, 1989; Potter & Logan, 1995).

iii One example of a PD course created within the state of Hawai'i was a program created by Dr Kathryn Davis of the Department of Second Language Studies at the University of Hawai'i at Mānoa in collaboration with two HIDOE language specialists. Following a request by the HIDOE, a teacher certification program was designed, with the pilot version indicating "highly positive responses by teacher participants and universal success among emergent bilingual students" (Davis & Phyak, 2015, p. 157).

In 2011, the state of Hawai'i piloted the first of anticipated four courses in the *Multilingual, Cross-Cultural, and Academic Development* (MCAD) program as a means for teachers of English learners to not only gain licensure and certification in to work with MLLs but also to: "(1) recognize and build on language and cultural resources within content area classrooms, (2) ensure equal educational access through Academic English instruction, and (3) promote development of Heritage Language, World Language, and Language Awareness programs" (MCAD, 2011, p. 1). This proposed program was divided into two grade levels, K-6 and 7-12, with both streams of the licensure program divided into four courses: (1) an introduction to language, culture, and academic development; (2) a methodology of English language and content instruction in the content areas of math and science; (3) a methodology of English language and content instruction in the areas of language arts, social studies, heritage/world languages, art and music; and, (4) language education policies, curriculum development, and assessment. The proposed *K-6 English Language Learner Teacher Specialist Certificate* (and similarly titled 7-12 certificate) would be granted upon completion of three of the four courses (the first and fourth course being obligatory, and a choice given between either the second or third content area interests decided by individual teachers based on their areas of interest), and culminating in a final portfolio.

The description for the second course entitled *K-6 Methodology of English Language and Content Instruction: Math and Science* is as follows:

> The methods course in Math and Science focuses on exploring specific strategies for helping English language learners from diverse linguistic/cultural backgrounds understand and use the content-specific language and literacy skills needed for success in these fields. The course further examines the potential for cross-content curriculum development and teacher collaboration. (MCAD, 2011, p. 2)

The remaining three courses were conceptualized and early literature reviews done for the grades K-6 and 7-12 versions of this course, *Methodology of English Language and Content Instruction: Math and Science* (by J. Holdway and R. Skarin, respectively). The literature reviews focused on compiling potential professional resources that incorporated concepts from the 21st century skills and funds of knowledge, with the collected resources divided into the following topics directly related to math and science: (1) an overview of teaching MLLs in math and science, (2) contextualizing MLL performance, (3) inquiry- and project-based learning, (4) writing, (5) scaffolding strategies, (6) developing academic literacy, (7) funds of knowledge and authentic tasks, (8) multicultural education, (9) teaching across the curriculum, (10) assessment, (11) cooperative learning, (12) the role of textbooks and materials, and (13) integrating technology (R. Skarin, personal communication). The course description states that course content addresses the state standards for the content areas, as well as end-goals in teacher learning including their demonstrating independence, building strong content knowledge, responding to the various demands of audience, task, purpose, and discipline, comprehend and critique, value evidence, use technology and digital media strategically and capably, and understand other perspectives and cultures (MCAD, 2011). Unfortunately, however, the MCAD program never developed beyond the first course on an introduction to language, culture, and academic development, and nothing further was done with the literature review compiled in the content areas of math and science. As noted in Davis and Phyak (2015), the MCAD program was "suddenly discontinued by the DOE under federal pressure to adopt a 'scientific based' curriculum and standardized methods such as those proposed by the WIDA English Language Development…company" (p. 157).

iv Recommendations for locally created and offered PD courses (Hitchcock & Chinn, 2016): (1) continue to offer the *Reading Comprehension in Math for ELLs* course through HI DOE PD3 (currently being explored) or through the Outreach College, University of Hawaiʻi at Mānoa (UHM); (2) collaborate with faculty in the UHM College of Education to develop PD modules for pre-service teachers, provide opportunities for master teachers to mentor teacher candidates, and work toward a program that offers a K-12 Certificate in Multilingual Learning (Hitchcock and Chinn have already begun this collaboration and held an initial meeting.); (3) develop 15-week online courses for in-service teachers that are based on effective practices (evidence-based strategies) with moderate or strong effects identified by the *What Works Clearinghouse*. The goal of these PD courses would be to improve language and literacy achievement for English learners (ELs) in STEM content areas, with particular focus on strategies to teach vocabulary, reading comprehension, and writing; (4) develop four new PD courses: (a) *Effective Practices in Math/STEM for EL* (K-3), (b) *Mobile Technology for EL (K-8)*, (c) *Improving Parent, Family, and Community Engagement Through Multicultural Understanding* (K-8), and (d) *Writing for Social Studies* (Grades 4-8). These courses support the recommendation included at the end of this study; for example, providing online courses so that teachers from geographically isolated areas who would otherwise not have access to such programs can do so, and helping teachers become "more effective in engaging parents, families, and community members in learning and include research-based strategies in cross-cultural understanding" (Hitchcock & Chinn, 2016, n.p.).