The author interviewed education researchers, neurolinguists, psycholinguists, and sociolinguists on four continents to arrive at a consensus for improving education to benefit all children. Historically, Europe, Asia, and North America have received millions of immigrants every year and the numbers are rising. School systems need to integrate these children into the fabric of their diverse populations and prepare all children for higher education. Newly arriving children will need first language support. Education leaders need to realize these children will outperform monolingual children in foreign language classrooms because they already know how to learn a language. Learning a third language is faster and more efficient than learning a second language, but every language that a child has learned needs to be supported. In the case of minority languages, education leaders need to reach out for community support. Education leaders might also consider placing children who speak non-standard dialects of official languages into the same classrooms as the non-native speakers. Better yet, integrate children into mixed ability groups in classes and de-stigmatize speaking differently.

Dr. Robert D. Hobbs investigated neurolinguistics, psycholinguistics, and sociolinguistics while living in Europe (Prague, Berlin, Luxembourg) and Asia (Tokyo, Kuwait), by using libraries in Europe and the USA: University of Hawaii, Birkbeck College University of London, Stadtsbibliotek Berlin, Hamburg University Libraries, and medical libraries.

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The Global Child

Hobbs

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THE GLOBAL CHILD:

How Experts Would Change Education;

Research-Based Acquisition of Languages

by

ROBERT DEAN HOBBS, EDD

March 2016

Dedication

I dedicate this book to the men and women who immigrate to other countries for jobs to support families who live in developing countries enduring separation from loved ones so children, siblings, and parents can have better shelter, healthcare, and education. More specifically on a more personal note, I want to dedicate this monograph to those who shared their stories and languages with me from Asia, Africa, Europe, and South America. While working in private, public, and non-profit sectors in Czech Republic (Cz), Denmark (D), Germany (G), Japan (J), Kuwait (K), and Uruguay, I met incredible people who extended friendship and kindness to me from Angola (G), Azerbaijin (J), Bangladesh (K & U), Burma (J & K), Cambodia (D), Chile (G & J & U), Cuba (Cz & G), Egypt (K), Ethiopia (K), Ghana (K), India (J & K), Iran (J & K), Iraq (G & K), Mongolia (G), Mozambique (G), Nepal (J & K), Pakistan (K), Peru (J & U), Somalia (K), Sri Lanka (J & K), and Vietnam (Cz & G). *Beshi Danabad* to the men of Bangladesh, Nepal, and India. *Shukran Jazeelan* to the Arab men and women. *Shukria* to the men and women of Pakistan and India. *Stutti* to the men of Sri Lanka. *Muchas gracias* to the men and women of Chile, Cuba, and Peru. *Gaman* to the men from Vietnam. *Obrigado* to the men from Angola. *Mamnoon* to the men from Iran. I also appreciate the hospitality of the Tokers, the Katsukis, the Giris, teachers at Czech Technical University, General Khalid Al-Sader, the Vietnamese Culture Center of Berlin, Dr. Li Wei, Dr. Gunter Radden, and the Blairs of East Bank, not to be confused with the Left Bank.

ろあおへせ いめイ はづえ すおん めもりえ
korera no jikan kara watashi ha kono you na omoide ga ari masu
これらの時間から 私 はこのような思い出があります
Aus all diesen Zeiten habe ich so gute Erinnerungen
De tous ces temps je dois ces souvenirs
De todas essas vezes eu tenho essas boas memórias
Da tutte queste volte ho bei ricordi
De todos estos momentos tengo esos recuerdos
Ze všech těchto časů, mám takové vzpomínky
এই সময়ের সব থেকে আমি যেমন অনুরাগী স্মৃতি আছে
Ē'i samaẏēra saba thēkē āmi yēmana anurāgī smṛti ache
फ्रोम ऑल ओफ ठेसे तम्स इ हवे सुच फोंद मेमोरएिस
min kl hadhih al'awqat laday tilk aldhdhikriat aleaziza
من كل هذه الأوقات لدي تلك الذكريات العزيزة
Translation: From all of these times, I have such fond memories.

[Japanese, German, French, Portuguese, Italian, Spanish, Czech, English, Nepali, Bangla in Roman letters then in Bangla script, Arabic in Roman letters then in Arabic.]

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Epigraphic Poignancy

"Primary teachers are being encouraged to see language diversity as a positive resource for learning, and to view speaking and learning other languages besides English as an asset, something to be celebrated and used positively in their teaching"

– Jean Conteh (Lytra & Martin, 2010, p. 155)

"In essence, the learning brain acts as a filter that selects and constrains the cultural representations that will be propagated"

– Stanislas Dehaene, *Reading in the Brain* (2009, p. 148)

"Information about the world around us continuously bombards the brain. The salient features of this stream of input are reflected in the mosaic of maps that tile the neocortex. These maps are highly dynamic and can be sculpted by the very experiences they represent"

– Takao Hensch (*Neuron*, volume 24, p. 492)

"Multilingual proficiency is to be considered as consisting of dynamically interacting linguistic subsystems which themselves do not necessarily represent any kind of constant but are subject to variation"

– Philip Herdina and Ulrike Jessner (2002, p. 75)

"In 1890, a school law was enacted that required male teachers at the Spencer Academy to be college graduates and to have the ability to teach Greek, Latin, French, and German" [As a result, Choctaw and Cherokee tribes had 100% literacy – multiliteracy – and their English literacy levels were higher than the white populations in surrounding states]

– Joel Spring,
Deculturalization and the Struggle for Equality (2012, p. 30)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

PART ONE: IMPROVING GLOBAL EDUCATION

Multilingual skills have existed as long as humans have been roaming across the earth, but brain researchers in the 21st century have revealed the cognitive benefits of learning other languages (Wang, 2015; Wei, 2008). Globalization has increased the need for improved communication in diplomacy and world trade, as well as international jobs in commerce, law, media, medicine, technology, and tourism at this current time of diminishing natural resources (Oleksak, 2007). King and Carson (2016) explained that multilingualism is a driving force in major cities where understanding the importance of multilingual practices is the key to urban harmony through the appreciation of cultural diversity. Nikula, Dafouz, Moore, and Smit (2016) recommended integrating languages in schools to benefit all students. A major shortcoming of teaching in higher education is the lack of internationalization (Sanderson, 2008). Educational leaders should take note that Baker (2011) extensively explained how to improve bilingual education to best serve the needs of learners. In high-tech Silicon Valley, Kleifgen (2013) revealed how work-place performance improved due to the multimodality of communicative methods practiced there. Multiculturalism in education offers immeasurable potential for improving communities, education, commerce, and diplomacy.

To achieve multiculturalism, school curriculum must include foreign languages. According to researchers Roselli and Ardilla (2003) in *Brain and Cognition*, "Language is culture" (p. 326). Neuroscientist Dehaene (2009) wrote, "Neuroimaging revealed which brain area encodes *this* type of cultural invariance" (p. 93). The implication of *this type* in this quote is that encoding in the brain corresponds to cultural idiosyncrasies; in this example, Dehaene (2009) referred to differentiating between upper case and lower case in written language as seen with neuroimaging equipment. No one can fully understand multiculturalism without exploring the truest artifact of cultures: languages, written and spoken languages.

Previous research reports that learners of three languages outperform monolingual and bilingual students in school (Cenoz, 2009; De Angelis, 2007; Riemersma, 2009; Safont, 2005) and also outperform students in higher education (Jessner, 2008). Walt (2013) explained that the acts of translating, interpreting, and codeswitching of multilingual students reinforces concepts in every language used. The implication is that multilingual reinforcement is superior to bilingual reinforcement. Multilingualism facilitates creativity in ways that monolingualism and bilingualism cannot compete (Kharkhurin, 2012). Based on the impetus of

38 studies cited in Jessner (2008) and the greater success of European versus American platforms of education (Schleicher, 2006), the goal of this study includes the exploration of contributions from multilingual researchers with the aim of constructing a multilingual model of education for the globalized 21st century.

No *one solution* exists for multilingual education. Contexts differ widely due to social and demographic factors. Motivations of learners and teachers complicate matters due to attitudes toward multilingualism and statuses of languages. Prior (2015) demonstrated that autobiographical interviews evoke powerful emotions from bilingual and multilingual immigrants concerning their experiences of assimilating a new language, sometimes at the expense of their mother tongues. Emotions are intrinsically connected to motivation. Harnessing emotions for the greater good promises a reservoir of untapped potential and creativity.

Studies in Otwinowska and De Angelis (2014) investigated instructional practices that make sense for covering a wide range of Western multilingual contexts while uncovering common practices and themes, shared concepts and goals, and occasionally similar solutions within diverse contexts. Based on research and empirical data, this monograph arrives at theoretical contributions in discussions of first, second, third, and subsequent languages (L1, L2, L3, Ln) with appropriate terminology when explaining complex multilingual realities and focusing on how ages of students factor into teaching and learning in the classroom. Weber (2014) explained how that flexible multilingual policies are much better for multilingual students. Kearney (2015) demonstrated the multifaceted value of intercultural learning because of the presence of multilingual students.

Chapter 1 includes problem and purpose statements with research questions for the study. The explanation of the background of the problem in Chapter 1 is essential for understanding the need for this research study. The theoretical framework for the multilingual education model is presented and stems from current brain-based learning research. Chapter 2 offers definitions for clarification of specific terminology and acronyms found in the multilingual literature. The second chapter also includes basic assumptions and a discussion of the scope, limitations, and delimitations. PART ONE will end with a summary of chapter 1 and chapter 2, then, segue into a review of the substantiating research literature in PART TWO.

Chapter 1. Setting Up the Study

The first chapter reveals the background of the problem and the purpose for conducting the research. After discussing the rationale for conducting the study, the author explains how the study is significant to students and to leaders in education. This section on the nature of the study includes an overview of the research method and design appropriateness. Next, the research questions divide into the general question and two specific multifaceted research questions. PART TWO offers supporting research. Chapter 1 ends in a discussion of the conceptual and theoretical framework.

Background

Worldwide competition has increased. According to the International Monetary Fund (IMF), China has surpassed America as the world's largest economy based on Purchasing Power Parity (PPP), and the $.2 trillion dollar gap is expected to keep widening as reported by the *BBC News Magazine* (Carter, 2014). China graduates three times as many engineers as the United States (Gerstner, 2006). High-tech businesses have emerged in Latin America, China, and India where multilingualism is the norm (Arias, 2006; Barrett, 2006; Lewis & Trudell, 2008; Liu, 2006; Nilekani, 2006). Communicative competence is vital in every sector. Knowing when and how to mix languages in marketing can make millions of dollars, but not knowing can cause great losses (Bhatia & Ritchie, 2008). Reich (2006) reported, "15% of manufacturing jobs in China vanished between 1995 and 2002 compared with 11% in the United States" (p. 44). Reich (2006) indicated the global need has greatly increased for symbolic analysts, such as engineers, lawyers, and other knowledge workers.

Table 1 reveals that only 63% of American students graduate from high school. Schleicher (2006) indicated a large number of students who drop out of school are immigrant and minority students who do not possess the language skills necessary for success in secondary education. An implication from Table 1 is that more students matriculating in multilingual education systems offered in other countries achieve the necessary communication skills to successfully complete secondary school with tertiary education readiness, and they did so with skills in two or three languages. Longitudinal research reported by Taylor (2009) demonstrated a strong link between second language (L2) successfulness with proficiency in the first language (L2).

Table 1

Multilingual and Monolingual System Comparison of Successful School Completion Rates in Selected Countries

Nation	Percentage	System of education
U.S.A.	63%	**Mono**lingual
Norway	68%	Multilingual
Poland	70%	Multilingual
Finland	73%	Multilingual
Sweden	80%	Multilingual
Iceland	83%	Multilingual

Note. Compiled from information presented in text from "Divided Europe; A Classless Act," by A. Schleicher, February 2006, Newsweek Special Edition, pp. 96-97. (Hobbs, 2011, p. 3)

Disdain for government language preference policies and general lack of understanding language acquisition and multicultural issues emanate throughout multilingual literature (Berthele, 2009; Canagarajah, 2006; Doran, 2006; Jessner, 2008; Safont, 2005; Wei, 2008). Sociolinguistic research has shown that monolingual policies in government and education damage the progress of minority and immigrant students, as reported in Pavlenko and Blackledge (2006).

Diversification of language learning and cultural awareness offer potential economic benefits (Edwards, 2010) because American minorities consume $2 trillion of products and services every year (Anderson, 2006); $2 trillion would rank 8th in the world economy according to The World Bank (GDP Ranking, 2010). Large companies recognize the benefits of incorporating minorities into their business strategies (Moylan, 2010). Sargent (2009) wrote, "limited-English-proficient or non-English proficient consumers are 4.8 times more likely to buy products offered and documented in their own languages" (p. 8). Directors of successful companies realize attention to diversity in hiring and selling of products and services contributes to their robustness (Shea, 2008). Targeting the mother tongues of consumers can be the key to increased sales and sustained growth. Work place productivity can increase by using L1 and L2 to enhance meaning in communication (Kleifgen, 2013).

According to Brinkbaumer (2006), nearly 200 million people migrated to other countries and continents between 2000 and 2005; North America received almost 45 million immigrants, Asia received 53 million,

and Europe received 64 million. Perceptions that most immigrants in the world go to the USA are incorrect. Schools around the world must cope with new students who have minimal knowledge of the language medium of instruction in recipient school systems according to Reyes and Moll (2008) in their article "Bilingual and Biliterate Practices at Home and School" that was published in *The Handbook of Educational Linguistics*. Research indicates these newcomers need to be taught their mother tongues in addition to the local language as reported in *Bilingualism in International Schools: A Model for Enriching Language Education* (Carder, 2007). Spanish speakers are losing their mother tongues because of lack of support in schools (Fuller, 2012). Longitudinal studies over a 20-year period studying 42,000 children demonstrated the relationship between academic success and first language support (Thomas & Collier cited in Walter, 2008).

Immigrants competent in their first languages will demonstrate positive results in foreign language learning due to the metalinguistic skills acquired (Bjorklund, 2009). Third language (L3) learning helps improve competency in the first two languages according to research conducted by Cenoz (2009), De Angelis (2007), Jessner (2006, 2009), and Riemersma (2009). Yet, immigrant children in the USA do not typically study third languages because educational leaders are unaware of the benefits indicated by the research. Educators are unaware that immigrant children learning a third language will outperform the other students in class. Monolingual educators have a monolingual bias and are unaware of the advantages of previously learning a language. Each language that learners study serves to reinforce the concepts, skills, and intuitions assimilated in previous language learning cultivation.

Another problem of monolingual bias confronted by educational leaders includes minority dialects appearing as errors on national standardized tests (Reaser & Adger, 2008). Statistics of higher immigrant dropout rates indicate students feel demoralized by such interpretation of their abilities (Chung, 2006). Regression analysis in Bang, Suarez-Orozco, Pakes, and O'Conner (2009) demonstrated that teachers in English-only curricula scored students higher due to greater proficiency in English regardless of homework completion; teachers awarded lower grades to less proficient children even if they completed homework. Some learners may have lost incentive for doing homework when they realized their efforts were unacknowledged. Students need to be assessed in their first languages as well as in English to receive accurate evaluations of progress in knowledge growth and skill development.

Foreign language learning mitigates ethnocentrism, racism, and xenophobia (Lasagabaster & Huguet, 2007). Multilingualism offers students larger interaction repertoires with a greater number of people (Biseth, 2009). Multilingual opportunities contribute to important democratic values of equality, tolerance, and mutual respect. Hinton, Miyamoto, and Della-Chiesa (2008) demonstrated by brain-informed research outcomes that policies should support students' early learning of foreign languages. This discussion turns to elaborating on the problem.

The Problem

The general problem is that a predominance of monolingual English-speaking citizens compromises American competitiveness and educational progress in the global world (Demont-Heinrich, 2009; Tochon, 2009). Pressure to "internationalize has dramatically intensified in all aspects of education" (Dolby & Rahman, 2008, p. 676), but education in the United States does not offer adequate opportunities or support for efficient language learning (Oleksak, 2007). Monolingual teachers are not adequately prepared for multicultural classrooms (Conteh, 2010; Pantazi, 2010; Robertson, 2010). Immigrant students suffer in one language educational systems as indicated in research outcomes in Alonzo (2008), Chung (2006), Goretskaya (2006), Laguerre (2008), Medina (2008), and Perea (2009). Due to English-centric policies and ethnocentric attitudes, policymakers have not perceived monolingual education as a problem (Holliday, 2008).

The specific problem is that monolingual students may miss critical thinking developmental opportunities. Not acknowledging first languages of multilingual students deprives monolingual students the opportunity to learn from the intuitions and abilities of multilingual classmates. Monolingual students and teachers will be unaware of the cognitive advantages inherent to multicultural knowledge embedded in the blended identities of multilingual students. Research has shown that bilingual students outperformed monolingual students on specific judgment task experiments and metalinguistic intuitive tasks (Bialystok, Craik, & Luk, 2008). Multilingual students outperformed bilingual students in similar experiments (Cenoz, 2009). Many teachers are unaware of the bilingual advantage (Callahan & Gandara (2014).

Bilingual students may miss opportunities because teachers are not acknowledging first languages of students, nor communicating high expectations of minority learners (Pyon, 2008). Authors in Lytra and Martin (2010) demonstrated the importance of acknowledging first languages to

enhance academic performance of minority learners. The greatest disadvantage to the students based in monolingual education is the lack of skills, experience, and transferable knowledge necessary later in life for learning languages, discerning cultural cues, translating phonetic or graphemic information, or analyzing cross-linguistic cognates when reading signs or listening to foreign speech.

This qualitative multilingual education model of education study uses Internet interviews to investigate the knowledge and perceptions of language researchers around the world who focus on various aspects of education and language acquisition. The goal was to determine factors needed to construct a multilingual model of education based on recent advancements in the field of neuroscience and sociolinguistics. Educational leaders and curriculum planners should be interested in the benefits of multiple language research provided by renowned experts. Ultimately, students of improved multicultural curricula are the intended beneficiaries. Society, trade, commerce, and diplomacy are the long-term beneficiaries.

Purpose of the Study

The purpose of this qualitative grounded theory study was to assess multilingual models of education by investigating how and when to incorporate second and third languages into the curriculum to improve language acquisition. The models should assist policy makers in understanding the cognitive benefits of increased diversity in communicative abilities so children are offered adequate foreign language learning opportunities. The most current findings in multilingual research should be used to guide curriculum for improved language learning. The qualitative aspect of this study was appropriate due to the contextual and experiential nature of the participants' answers (Moyer, 2008). Knowledge from experts can best be expressed in the qualitative data (Codo, 2008). The research variables included knowledge from researchers in neurolinguistics, psycholinguistics, and sociolinguistics located in various countries around the world. The outcome of this study benefits from various perspectives of the personal observations, knowledge, and experience of these researchers.

Grounded theory was the appropriate qualitative research design. In the seminal work of Glaser and Strauss (1967), classic grounded theory was used for discovering theory by obtaining and analyzing data systematically. According to Glaser and Strauss (1967), even novice researchers can generate usable theories by employing systematic grounded theory research designs. Charmaz (2006) explained the 21st century grounded theory

methodology of interpreting and portraying the theoretical world. Models are a way of portraying the theoretical world. In this study, the acquisition and analysis of data by systematic grounded theory design is used to assess models of multilingual education that the researcher constructed for the study.

Allen (2010) wrote that the motive behind Glaser and Strauss (1967) was for researchers to explore different ways of doing grounded theory research. Using Internet questionnaires with grounded theory design was accepted by universities for doing terminal degree research (Breland, 2009; Dangerfield, 2010) and explained by Charmaz (2006) as an alternative method of gathering data. For this study, Internet questionnaire interviews were devised to stimulate written responses or conversations to garner information from themes that emerged from open-ended questions with researchers located on other continents. The researcher piloted a questionnaire sent to individuals involved in theoretical and applied linguistics. The generated questions target issues concerning when and how to incorporate languages into the curriculum and what methodologies and strategies best contribute to language acquisition. Researchers use the constant comparative method described by Glaser and Strauss (1967) as appropriate for qualitative analysis of data.

Systematic grounded theory is useful for discovering themes that emerge from data that may be categorized into useful components for constructing theoretical models according to Charmaz (2006). Abutalebi and Della Rosa (2008) demonstrated that grounded theory designs may be used to explore a multilingual process. In this qualitative study, the process to be explored was multiple language acquisition and maintenance. The model to construct should clarify, enhance, and complement the pedagogical process.

Significance

The significance of this study resides in how the outcomes may benefit perceptions of school leaders, teachers, and students worldwide through comprehensive integrated educational modeling to improve curriculum, instruction, assessment, analysis, research, and feedback. Such benefits include tolerance of errors of minority and immigrant students thus likely to raise self-esteem and motivation. Implementation of multilingual curricula may reduce impoverishments of students who will benefit from the cognitive skills and metalinguistic associations inherent to learning languages.

Significance to Learners. Language learning may be enhanced because research has shown that abilities in all three languages improve due

to the transfer of knowledge and skills demonstrated by Bialystok, Craik, and Luk (2008), Cenoz (2009), De Angelis (2007), multiple studies compiled in Jessner (2006, 2008), and Riemersma (2009). Sociolinguistic investigation demonstrated that language sharing by immigrant students in class offers positive establishment of their identities that is crucial to their development, as demonstrated by the many authors in Dornyei and Ushioda (2009) and Lytra and Martin (2010).

Significance to Leaders. Educational leaders interested in professional development for teachers may utilize the outcomes for training teachers how to leverage the human capital of students while celebrating their unique skills; raising their self-esteem; reducing isolation, racism, and xenophobia; and, encouraging the appreciation of diversity. This practice may have extenuating positive influences on marginalized individuals and school cultures as observed by this author in Atlanta, GA, USA; Tokyo, Japan; Prague, Czech Republic; Berlin, Germany; Luxembourg City, Luxembourg; Honolulu, Hawaii, USA; Salmiya, Kuwait; Itahari, Nepal; Dubai, UAE; Charleston, WV, USA; Montevideo, Uruguay; and Santo Domingo, Dominican Republic. Reciprocity by minority language students in contributing their unique perspectives serves to de-marginalize them, allow them to demonstrate expertise, foster multiculturalism, and demonstrate appreciation for diversity, while contributing multiculturalism to the learning environments of the majority students.

Nature of the Study

The research design was a stratified systematic grounded theory qualitative study design to enhance the abstract concepts of how an improved curriculum can improve children's learning of multiple languages by developing a new multilingual education model. A qualitative design allowed the researcher to explore the complexities of intuition, knowledge, and perceptions of multilingual researchers. Internet interviews obtained in the grounded theory design provided a way to explore the processes of language acquisition for the purpose of constructing a model of multilingual education. Grounded theory designs allow researchers to explore themes and discover variables according to the Jossey-Bass guide to qualitative research design (Merriam, 2009). After discovering variables in this study, researchers can conduct quantitative investigations to test the variables for gaining a deeper understanding of multiple language assimilation and multilingual education.

Research Method Overview

This discussion reflects on how the research method accomplished the goals of the researcher in comparison to other methods. Other qualitative methods were not suitable for constructing a model. Constructing a model was the best way to offer a theoretical basis for designing a curriculum to deliver multilingual education. The research design followed a systematic process in three steps.

The data was gathered, categorized into themes, and then selected for appropriateness. This type of grounded theory design allowed the themes to emerge. Lack of systematization would not have offered the sequential analytical nature to produce the desired results. With a qualitative systematic design, unknown variables were discovered relevant to constructing a multilingual model of education. Discovering unknown variables was impossible with a quantitative design. The quantitative method was not appropriate because thematic variables discovered were not quantifiable.

The integrated multilingual education model was grounded in the data that emerged from the current study. Organization in a corpus allows data to emerge (Backus, 2008). Charmaz (2006) stated that in systematic design, the data analysis uses initial coding, focused coding, and axial coding. Focused coding refers to the formation of initial categories by the researcher. These categories may consist of themes, properties, or dimensions observed in the data. After the broad categories were established, the researcher proceeded to the next step of axial coding. The axial phase of coding led to proposing an integrated model on the interrelationships of categories distinguished by the selective aspect of the axial coding phase.

Research Design Appropriateness

The qualitative design was appropriate because of the conceptual nature of the study. A quantitative design was not appropriate because there were no variables to quantify. The grounded theory approach was appropriate because theoretical themes were explored in the data to derive a comprehensive integrated multilingual model of education. This grounded theory design was appropriate because the information sought comprised perceptions of strategies, methodologies, and instructional practices.

A quantitative methodological approach was not appropriate for constructing this model because of insufficient knowledge about the variables to evaluate them quantitatively (Tokowicz & Warren, 2008). The variables should be clarified due to the great amount of research

accomplished recently that served as the rationale for this study. Perspectives on the multilingual learner changed due to vast improvements to brain imaging technology (Abutalebi & Della Rosa, 2008). Another reason quantitative methods were not appropriate was because such methods seek to quantify the strength and hierarchy of relationships between variables within models. A quantitative study was not possible at this time because the essential variables had not been discovered to quantify.

Grounded theory was appropriate for this study because the goal of this study was to construct a model based on theoretical knowledge. Grounded theory is also useful for theoretical predetermined categories according to the monographic manual on the procedures and techniques for developing grounded theory by Strauss and Corbin (1998). The four predetermined categories of participants sought were neurolinguistic, psycholinguistic, sociolinguistic, and multilingual education researchers. Different perspectives served to allow enriched data to emerge as suggested by Charmaz (2006). The systematic aspect for this study was appropriate for exploring abstract concepts (Merriam, 2009). The qualitative method was appropriate for this study because the target data was conceptual, abstract, and not quantifiable.

A grounded theory qualitative design was more appropriate than a phenomenological qualitative design because this study did not rely exclusively on lived experiences of the respondents (Merriam, 2009). While lived experiences may contribute to formation of interviewees' responses, this sample was comprised of academicians whose research and knowledge of this field was also likely to contribute to their responses. Perceptions of informants in this study were likely to be based on empirical research. Grounded theory was the best qualitative method because the resulting themes, variables, and models were at least somewhat grounded in the research. Exploring the data using a grounded theory design yielded the salient constructs necessary for creating a model of multilingual education.

Research Questions

Methodology needs to be connected to the research questions (Moyer, 2008). The researcher must establish what qualifies as knowledge. The aspects of knowledge include ontological and epistemological aspects. Sharing the goal was the most advantageous way to engage participants in contemplating the research questions. Generating and organizing knowledge produced the desired results. The researcher had to decide what evidence supported the claims generated by the study.

In this study, the intent of the research questions was to construct a new model or system of models from the data that emerged to contribute to a multifaceted multilingual model of education. The premise was that a multilingual model of education would promote multicultural awareness to benefit all students. How can the acquisition of English and other languages be accomplished best? Instead of paying attention to the certificate programs for TEFL or TESL, what do language acquisition research experts say? Instead of English acquisition, what can we learn of the acquisition of other languages or any assortment of languages?

General Research Question

What theory will emerge to propose improved instruction and curriculum design to best facilitate multiple language acquisition and learner cognitive skill development?

Research Question One

How should languages be systematically incorporated throughout the curriculum over time to meet the needs of learners?

Research Question Two

What types of teaching methodologies, strategies, and techniques contribute best to construct learning, identity, intuitions, and retention of second and third languages regarding listening, speaking, reading, writing, grammar and vocabulary?

The Hidden Curriculum Question

Educators must always question the implied values of research, curriculum, instructional design, and assessment design. Implications in this study are that public schools adhering to one-language policies are inherently discriminatory toward speakers of other languages. The hidden curriculum is that one language is valued and other languages are not valued. The hidden curriculum question of this study concerns how to make public schools more accessible to immigrant students. How do we help immigrant students thrive within a curriculum that automatically casts them as aliens and outsiders due to the dominant language focus? Or, how do we change the curriculum to meet immigrant needs?

Chapter 2. Conceptual and Theoretical Framework

Any multilingual model of education may overlap several areas of theoretical investigation. The dynamic model of multilingualism (DMM) presented by Herdina and Jessner (2002) discussed a threshold phenomenon previously explained by Cummins (cited in Herdina & Jessner, 2002) that stipulates the existence of a threshold that bilinguals must reach in competence and proficiency to enjoy the benefits of being bilingual. Learners need to reach a certain threshold of learning a second language for the learning investment to be advantageous. The automaticity of fluency marks the sustainability threshold necessary to maintain languages throughout life.

The practice and reinforcement of languages indicates that myelination in the brain has paved neural pathways that physiologically support the demonstrated behavior of language fluency and automaticity, as demonstrated by the neuroscientists Nagy, Westerberg, and Klingberg (2004). Nagy et al. (2004) reported their research in their article, "Maturation of White Matter is Associated with the Development of Cognitive Functions During Childhood" published in the *Journal of Cognitive Neuroscience, Volume 16, Issue 7*, pages 1227 to 1233.

Herdina and Jessner (2002) hypothesized in their DMM theory that language maintenance becomes easier for learners after they develop past the rudimentary stage. Reaching fluency helps to maintain newly acquired languages. The learning of a second language increases the aptitude for learning third and subsequent languages. Herdina and Jessner (2002) also reported a backlash effect that can occur if the first language is not maintained: the learner may develop a foreign accent in his or her first language if the dominant use is overwhelmingly in a newly acquired second, third, fourth, or subsequent language.

The DMM by Herdina and Jessner (2002) stipulated as a basis for DMM that the double monolingualism perspective is inappropriate. De Angelis (2007), Grosjean (2001, 2004), and Safont (2005) concur that the double monolingualism perspective is inappropriate. Bilinguals are not two monolinguals in one brain. Languages in the mind are interfaced to offer enhanced deciphering and creative power. Herdina and Jessner (2002) differentiated between *holistic* and *wholistic* with only a subtle nuance of difference: wholistic is phenomenon perceived as whole; holistic is the theory that the whole phenomenon has properties not represented in its parts. Cross-linguistic interaction and the *wholistic* view of multicompentence are

elements of current theory accepted by prominent multilingual theorists. *Wholism* overlaps into the realm of multilingual education. Multiculturalism and multilingual communication, as exemplified by Cenoz (2008, 2009), are appropriate for teaching, and crucial to the multilingual education model. Students sometimes need to speak or write in their first languages in order to enhance determining meaning in their second or third language, or newest language. Teacher tolerance is necessary so that students can learn in their unique ways.

L. Taylor (2008) asserted that evidence from literacy research indicates that new models of literacy are necessary to improve literacy education. This assertion includes the adoption of the pedagogy of multiliteracies exemplified in Quebec, Canada. Negotiation of competing values is a pervasive topic throughout education as reported by Blackledge and Creese (2010), in their *Sites of Multilingualism; Complementary Schools in Britain*; Canagarajah (2006), in *Multilingual Writers and the Struggle for Voice in Academic Discourse*; Doran (2006), in *Negotiating Between Bourge and Racaille: Verlan as Youth Identity Practice in Suburban Paris*; Egbo (2006) *Intersections of Literacy and Construction of Social Identities*; Giampapa (2006), in *The Politics of Identity, Representations, and the Discourses of Self-Identification: Negotiating the Periphery and the Center*; Hornberger (2009), in *Multilingual Education Policy and Practice*; Lytra, Martin, Barac, and Bhatt (2010), in *Investigating the Intersection of Multilingualism and Multimodality in Turkish and Gujarati Literacy Classes*; Miller (2006), in *Identity and Language Use: The Politics of Speaking ESL in Schools*; Pavlenko and Blackledge (2006), in *Negotiating of Identities in Multilingual Contexts*; Prokopiou and Cline (2010), in *Constructing Cultural and Academic Identities in Community Schools: A Socio-Cultural and Dialogical Approach*; and, Wei and Wu (2010), in *Literacy and Socializational Teaching in Chinese Complementary Schools.*

Overview of the Theoretical Area of Multilingualism

In the *Blackwell Guide to Research Methods in Bilingualism and Multilingualism*, Wei (2008) listed research perspectives associated with multilingual education as including theories from the following fields: linguistics, psycholinguistics, sociolinguistics, and transdisciplinary research. This multilingual study fits with Wei's vision due to the interdisciplinary nature of synthesizing responses from [expert] participants involved in these branches of multilingual research. This study will also attempt to answer Wei's questions concerning the knowledge, acquisition,

and use of languages by multilingual individuals. If the perspective of Wei (2008) is a quasi-macro perspective of research, then the perspective of Moyer (2008) is a quasi-micro perspective. Wei and Moyer (2008) are co-editors of the authoritative *Blackwell Guide to Research Methods.*

Moyer (2008) explained the perspectives of language and theories connected to structure and form, competence and cognition, production and practice, and social action. According to Moyer (2008), connecting theory and research method to research questions and data is important within the view that research is an ongoing dynamic process. This study also fits in with Moyer's concepts because the interview questions were designed to elicit answers that conform to these quasi-micro matters of multilingualism such as cognition and practice.

From the psycholinguistics perspective, Wei (2008) discussed the coordinate, compound, and subordinate types of bilinguals explained by Weinreich. The perspective in the 1950s was that compound bilinguals have fused or shared memories in both languages, but coordinate bilinguals have separate memories, and subordinate bilinguals store everything in the dominant language, then, translate into the second language. Perceptions have changed due to neurolinguistic and psycholinguistic data that suggest the importance of other variables for categorizing the mental lexicon of bilinguals to include proficiency, exposure, environment, and age of acquisition (Cieslicka & Heredia, 2016; Heredia & Cieslicka, 2014; Moradi, 2014). Differences in retrieval and storage depend on how the multilingual individual uses languages. Empirical evidence [this volume] suggests that translators and teachers store and retrieve languages differently.

By including neurolinguistic researchers as participants in this study, a more contemporary and comprehensive representation of the human multilingual lexicon was sought as a component of the multilingual model of education. Wei (2008) asserted that the research across disciplines divulges a broader spectrum of knowledge for the future. This research study follows the suggestion by Wei (2008) by including participants across the linguistic research spectrum of disciplines to construct a multilingual model of education based on the most current information available.

In their sociolinguistic research monograph, Ushioda and Dornyei (2009) reported a dramatic paradigmatic shift in motivational theories concerning language learning based on key empirical evidence. This paradigmatic shift focuses on identity construction and negotiation as a crucial theme throughout the empirical work in sociolinguistics. Blended identities result from the negotiated identities constructed by multilingual speakers who bridge two or more cultures. Prior (2015) offers powerful

stories in *Emotions and Discourse in L2 Narrative Research*. Identity is a component in the multilingual instrument produced by this research project.

In psycholinguistics, Cenoz (2008, 2009) offers current evidence on the benefits of interlanguage transfer and cross-linguistic influence in research on trilingual education in primary and secondary schools. Eliciting responses from participants concerning intuition seeks to include the concepts of *interlanguage transfer* and *cross-linguistic influence* in the model to be constructed. This evolution of research with paradigmatic shifts in neurolinguistics, psycholinguistics, and sociolinguistics supports the need for a new multilingual model of education. Hence, the outcome of this study offers a comprehensive integrated model of multilingual education.

Definitions

The variety of terminology used to describe different types of multilingualism is inconsistent because research in third language (L3) acquisition is a young discipline in linguistic research as asserted by Wrembl, Gut, and Melhorn (2010) in the *International Journal of Multilingualism*. In his UNESCO authorized *Manual of Lexicography*, Zgusta (1971) related that inconsistencies in the use of terminology indicates that a discipline is new. Leading lexicographers Bo Svenson (1993) and Sidney Landau (1989) consider Zgusta as the father of 20th century lexicography. UNESCO is the United Nations Education Science and Culture Organization.

Acronyms used in multilingual literature were compiled in Jessner (2006). The following terms and definitions were adapted from the list in Safont (2005) explaining bilingualism. The author converted definitions furnished by Safont for bilingualism to represent multilingualism. Alteration of terms was necessary to portray the multilingual circumstance of knowing at least three languages to a partial degree. Terminology defined by other authors and researchers are cited appropriately. Owing to the multilingual state of the participant researchers in this study, one can extrapolate they would use the terminology represented in the list that follows.

Multilingual Terminology Defined

<u>Additive multilingual</u>: Each language complements the other languages in an enriching way (Safont, 2005; Herdina & Jessner, 2002).

Ambilinguals: Person fully fluent in two languages (Herdina & Jessner, 2002, p. 59).

Balanced multilingual: Equivalent mastery of languages, which is also termed as *equilingual multilinguality* or *symmetrical multilinguality* (extremely rare).

CLI: cross-linguistic influence.

CLIL: Content and Language integrated Learning is a methodology of teaching content courses in the curriculum in the second or third languages of students (Del Pilar & Lazaro, 2009).

CLIN: Cross-linguistic interaction.

Dominant multilingual: Higher proficiency in a particular language due to greater use.

Dormant multilingual: Usage of first or second language has decreased because of moving to another language environment where little or no opportunities exist for practice.

Early multilingual: Acquisition of languages in early childhood.

EFL: English as a foreign language.

ELF: English as lingua franca.

FLA: First language acquisition.

Functional multilingual: Fluency is limited to certain contexts for languages acquired.

Horizontal multilingual: Languages learned have equal prestige status value.

Hyper-polyglot: Speaker of six or more languages (Zeite, 2009).

Late multilingual: Languages learned after childhood, which may also be known as *achieved multilinguality*.

L1, L2, L3, Ln: Languages first, second, third, and other additional languages.

Maximal multilingual: Near native control of three or more languages.

Minimal multilingualism: Limited knowledge of other languages.

Natural multilingual: No training or schooling in the other languages acquired; also termed as *primary multilinguality*.

Productive multilingual: Speaking has been accomplished in three or more languages in addition to understanding; writing in those languages may be possible (Safont, 2005); ***multiliterate*** and ***multiliteracy*** are other terms used to refer to the productive multilingual and productive multilingualism (Prinsloo & Baynham, 2008).

Receptive multilingual: Understanding of at least two other languages, but unable to speak or write, which may also be known as ***asymmetrical multilinguality***, ***passive multilinguality***, or ***semimultilinguality*** (Thije & Zeevaert, 2007).

Recessive multilingual: Difficulty in understanding or speaking other languages due to lack of use.

Semilingual: Insufficient knowledge of any particular language to be considered fluent.

Simultaneous multilingual: At least three languages spoken from early childhood [rare, but the author observed a tiny Vietnamese boy in the border town of Cheb who spoke German and Czech in addition to Vietnamese and was learning English from Sesame Street on television; his caregivers while his parents were at work were an elderly German-Czech couple].

SLA: Second Language Acquisition

Subordinate multilingual: Interference from other languages that reduces fluency

Subtractive multilingual: Newly acquired languages are displacing a previously learned language or previously learned languages (De Angelis, 2007).

Successive multilingual: Languages learned at different stages of development, which is also referred to as ***consecutive multilingualism***.

TLA: Third Language Acquisition.

Vertical multilingual: Fluent in a standard language and related languages or dialects.

XLA: Cross-Linguistic Awareness.

XLI: Cross-Linguistic Intuition.

Again, in the list above the author adapted most of the multilingual terms and definitions from the bilingual list of terms from Safont (2005). Acronyms came from Jessner (2006, pp. viii-ix). Other definitions came from the following authors: De Angelis (2007), Del Pilar and Lazaro (2009), Prinsloo and Baynham (2008), and Thije and Zeevaert (2007).

Assumptions

Researchers interpret data from what they study to construct grounded theory concepts, according to Charmaz (2006). Correspondingly, Pavlenko (2008) cautioned that stories of multilingual informants are not representations, but interpretations of reality; thus, researchers must reach beyond the viewpoints of participants. **The first assumption** was that interpretations of reality reported by the respondents are candid responses that represent perceptions, knowledge, experience, and intuitions of these participants.

The second assumption was closely related to the first assumption, but applies the grounded theory principle that the current research of this study has the experiences, intuitions, knowledge, and perceptions of the researcher participants as the foundation for the validity and reliability of this study. Further, **the second assumption** means that the knowledge of the participant researchers is grounded in the findings of the current research.

In Herdina and Jessner (2002), Cook offered **three arguments** to support the assumption that language systems of multilingual individuals are

different from those of monolingual or bilingual individuals. The **first reason** is that multilingual speakers use the same lexicon in memory that contains the other languages they know; therefore, the existence of separate systems of languages is implausible. As a multilingual speaker, the author knows the systems are not separate, but one complex system of languages of ranging dynamic dominance. The **second reason** is that research refutes any claim that a language switches off when another language is in use by multilingual speakers. As a multilingual speaker, the author knows that none of the languages "switch off" and all of the languages are ready for spoken or written production as soon as an accent is heard, or a common cognate is heard or seen. The **third reason** is that languages cannot be separated at the neurological level. All speakers can reorganize the storage in their brains, either consciously or unconsciously. A teacher who becomes a simultaneous translator reorganizes the brain with the great effort and concentration required by becoming a simultaneous translator. The author interviewed simultaneous translators from 2002 to 2015. No one refuted the assertion that we reorganize our brains. Christoffels and De Groot (2005) offer a cognitive explanation, as well.

Examples of neurological research supporting Cook's arguments in Herdina and Jessner (2002) include:

- Functional neuroimaging of speech production (Zeffiro & Frymiare, 2006)

- Heteromodal system in the brain maps between different representational systems (Booth, Bruman, Meyer, Gitelman, Parrish, & Mesulam, 2004)

- Sublexical routing interfaces graphemic, phonemic, and semantic lexicons (Schwartz, 2009)

- Nouns are produced in the sensory processing area, and verbs are produced in the proprioceptive area of position and movement (Cangelosi & Parisi, 2004)

- Activation of languages depends on the language input received as well as the desired language output (Bloch, Kaiser, Kuenzli, Zappatore, Haller, Francschini,…Nitsch, 2009).

The third assumption in this study was that multilingual language systems are different from monolingual and bilingual language systems as just explained and supported by neurological research evidence.

The research literature suggests that many educational leaders may not realize that bilingual and multilingual language systems differ (Bharati, 2009; Cenoz, 2009; De Angelis, 2007, 2008, 2009). Realizing the difference between bilingual and trilingual language systems is important for understanding the need for teaching students a third language. Research reveals that third language learners in trilingual education schools scored higher than second language learners in all three languages (Cenoz, 2009; Hobbs, 2011, 2012; Jessner, 2006; Riemersma, 2009; Safont, 2005). **The fourth assumption** was that some educators might not understand the difference between bilingual and multilingual language systems.

To understand the data outcomes, readers need to understand the four assumptions articulated in Herdina and Jessner (2002):

a) Equicomplexity assumption,
b) Equidistance assumption,
c) Homogeneous growth assumption, and
d) Homogeneous multilingual proficiency assumption (HMP).

Thus, the fifth, sixth, seventh, and eighth assumptions were that languages are equally complex, equally distant from each other, develop in the same ways, and that command of the first language for a multilingual individual varies greatly. The reader should bear in mind that while languages are equally complex, languages are complex in different ways. Languages are not equally distant, but to simplify for this investigation the assumption is that languages are equally distant, because to explain otherwise is another book. Languages do not "grow" at exactly the same rate, but that is another book, so to simplify for this study: languages grow at the same rate.

The homogeneous multilingual proficiency assumption (HMP) is made up of variable subsystems that include systems of phonology, syntax, and the lexicon. To measure proficiency, the subsystems must be measured, but Jessner (2008) and Safont (2005) demonstrated that competence varies. Although Navriscis (2006) refuted some of Safont's methodologies in a book review, Navriscis did not refute that competence varies among individuals as well as in their abilities in various languages. Safont (2005) referred to the mother tongue or native tongue as the first language and emphasized that mother tongues can be lost if not used and reinforced.

The reader may assume that the first language refers to the mother tongue, but the first language may or may not be the dominant language of an individual. The author had a "German" student who was ethnically Korean. Her mother tongue was Korean, but her dominant language was German. Her second language was English, which is the language she and I were trying to perfect. So, Korean was relegated to third place. She said it was very difficult for her to think or speak in Korean. She even dreamed in German, which was the third language she learned, but her dominant language.

The ninth assumption of this study was that knowledge of languages is inherent to multicultural education, although this statement is not true in the USA. Hence, what most educators may try to claim is *multicultural education* - this writer argues that multicultural education must include the teaching of languages. The teaching of languages automatically exposes students to multiculturalism. Without knowledge of other languages, students miss the core of culture: language. Only superficial knowledge of culture is possible without knowledge of language because language is the window into the culture.

The tenth assumption was that the use of the stratified systematic grounded theory methodology of qualitative study as proposed by Glaser and Strauss (1967) provides "relevant predictions, explanations, interpretations, and applications" (p. 1) and constructs an accepted rational way of conducting research to achieve the desired results. Hence, the outcomes will be the desired results and the recommendations will be appropriate.

Scope

The specific focus of this study was on creating an idealized multilingual educational system anywhere in the world. Within the qualitative paradigm, this study used qualitative methods and offered a perspective of "insider" experts who generate the data. This study was holistic by the very nature of constructing a model of education. Focusing on the brain was the micro level of the model of education. Focusing on the individual student was at the meso level of the model of education. Focusing on schools, curriculum, instruction, assessment, technology, and media was at the macro level of the model of education. The information generated by this study is generalizable to educational leaders who choose or contemplate choosing to base the design of their school curriculum on the concept of teaching three or more languages to students of any age.

The procedure for this study followed Glaser and Strauss (1967) seminal work in the description of a constant comparative systematic grounded theory qualitative design. The study used the method of a written questionnaire followed by written conversations in asynchronized Internet communication, or, if a participant requested, the alternative of synchronized "televised" [aka Skype] communication. This procedure reflected the social constructivist approach of Charmaz (2006). The theoretical framework encompassed educational leadership, policy-makers, change theory, curriculum and instruction theory, learning theory, and theories of linguistics, neurolinguistics, psycholinguistics, sociolinguistics, and multilingualism. The scope of this study was basic social research with the intent of contributing to basic theoretical knowledge. According to Neuman (2003) *Social Research Methods*, the seven steps in the scope of research include topic selection, research questions formation, design of the study, collection of data, analysis of data, interpretation of data, and dissemination of the results.

Limitations

Potential weaknesses comprise the limitations of any study according to Creswell (2005) *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualititative Research*. Weaknesses limit generalizability according to Cone and Foster (2005). Weaknesses also limit the transferability of study outcomes. Exploratory qualitative research concerns credibility, confirmability, dependability, and transferability according to Denzin and Lincoln (2010) in the *The Sage Handbook of Qualitative Research*. Credibility is analogous to internal validity in quantitative research (Denzin & Lincoln, 2010). The limitations of the current study included the selection of participants based on those who responded to invitations via the Internet. Potential limitations of a grounded theory sampling consist of premature closing of categories for analysis, unimportant or overlapping categories, reliance on overt assertions instead of sensitivity to inferences, and neglected or overlooked categories (Charmaz, 2006).

To enhance credibility, Denzin and Lincoln (2010) listed several technologies that can be used: debriefing of peers, negative case analysis, checking of members, persistent observations, referential analysis, prolonged engagement, or triangulation. In this study, the triangulation of data that emerged from the Internet interviews compared with the information from the Internet search served to mitigate the weaknesses

inherent to the limitations of a brief questionnaire administered via Internet communication. According to Charmaz (2006), interviews are negotiated and contextualized. The Internet interviews in this study were contextualized, but less negotiated than face-to-face interviews due to the lack of facial cues because the university technology lacked the bandwidth to produce simultaneous face-to-face interviews. However, bandwidth strength did permit audio for simultaneous interviews for participants who requested simultaneous face-to-face interviews, and participants could see the researcher. Follow-up inquiry via written Internet communication was another method that was used for mitigating the limitation of the Internet questionnaire. Participants expounded whenever clarification was sought.

The pilot study should have enhanced the validity of the question items generated for the current study, especially in the circumstance of the stratification that took place to ensure the preeminence of the participating researchers. The most published and possibly the most prolific researcher participants graciously served as participants for the pilot study. Ultimately, the data resulting from the generated questions was used for altering and constructing the final comprehensive integrated model. Theoretical results based on data cannot be refuted completely according to the seminal grounded theory researchers Glaser and Strauss (1967). In brief, the limitations of this study were communicating by the Internet, the limited amount of questions feasible to ask the researcher participants, the constrained number of researcher participants, and the limited scope of answers possible given the time frame of two months.

Delimitations

According to Lunenberg and Irby (2009), parameters set by researchers are delimitations. Delimitations concern what to include and exclude. The researcher in this study compiled and analyzed responses of language education researchers, psycholinguists, neurolinguists, and sociolinguists. These researchers responded to a questionnaire designed to elicit constructs for a multilingual model of education. The researcher chose the participants based on their status history of publishing articles in peer-reviewed journals, monographs, and conference abstracts of multilingual research. The researcher stratified the invitation list based on the preeminence of each researcher in his or her individual field of expertise subjectively measured by the number and frequency of publications. The succinctness of the questionnaire was a delimiting factor in order to attract responses from the qualified experts.

PART ONE SUMMARY

Chapters one and two included a discussion revealing the prevalence of research indicating that multilingual students outperform bilingual and monolingual students in every language learned as long as every language learned is supported in the education system. Globalization has increased the demand for multilingual education throughout the world, but educational leaders in the USA and other one language focused countries [revealed in the literature] seem to have ignored this trend. Research by Bialystok et al. (2008), Marx and Melhorn (2010), Safont (2005), and many others (Jessner, 2006, 2008) reported significant cognitive benefits of learning multiple languages. The general problem was the lack of multilingual education in the USA may have reduced America's competitive advantage and could be increasing the threat to national security (Oleksak, 2007). The negative impact on business caused by monolingual education has not been assessed. The specific problem was that students in monolingual education anywhere in the world were not being offered adequate language learning opportunities and were losing cognitive development opportunities that are created in the challenging learning environment of ambiguity and uncertainty that learning a new language provides, according to neuroscientific studies (Snell, 2010). Educational leaders in countries with one official language and limited foreign language learning possibilities seem to be unaware of the cross-linguistic benefits of learning three or more languages.

The purpose of this stratified systematic qualitative grounded theory study was to obtain relevant structural concepts that led to the construction of a comprehensive integrated model for multilingual education as procedurally described in the guide for doing grounded theory research by Charmaz (2006). The qualitative method of inquiry was preferred due to the ability to investigate abstract concepts. Grounded theory design allows exploring the common experiences of researchers to discover common themes emulating from the data. Informants were experts in multilingual and educational research. The experts represented research in the fields of neurolinguistics, psycholinguistics, sociolinguistics, and pedagogical research. A systematic grounded theory qualitative design was appropriate for analyzing the data generated by piloted questionnaires answered by multilingual research experts.

The significance of the study was the provision of a tool for educational leaders for renovating curriculum and instruction according to a

paradigm reflecting the recommendations of experts in language acquisition research. The nature of this study was the grounding of the theoretical model in the data generated by multilingual research experts. The research questions dealt with issues of great importance to constructing an integrated multilingual model of education.

The research questions explored how students learn second and third languages, when languages should appear in the curriculum, and what methodologies were important for learners assimilating multiple languages. This inquiry also investigated the intuitions and insights that can be gained from learning multiple languages. Researchers may describe how existing frameworks of education and learner development can be improved for multilingual education. This study also may have exposed how teachers can best motivate learning to improve and maintain language learning in students.

The premise of this study assumed the correctness of responses by expert participants. Anonymity assures candid responses based on personal and professional experience as the researchers were personally multilingual and as published authors did multilingual research as a profession. This researcher concurs with Heller (2008) that bilingualism is a social construct of knowledge, and with Herdina and Jessner (2002) that languages are equally complex. The researcher also concurs with Van Geert (cited in Herdina & Jessner, 2002) that the learning of new languages develops in similar but not uniform ways. The author agrees with Safont (2005) that first language abilities vary in competency, and has observed students much more proficient in their second or third or fourth languages than their first language.

The author concurs with Roselli and Ardilla (2004) that learning a language is indeed learning a culture because language is a window into a culture that opens as a door as the new language is mastered. Physiological processes are dynamic and not static because the mind and the body are always changing. The author concurs with Whitney (cited in Herdina & Jessner, 2002) that a fundamental characteristic of languages is that languages are symbolic rule-based systems. These symbols can be sounds that are spoken, or markings written on a page, a stone, or a wall.

The scope of this study was limited to the experts who volunteered for the pilot study and the main study to answer a questionnaire. Experts in the pilot previewed proposed models, but experts in the main study did not see the models beforehand. However, one model emerged from the study based on participant input; therefore, none of the experts saw the model that emerged until a synopsis was published in the International Journal of

Multilingualism (Hobbs, 2011 online, 2012 hardcopy). None of the experts are aware of follow up studies [discussed later]. This study is transferable to educational leaders who contemplate or choose to pursue a multilingual paradigm as a feature of school curriculum. The limitation was the amount of data that could be generated by a brief questionnaire that the author offered to voluntary published multilingual experts.

The multilingual literature review follows in Part Two. The research literature offers evidence of multilingual benefits and advantages from various fields of linguistic research. Explanation of the Dynamic Model of Multilingualism (DMM) affords an understanding of multiple language acquisition. DMM continues to be cited in the multilingual research that is discussed throughout Part Two and mentioned by the expert participants in their answers to the questionnaire instrument provided by the researcher of this study. Other educational models reveal features and alternatives to incorporate into the integrated multilingual model of education. Issues related to policy have a considerable impact on how to develop and implement multilingual education. Multilingual research and multilingual issues are multifaceted, interconnected, and interfaced in the mind, the brain, and society from the neurobiological processes to the social interaction processes from early childhood throughout the lifespan.

PART TWO: THE SUPPORTING RESEARCH

The problem is that students in monolingual education anywhere in the world are missing opportunities for cognitive and communicative development by not learning additional languages. Monolingual educators and their leaders seem unaware of the bilingual advantages over monolingualism (Callahan & Gandara, 2014) and of the creativity stimulated by multilingualism (Kharkhuran, 2012). Bilingual students outperform monolingual students on cognitive tests (Bialystok, 2007). Learning three languages has the effect of mutual acquisition reinforcement according to Cenoz (2009) and Reimersma (2009). Multilingual students outperform their bilingual colleagues in higher education according to 38 studies compiled in Jessner (2008). Callahan and Humphries (2016) illuminated the immigrant advantage. According to Bailey, Burkett, and Freeman (2008), MacWhinney (2008), and Tyler (2008), the current models and guidelines of curriculum design are obsolete. The author agrees with Conteh (2010) that a well-defined model for education is needed.

Refined neurological tools have revolutionized available knowledge on language learning and development. Immigrant students in the USA and around the world suffer significantly under outdated education policies and practices (Feuerherm & Ramanathan, 2015). Educational leaders in the USA seem unaware that academic literacy instruction should be integrated into the curriculum and credited to ensure the success of all students (Wingate, 2015). Ushioda and Dornyei (2009) reported that due to the findings in sociolinguistic research that scholars are re-conceptualizing motivation and identity. All of these developments require adjustments to the theoretical perspectives in neurolinguistics, psycholinguistics, and sociolinguistics, as well as education, pedagogy, and didactics. The author concurs with Aronin and Singleton (2008) that a new dispensation of multilingual education is needed.

The review of the research literature begins with a focus on the USA, then, examines school systems around the world. Chapter 3 explains how monolingual education is a multifaceted problem in the USA and other countries. Chapter 4 offers an explanation of the theoretical foundation of multilingualism. Subsequent chapters delve into neurolinguistics, psycholinguistics, and sociolinguistics, as well as education research. PART TWO concludes with discussions on education policies and meta-literature of the research on research and how to conduct research.

Chapter 3. Shortcomings of Monolingual Education

Monolingual education is a problem in a variety of ways. First, we examine the problem of multilingual education in the USA; then, we examine monolingual education as a larger problem for the world. Armon-Lotem, Jong, and Meier (2015) determined that poor ways of assessing students who are non-native speakers resulted in classifying them as Specific Language Impaired (SLI). The difference between non-native speakers and SLI is that L2 English speakers will catch up with L1 speakers, but SLI will not. Meanwhile school leaders wasted L2 student time and school resources. Alonzo (2008) explored why Latino males do not persevere in school, but Armon-Lotem et al. (2015) may have found the reason. The investigation by Chung (2006) demonstrated that English Speakers of Other Languages (ESOL) programs are inadequate in the USA. Baker (2011) published extensive strategies for improving bilingual education, but the vast majority of public education in the USA and several other countries is monolingual. Policies should serve the needs of all members of society.

Research by Goretskaya (2006) revealed that alternative methods of delivering instruction and assessment have not been used sufficiently to benefit English learners. Laguerre (2008) investigated why foreign-born Hispanics and other minorities lagged behind in education in the USA to find that education does not meet their needs and Fuller (2012) cautioned that one category of Spanish speakers are losing their mother tongue. Medina (2008) explained why placement into college remediation programs has been problematic in the USA. Affording the time and money that remediation requires can be difficult. Perea (2009) demonstrated that identity assimilation is an inhibiting factor for immigrant students in New England. The gap in the research literature is that none of these previous studies explored the possibility that multilingual education may alleviate these problems in delivering education to minorities in the USA.

For a global comparison of education in the USA and other countries, Schleicher (2006) reported that European students were outperforming American students on the **P**rogramme for **I**nternational **S**tudent **A**ssessment (PISA) developed by the **O**rganization for **E**conomic **C**ooperation and **D**evelopment (OECD). The PISA standardized exam measures the success of students in secondary education for country-by-country comparisons. PISA is the only test that measures creative and critical thinking (Ripley, 2013). In the *Education Policy* journal, Jeynes (2008) revealed that Asian students also outperformed American students on the PISA. In an official interview, the U.S. Secretary of Education Spellings (2006) said, “About

80% of the fastest-growing jobs will require some postsecondary education" (p. 99).

According to the OECD, Schleicher (2006) explained that *for every one-year increment in average education* that national output increases from three to six percent **[All students +1 year in school = 3% to 6% GDP growth**]. The implication is that productivity in the USA would increase significantly if educators and government in the USA could devise ways of getting young people to stay in schools longer. GDP is Gross Domestic Product, which is the number that represents the national output for each country in growth comparison by the OECD. Although European countries spend half what the USA spends, European scores are higher. Yet, even though the EU spends half as much on education as the USA, the EU manages to deliver multilingual education. Educational leaders in the USA must find ways to keep students in schools longer to prepare them for jobs of the future, increase national output, and serve the needs of society, families, and individuals.

The Institute for Evidence-Based Decision-Making in Education reported that leaders in education face the dilemma between adhering to evidence from the research on learning, or relenting to the pervasive biases, political agendas, and group pressures of publishing executives and sales teams, reported by Friedman, Harwell, and Schnepel (2006) in their *Effective Instruction; Handbook of Evidence-Based Strategies*. In the monograph *Negotiation of Identities in Multilingual Contexts* (Pavlenko & Blackledge, 2006), the authors lamented that government-mandated one-language policies perpetuate social injustice by the symbolic domination of hegemonic ideologies:

a) Britain (Blackledge, 2006),
b) France (Doran, 2006),
c) Australia (Miller, 2006), and
d) USA (Pavlenko, 2006).

Origgi (2008) explained in *New Statesman* why second language learning is key to indoctrinating tolerance and reducing intolerance. Catalano (2016) extolls the importance of dispelling stereotypes. Feuerherm and Ramanathan (2015) assert that refugees must be valued as assets. Kearney (2015) explained the great advantages of intercultural learning that are possible when immigrants are valued. Wingate (2015) recommends integrating literacy programs for credit to serve diverse populations. Mills (2015) delineated literacy theories of which most teachers have not been

informed. Teachers need to understand language use of immigrant students (Behrens, 2014) and how mixing languages helps them learn.

Another facet of the problem is that educational leaders neglect the economic vitality, job security, and safeguard of United States citizens by not promoting foreign language skills in the curriculum (Oleksak, 2007). In the business journal *Financial Executive*, Marshall and Heffes (2005) suggest that Americans are competitively disadvantaged because of attitudes that contrast with 88% of the recruiters in Asia, 85% in Europe, and 95% in Central America who demand at least bilingual skills for placing and hiring executives. The existence of English-centric policies and ethnocentric attitudes implies that American policymakers are not aware of multilingual education advantages, according to Holliday (2008) in the peer-reviewed academic journal *Language Teaching*. Not supporting foreign languages are missed opportunities for multiculturalism that are also missed opportunities for promoting tolerance while mitigating racism, xenophobia, and ethnocentricity, according to Lasagabaster and Huguet (2007) in their monograph *Multilingualism in European Countries*. According to Helot and O Laoire (2011), improved language policies are the key to transformative classrooms that obtain greater outcomes.

The severity of the impact on United States businesses cannot be measured according to Maclean (2006) in his article published in the business journal *Management Decision*. Maclean (2006) expressed the importance of the "strategic management of languages in a complex multilingual business environment" (p. 1377). Kleifgen (2013) demonstrated that mixing languages in the work place has had tremendous benefits for communication and productivity. Published by Harvard University Press, Salomone (2010) suggested that schools risk the future of students by neglecting to support foreign-language-learning. The damage of not learning a foreign language in a multilingual competitive world is impossible to assess. Salomone (2010) warned that immigrant children were not reaching their potentials because of the lack of first language support. In the greatest numbers, Hispanic children suffered the most.

NCLB is an impediment to 12 million learners from immigrant families as well as other learners for advocating monolingual education (Salomone, 2010). NCLB is the infamous USA legislation that mandated comparing all schools as if they were equally funded and served socioeconomically equal constituents. USA schools are not funded equally. NCLB sanctioned comparisons were made by high-stakes tests that seemed to cause damage to graduation rates as well as students' motivation and self-esteem. NCLB stands for No Child Left Behind. NCLB is infamous for

creating havoc that *left behind* children in poverty, immigrant children, and the teachers who were trying to serve them. Fuller (2012) categorized Spanish speakers in three ways:

a) Spanish only,
b) English learning, Spanish maintaining, and
c) Language shift to English while losing Spanish.

L1 Spanish native speakers need to be reinforce L1 and L2 for improved communication abilities in L1 and L2.

Americans who travel abroad also benefit from foreign language instruction. Annual foreign travel includes 8.1 million American business people and 31 million American tourists (Inflight Survey, 2008). The IRS listed 1,771,803 personal 2008 tax returns filed outside the United States in 2009 for single individuals and families (Research, 2010). There is no way to know what language a child will need in the future, but learning a second language makes learning a third language faster and more efficient because the brain already knows how to learn another language. Receptive skills may be the most important, and learning languages increases receptivity to other languages.

Deployed U.S. military personnel need languages. Subsequent foreign language learning increases the safety of military personnel as well as the foreign civilians with whom they have contact. Monolingualism compromises national security as well as economic competitiveness according to Demont-Heinrich (2009) in the *Journal of Communication Inquiry,* with the implication that Americans, in general, are inept at communicating as global citizens. In the journal *Industrial and Commercial Training*, Hurn (2009) advised that fluency in languages of potential customers achieves a competitive advantage due to the numerous disadvantages of English, such as idiomatic expressions, colloquialisms, chaotic spellings, and resentment from bilingual and multilingual foreigners.

Expanding policies in foreign language education may prevent misunderstandings in international diplomatic meetings and global corporate negotiations (Barenfanger & Tschirner, 2008). School leaders and educational policymakers in monolingual predominant countries need to design curricula to support efficient learning of languages. Most countries around the world in the 21st century must deal with educating populations that are multicultural, multiethnic, multifaceted, multilingual, and multiracial (Burns & Roberts, 2010). Capitalizing on previously learned languages of immigrant students by teachers could facilitate positive bidirectional inter-

linguistic transfer of declarative, procedural, strategic, lexical (vocabulary), and grammatical systemic knowledge (Marx & Melhorn, 2010). Such policy redesign would improve USA global competitiveness in South America, Europe, and Asia where students learn two, three, or more languages.

The USA has something in common with Iran: monolingual education. Kalan (2016) interviewed experts in linguistic human rights, mother tongue education, bilingual education, and multilingual education. As the ancient Mesopotamia, Iran could be said to be a birthplace of human society and a crossroad for millennia for commerce and trade from Asia, Europe, and Africa to Asia, Europe, and Africa. Iran has 70 languages, but only Farsi or Persian is the official language. Most Iranians are multilingual and Farsi is the mother tongue of the minority in Iran according to some Iranians. Skutnabb-Kangas, Cummins, Mohanty, and Bahry refute the arguments against multilingual education. Mohanty is an advocate for multilingual education in India, but the context of India is that for some languages there are no teachers because there are few speakers of certain extreme minority languages. Children who do not understand Hindi get discouraged listening to a language they do not understand (Mohanty, 1994, 2009). With 26 official languages, India does have multilingual education, but not everywhere.

Chapter 4 will focus on the premise of the study supported by evidence. Next, discussions involve various types of bilingual and multilingual research. **Chapter 5** contains explanations of the theoretical foundation of multilingual research and explains the premise of the research based on evidence of multilingual cognitive superiority. **Chapter 6** offers an explanation of the theoretical foundation of the dynamic model of multilingualism (DMM). **Chapter 7** reveals the multilingual speech production model and explains its origin and enhancements.

The other chapters in the literature review will allow the reader to explore published material, studies, research, theories, and multilingual education from the various perspectives of language acquisition, psycholinguistics, sociolinguistics, and neurolinguistics. These aspects of language investigation have an impact on how to construct a multilingual model of education.

Chapter 4. Premise: Multilingual Cognitive Superiority

The premise for this study is that multilingual students perform in superior ways over bilingual and monolingual students. Researchers demonstrated:

- Learning foreign languages increases cognitive skills (Bialystok, 2007; Bialystok, Craik, & Luk, 2008; De Angelis, 2007; Otwinowska, 2015).

- Learning an additional language enhances linguistic creativity (Bhatia & Ritchie, 2008; Kharkhurin, 2012).

- Bilingual children outperformed monolingual children (Bialystok, 2005, 2007; Callahan & Gandara, 2014; Safont, 2005).

- Multilingual children demonstrated superior language accuracy in every language learned compared to bilingual children (Cenoz, 2009; Riemersma, 2009).

- Learning other languages increases receptivity in related languages so that receptivity increases exponentially (empirical evidence; observed evidence; Stathopoulou, 2015; Thije & Zeevaert, 2007; Tochon, 2009).

Greater cognitive skills lead to higher academic performance. Multilingual students outperformed their monolingual and bilingual colleagues in higher education regardless of the combination of languages spoken in 38 studies. Researchers conducted their multilingual investigations in 20 countries from 1976 to 2007 [See Appendix A for a brief summary of Jessner (2008)]. Superior performance of multilingual students occurred regardless of the language environment or linguistic landscape. Linguistic landscape refers to languages represented in signage, advertisements, and billboards.

The author has taught children as young as three and adults as old as 64 in the USA, Europe, Asia, the Middle East, and South America. Subjects ranged from gymnastics to tax law update and biology (for nursing students) to investment banking, as well as English as L2, L3, L4, L5, L6, and L7. Bilingual students seem more creative and more receptive to abstract concepts. Multilingual students seem to outperform bilingual students and monolingual students. The observation by the author has been that

multilingual students inherently have a much more sophisticated worldview than monolingual students. In the workplace, multilingual co-workers are a great advantage to serving an international clientele. Simultaneous acquisition of languages at a young age may seem to delay development in small children, but the result is communicative abilities in two or more languages.

Bilingual Research

Data from bilingual research dispelled myths that learning second languages confuses learners (Bialystok et al., 2008). Bialystok (2005) found that both languages in bilinguals remain active in processing either language. In theory of mind experiments bilingual children consistently outperformed monolingual children in controlling perceptions by ignoring inaccurate or misleading information. Bilingual children also outperformed monolingual children on mixed cue stimulus experiments and quantitative tasks. Bialystok (2005) attributed the faster performance of bilingual students in solving problems as due to the superior ability to inhibit irrelevant information distractions. These cognitive control advantages of bilinguals protect them from cognitive decline in the aging process later in life (Bialystok, 2007). These findings indicate that bilingualism accelerates and maintains the cognitive functioning development of attention and inhibition throughout the life span. Stafford, Sanz, and Bowden (2010) demonstrated that bilingual advantage in learning L3 persisted in the early or late learning of L2. Wen, Mota, and McNeill (2015) revealed the dynamic complex relationships between working memory and L2 development, processing, and performance [L2 = Second Language].

Trilingual Research

Parents worried when school leaders implemented a multilingual model of education in the Basque area of Spain. Parental concern that *student progress* could suffer dissipated when school leaders revealed that Basque children had the best scores in Spain as reported by Lasagabaster and Sierra (2009) and Ruiz de Zarroba, Sierra, and Gallardo del Puerto (2011). Assertions that learning other languages confuses learners are untenable. Learning three languages seems superior to learning two languages as long as all three languages are supported in the curriculum.

Students learning three languages demonstrated greater language skills than students learning two languages in the following studies:

- Learners studying French, Hebrew, and English outperformed learners studying Hebrew and English (Jessner, 2006);

- Children studying Basque, Spanish, and English outperformed children studying Basque and Spanish (Cenoz, 2009);

- Children studying Frisian, Dutch, and English outperformed children studying two languages (Riemersma, 2009);

- Learners studying Swedish, Finnish, and English outperformed learners studying two languages (Jessner, 2006);

- In the Netherlands, Turkish and Moroccan immigrants performed better in learning English than Dutch monolingual students (Jessner, 2006).

Third language learning reinforces language learning skills better than second language learning in superior cognitive flexibility with greater repertoires of phonetic and phonological abilities that result in better pronunciation and more strategies for future language-learning (Marx & Melhorn, 2010). Three issues debated concerning multi-competence involve:

- Conceptual and linguistic levels of use and development;

- Qualitative and quantitative differences between monolingual and multilingual competencies; and

- The methods of analysis for the differences between mono- and multilingual competencies (Kecskes, 2010).

When analyzing competency in languages, educators need to consider individual strengths and weaknesses in each language for reading comprehension, listening comprehension, speaking abilities, writing abilities, use of appropriate vocabulary and use of a variety of vocabulary in writing and in speech, and grammatical conventions in conforming to the rules of each language learned. Abilities change, so reassessment is

necessary. Every language learned needs reinforcement throughout the lifespan to stay current in the mind and the brain. Educators need to distinguish between L2 and L3 learners to assist in their language development and acquisition (Otwinowska, 2015).

Higher Education Multilingual Superiority Evidence

Analyzing the information presented by Jessner (2008) offers important information. The evidence that supports the need for a new multilingual model of education is a comparison of language learner types to language learning environment. Of the 38 studies listed by Jessner (2008), 22 studies examined learners studying a third language in their native language environments, and 16 studies were immigrants studying a third language in second, third, or fourth language environments. Multilingual students outperformed monolingual and bilingual students in all studies regardless of language environment.

Analysis of evidence. Further analysis of Jessner (2008) reveals that of the 15 immigrant third language (L3) studies, seven investigations were students in their L2 environments learning L3, seven inquiries were students learning while immersed in their L3 target language environments, and one research study was in an L4 environment where the target language was L3. The most unique of these studies took place in Poland examining Portuguese (L1) students who spoke English (L2) and studied German (L3) in the Polish (L4) environment. The common factor in all of the studies was that the learning of three languages indicated higher academic performance than the learning two languages.

Significance of evidence. Significant to this study is that third language (L3) learners in all four environments (L1, L2, L3, and L4) outperformed monolinguals and bilinguals in higher education. The evidence tabulated by Jessner (2008) indicated that studying foreign languages is beneficial to the native speaker as well as the immigrant. All studies in the table represented third language learners outperforming others in higher education. This factor supports the view that second and third language learning should be incorporated into the curriculum of primary and secondary schools as asserted by Cenoz (2009), Jessner (2008), Marx and Melhorn (2010) and others (Hobbs, 2011, 2012). Table 2 demonstrates the variety of studies that took place in first, second, third, and fourth language environments (L1, L2, L3, L4).

Table 2

Comparative Studies of Multilingual and Non-multilingual Student Performance in Higher Education with a Focus on Language Environment; Students were Studying their Third Language in L1, L2, L3, and L4 Environments [Visual linguistic receptivity down, Acoustic linguistic receptivity across]

Languages	L1	L2	L3	L4
L1	23			
L2		7		
L3			7	
L4				1

Note. Jessner (2008) compiled 38 studies in higher education that demonstrated that multilingual students outperform other students. Table 2 represents that 23 of the 38 studies of students learning third languages took place in the first language (L1) mother tongue home environment. Seven studies took place in the L2 environment, the place where their second languages were spoken. Seven studies took place immersed in the L3 environment of the language being learned. And, one study took place with students learning their third language in L4 environment, an environment where they did not know the language when they arrived. The table represents languages that students hear (horizontally) and languages that students see – the linguistic landscape (vertically). L1, L2, L3, and L4 represent the sequence in which the students learned their languages. Students in each study and location had the same language repertoire. The diagonal design infers the complexity of learning multiple languages with respect to the dominant language seen and heard. Critical abstract thought was the goal of the diagonal table design. Students learning L3 in L4 environment will be compelled to learn L4 to at least a functional degree. Students learning L3 in L3 environment enjoy the optimal language acquisition circumstance. Students learning L3 in L2 environment reinforce L2 while trying to learn L3. Perhaps students learning L3 in L1 environment have the greatest challenge because learning L3 in L4 environment may be more stimulating than learning L3 in L1 environment. The author taught Investment Banking for Luxembourgish students at the Chamber of Commerce in Trier, Germany who spoke English as L4, L5, L6, and L7. Luxembourgish children speak L1 Luxembourgish, L2 German, L3 French, and L4 English, but 15% of the population of Luxembourg is Italian and 18% is Portuguese. Some of them intermarry and have Spanish relatives, so they speak Luxembourgish, Italian, Portuguese, German, French, Spanish, and English. Subtitles on all of the films in Luxembourg are in Flemish Dutch and French (two rows of subtitles), so they invariably understand Flemish and Dutch script as well. The Luxembourgish school system also supported the first language of Yugoslavian refugees who were learning French as L2 and English as L3. Some Luxembourgish students took Latin as an elective. Cities like Luxembourg offer a perfect environment for reinforcing many languages.

Chapter 5. Theoretical Foundation: DMM

Herdina and Jessner (2002) based their *dynamic model of multilingualism* (DMM) on *dynamic systems theory* (DST). DST is also referred to as *complexity theory* or *chaos theory*. According to DMM, multilingual systems change continually with *language development and attrition* throughout the lifespan. Language maintenance is necessary to avoid language attrition. Schooling must build language skills or communicative ability dissipates. Reaching fluency is necessary to strengthen the neuronal paths that format automaticity. Fluency ensures greater memory storage and retrieval. Navricsis (2006) favorably reviewed Herdina and Jessner (2002) commenting that frequent references in multilingual research signaled wide acceptance of the theory. Hence, DMM is frequently cited and referenced in 21st century language acquisition research.

DMM Processing and Storage

Navricsis (2007) designed research that offered support to DMM by testing how words or concepts are stored and organized in the brains of bilinguals. Researchers observed that younger language acquisition seemed to denote paradigmatic memory whereas later acquisition resulted in a more syntagmatic representation of language. In other words, early L2 or L3 acquisition results in memory storage indistinguishable from L1 acquisition.

Syntagmatic Memory Precedes Dual Language Memory

Syntagmatic storage implies separate storage that is accessible through a *parallel memory search* in the first language until the learner achieves native-like automatic fluency in the additional language. A syntagmatic representation in memory may indicate the necessity of the learner to translate from L1 to L2 in the earlier language development stages until the learner achieves the automaticity of fluency. Syntagmatic refers to the unconscious system of rules for syntax and lexicalization - word order and word formation (Quirk, Greenbaum, Leech, & Svartvik, 1985).

This finding does not mean that native fluency is not possible in L2 or L3 or Ln, but means that later acquisition of a language will never be incorporated into memory in the same way as the first language (Schumann et al., 2004). Singleton (2007) demonstrated that a high degree of lexical interconnectivity exists across the languages of a bilingual or multilingual person.

Memory Storage Differentiation

According to Navricsics (2007), the memory storage of fluent bilinguals is similar to monolinguals in the way that *declarative* and *procedural memories* combine to produce utterances. The findings from Navricsics (2007) indicate that memory storage has implications for education. Instruction should emphasize teaching concepts because concepts have a greater impact in memory storage. Concepts are more retrievable from memory than isolated information. Implications also suggest that teaching grammar conceptually and communicatively achieves greater success than rote-based rule memorization. Think aloud techniques assist learning in less explicit situations, but serve no advantage in highly explicit teaching (Stafford, Sanz, & Bowden, 2010).

Neurolinguistic investigation into 18 languages. The languages included in Navricsics (2007) study were: Vietnamese, Swedish, Swahili, Slovak, Serbian, Russian, Romanian, Polish, Latvian, Italian, Greek, German, French, English, Czech, Croatian, Chinese, and Arabic. Navricsics (2007) investigated four relationships:

- Retrieved response correlation with word class
- Proportion of word class responses
- Meaning relationships
- Age group responses.

Navricsics (2007) monitored: nouns, verbs, infinitives, adjectives, adverbs, modifiers, pronouns, and cardinal numbers. Relationships noted were lexical equivalents, miscellaneous, syntagmatic, hyponyms (hierarchical relationships), antonyms, collocations, meronyms (part representing whole), phrases, infinitive derivations, and semantic derivations. The findings from Navricsics (2007) follow.

Bilingual memory storage. According to Navricsics (2007), the memory storage of fluent bilinguals is similar to monolinguals in the way that declarative and procedural memories combine to produce utterances. The findings from Navricsics (2007) indicate that memory storage relates more to concept rather than grammatical form. Navricsics (2007) findings are consistent with the explanation of *declarative* and *non-declarative memory* in Nelson, De Haan, and Thomas (2006) as well as Crowell (cited in Schumann et al, 2004). In the literature, *declarative memory* is also referred

to as *explicit memory*, and *non-declarative memory* is the equivalent of *implicit memory*, as pointed out by Nelson et al. (2006).

Evidence for Supporting First Languages

Thomas and Collier (cited in Walter, 2008) reported on 42,000 children in a 20-year ongoing longitudinal study that indicated academic success is related to first language support. Walter (2008) wrote that many scholars question the fairness of not providing primary language support. Moreover, sociolinguists declare that multilingual education is an issue of fulfilling basic linguistic human rights for all children (Asgharzadeh, 2008; Hornberber & Hult, 2008). Monolingual English speakers studying Spanish outperform heritage learners in grammar if the native-Spanish speakers are not provided explicit grammar instruction (Potowski, Jegershi, & Moran-Short, 2009). These native-Spanish speaker children have a right to learn their first languages, especially due to research evidence that second language skills depend on achieving proficiency in the first language.

Sociolinguists are concerned for immigrant students at the impact that the low status of vernacular language use has on their self-esteem. These concerns relate to policy and ecology of languages on global and national levels (Hornberger & Hult, 2008). Misdiagnosing features of dialects as learning disabilities can damage the motivation of students and perpetuate segregation, racism, and intolerance (Reaser & Adger, 2008). Many bilingual students are incorrectly placed in special education because of American inefficient funding policies (Frattura & Topinka, 2006). The result is slowed academic growth with adverse emotional impact on immigrant students made to feel as outsiders. The difference of treatment of immigrant and minority students can be the difference between success and poverty.

Language policy has been more related to political agenda than to linguistics (McGroarty, 2008). Designers of No Child Left Behind (NCLB) legislation (USA) was to target performance in high-stakes testing that does not consider that English is a new and difficult language for some students. Assessments should not be generalized to whole populations by ignoring language level proficiency of immigrants. Children who lack proficiency in English should be tested in their dominant languages. Accountability must include demographic factors to be fair to school leaders, teachers, and students.

The global perspective of numerous minority languages competing for prominence next to the few languages designated by governments and society as majority languages is an issue of concern for sociolinguists as

explained by Lewis and Trudell (2008) in their article "Language Cultivation in Contexts of Multiple Community Languages" published in *The Handbook of Educational Linguistics*. Scholars with sociolinguistic concerns want to see policies in education reflecting the necessities of individuals and communities revealed by social research. Discussions on sociolinguistics and policy resume later. The organization of following chapters reflects these branches of linguistic categories combined with the representations in the following model. The curriculum and instruction-human development interface model follows after the breakdown of the equation on the following page. At the top of the model, please notice the Synergistic Equation and contemplate the implications for integrating the concepts of human development with the cycle of curriculum, instruction, assessment, media, technology, performance, and feedback.

Deconstructing the Synergistic Equation of Curriculum and Instruction

The researcher designed questions on the following page to deconstruct the equation and give meaning to each of the components. Understanding how each of the components fit into the equation is necessary for understanding how the equation works in a real world application. The implication is that the equation should be considered in the:

- Designing of curriculum
- Initial evaluating of students for placing in mixed ability groups
- Grouping of students in mixed ability groups to yield the best results
- Regrouping of students to facilitate students learning to adapt to new circumstances
- Designing of instruction to yield meaningful student products – meaningful to students and meaningful to observers
- Incorporating media and technology into curriculum and instruction to enhance learning
- Designing of assessment to accurately depict the learning and progress of students
- Designing of feedback so that students feel challenged and never defeated
- Evaluating and redesigning curriculum to stay current with technology, media, and concerns of the time.

EQUATION: Instructional Input} *Drive} Collaboration} Synergy} Performance* **Output =**
[Cognitive/Affective/Psychomotor Development ***X*** *Constructivist Approach]*
Curriculum + Artistic Aspect + Technological infusion + Formative Assessments **=**
Student Skills Acquisition + **Critical Thinking** Adaptations;
Summative Assessment} Next phase/stage/level/sphere of influence.

Figure 1 Extract. The Synergistic Equation (Hobbs, 2011, 2012). The full Figure 1 Curriculum and Instruction Interfaced with the Human Development Domains follows on the next page.

Above, please find the Synergistic Equation of Curriculum and Instruction Interfaced with Human Development. The equation above was published with the model on the following page, and the equation appears at the top of the following model. Please contemplate the equation first and ask yourself from a teaching perspective (teaching any subject) the following questions:

1. When I design instruction, do I consider the motivational drive of the students and how to carry the lesson forward to the outcomes that I want?
2. When I design instruction, do I consider how to group students to bring about the best collaboration?
3. When I group students, do I consider changing the groups again and again to see what combinations of students yield the highest synergy?
4. When I consider the different amounts of synergy yielded by each combination of students, how does the performance output compare from each group?
5. Do I consider the cognitive and psychomotor development of each student when I plan instruction?
6. Do I observe if each student is receiving the same positive treatment from other students to enhance the affective aspect of feeling acknowledged, valued, and appreciated in the classroom?
7. If I notice that the affective needs of a student are not being met in a class, what am I doing to alter the situation?
8. When I design project alternatives for students, do I always explicitly or implicitly include the artistic input of students with the aesthetic outcomes of student products so that students will be motivated and inspired?
9. When I design project menus for students, do I make the project menus complex enough that students feel challenged by the critical thinking required to produce student products worthy of display and performance at events?

EQUATION: Instructional Input} *Drive} Collaboration} Synergy} Performance* **Output =**
[Cognitive/Affective/Psychomotor Development ***X*** *Constructivist Approach]*
Curriculum + Artistic Aspect + Technological infusion + Formative Assessments **=**
Student Skills Acquisition + **Critical Thinking** Adaptations;
Summative Assessment} Next phase/stage/level/sphere of influence.

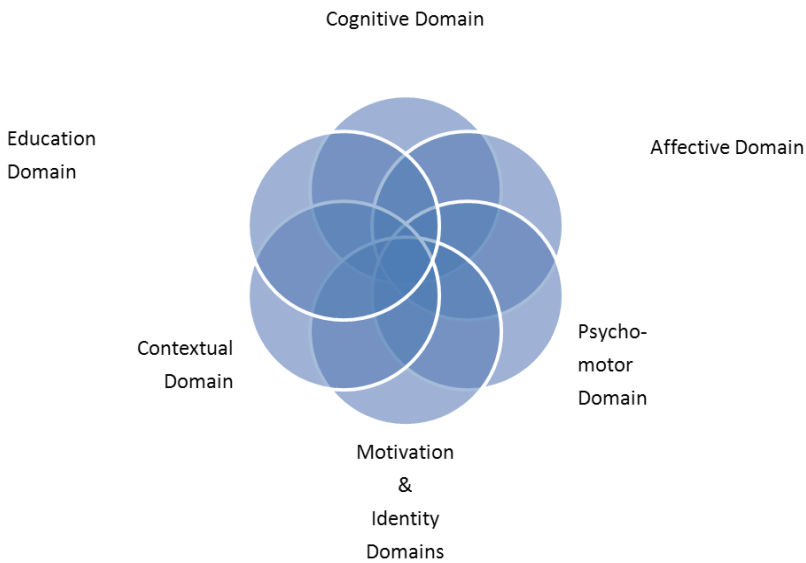

Figure 1. The Hobbs Curriculum-Instruction Human-Development Interface Model (Hobbs, 2011, 2012) consists of six overlapping dynamic spheres and an equation representing domain synergy. The model was inspired by theories in Gredler (2005) and Schunk (2004). Imagine the model spinning dynamically with expanding and contracting components as if living and breathing. An explanation of the Synergistic Equation at the top of the Model follows.

Chapter 6. Hobbs CI-HD Interface Model and Equation

On the preceding page, please find the Hobbs Curriculum-Instruction Human-Development Interface Model and Synergistic Equation. The discussion will begin with an explanation of the equation at the top followed by an explanation of the model below the equation. A PowerPoint in the Synergistic Equation can be found on the ACADEMIA.EDU website under the profile of Robert Dean Hobbs (the author). By clicking on Analytics, one can discover the number of researchers and education colleagues country by country all over the world that have viewed or downloaded the PowerPoint. There seems to be a positive correlation between complexity and views. The implication seems to be that scholars seek new ways of thinking and visualizing complex concepts. Discussion of the equation above the model on the preceding page follows.

The equation furnished with the curriculum-instruction human-development interface model expresses how to maximize learning and language acquisition. In other words, multilingual cognitive superiority needs to be strategically planned, but the equation is general for teaching any subject successfully. Key words of the equation are in bold typeface. **Input** represents instruction, technology, media, and texts. **Drive** represents enthusiasm and encouragement from teachers to stimulate student enthusiasm. **Collaboration** represents students working together on projects and presentations. **Synergy** is the result of excellent instruction, use of technology, carefully selected media, enthusiasm from the instructor, and collaboration with fellow students that yields greater results because of the collaboration. **Performance** represents the deliverables: project, experiment, research report, thematic essays, visuals, maps, diagrams, charts, tables, and presentations. This **output** is the result of attention by educators to the **cognitive**, **affective**, and **psychomotor** development multiplied with enhancements by using **constructivist** learning-approaches in which students construct their own learning. Educators must also anticipate and allow for creative, **artistic**, and aesthetic components in the outcomes. Educators must strategically use **technology** and plan for students to use technology in their research. **Formative assessments** must be designed in alternative ways so that subjective and objective analyses can take place. The output represents **skill development** and **critical thinking** applications. **Summative assessments** must be designed to fairly test what students have learned in ways that reveal how students have been successful. To be fair, students must be assessed in their dominant languages to compare the results with assessments in the official languages to fully understand student

progress. The **next phase** is the next component in the curriculum. The **next stage** is the next stage of development. The **next level** is the next grade in school or a higher-level textbook or reader. The **next sphere of influence** can be the transition to university or the work place, or growth within any hierarchy.

The Hobbs Curriculum-Instruction Human-Development Interface Model consists of six overlapping domains: cognitive, affective, psychomotor, motivation/identity, education, and the contextual domain. The **cognitive domain** represents the thinking and learning of individual students. To examine the cognitive domain one must examine the research in neurolinguistics, psycholinguistics, and education.

The **affective domain** represents the emotions. The overlaps that you see on the edges and in the center of the model represent that positive or negative emotions have a great impact on whether the cognitive domain can reach maximum potential. To examine the affective domain one must examine the investigations into psycholinguistic, sociolinguistic, and education research.

The **psychomotor domain** represents human development and skill development. To investigate the psychomotor domain one must examine the research in neuroscience, human development, and education.

The **motivation and identity** domain represents exploration of the identities and blended identities of individual children. Blended identities refers to children who were:

- Born in one country, but live in another country, or have lived in various countries;
- Born to parents of different nationalities;
- Born to parents who have different mother tongues from each other;
- Born to parents who speak one or more languages different from the official language spoken in the country where they live;
- Live in a country where the official languages are different from the languages spoken by either or both parents, or the language spoken in the home;
- Have grandparents who speak different languages from one another, or different from either or both of the parents, or different from the national language or languages where the children live;
- Have parents or grandparents who are from different religious backgrounds.

Teenage individuals adapt new identities that involve fashion or style of dress, music preferences, sports preferences, identification with teams, tattoos and piercings or the lack of them, collections, clubs, and so on. To investigate motivation and identity one must explore genres of the social sciences, sociolinguistics, and education research.

The **school domain** represents curriculum, instruction, assessments, materials, media, and educational technology. The school domain also includes an examination of the hidden curriculum as well as the stated curriculum. The hidden curriculum involves and examination of the values advocated implicitly. The explicit values are expressed in the vision and mission statements. To investigate the school domain one must explore the education research as well as the social science and behavioral research.

The **contextual domain** represents communities, laws, values, languages, religions, demographics, linguistic landscapes, architecture, furnishings, climate, and status of education, languages, religions, sciences, history, teachers, freedoms, human rights, foreign perspectives, spheres of influence, and families. To investigate the contextual domain one must read the research of the social sciences.

Examining the center of the Curriculum-Instruction Human Development Interface model reveals that all of the domains overlap. The implication is that the domains are interconnected. For instance, all of the domains make up one's identification. Motivation is intrinsic to identity and dependent upon the affective domain. The psychomotor domain is dependent upon the motivation and affective domains. The school domain has a great impact on the other domains. The contextual domain has a great impact on the school domain. Hence, all of the domains are interconnected and interdependent.

Multiple Domain Factors and Human Development Domains

In the Safont (2005) research investigation, Safont (2005) reported **eight factors** of multilingual research. In the following discussion of the eight factors of multilingual research by Safont (2005), the author offers an explanation of how the curriculum-instruction human-development domains correspond to the factors of multilingual research. The **first factor** involves maintenance and attrition of languages in the development process. The human development affective, motivational, and contextual domains influence the cognitive and psychomotor domains to have an impact on the whether languages are maintained or fall into attrition. Maintenance and attrition of languages in the development process are discussed in similar

ways by other multilingual researchers, such as Cenoz (2009), De Angelis (2007), and Herdina and Jessner (2002).

The **second factor** in three-parts includes the age of the learner, the timeframe of learning process, and the sequence of languages learned. The second factor assertion by Safont (2005) also corresponds to the multilingual literature. Moeller and Catalano (2015) discuss the intricacies of the age of the learner and the human development continuum in relation to 20th century and 21st century research. The contextual and educational domains of human development encompass what languages individuals learn and when.

The **third factor** is the level of proficiency attained in each language. The third factor assertion by Safont (2005) concurs with the Herdina and Jessner (2002) assertion that proficiency attained in a language influences whether or not the learner is able to maintain the language. Level of proficiency is influenced by the interconnectivity of the human development domains of motivation and identity with the contextual domain that influences the affective domain that in turn has an impact on the cognitive and psychomotor domains. Proficiency in languages infers that systems of neurological synaptic networks are in place to serve syntactic linguistic systems (Hobbs, 2000, 2011).

The **fourth factor** of Safont (2005) includes the sociolinguistic information that determines which language is used with whom, when, and where. The fourth factor of what languages are used when, where, and with whom involves the contextual domain of human development. Authors in Pavlenko and Blackledge (2006) *Negotiation of Identities in Multilingual Contexts* discuss these contextual matters that have an impact on every day life concerning what language is appropriate for government offices, religious institutions, community buildings, as well as what languages can be used for filling in forms and what languages can be seen on signs and billboards that comprise the linguistic landscape.

The **fifth factor** of Safont (2005) involves the attitudes of the multilingual individual toward each language and the situation of learning. The human development affective, motivation, and identity domains have a great impact on the attitudes of an individual toward languages being learned. The contextual domain involves the situation of learning. Hence, the interconnectedness of the human development domains influences the fifth factor of attitudes.

The **sixth factor** of Safont (2005) includes the motivational factors attributable to the characteristic integration of context, course, teachers, situation, language, and learners, individually, and as a group that comprises an interface of human development domains. In *Talking About Global*

Migration, Catalano (2016) offers a worldview. In *Refugee Resettlement in the United States; Language, Policy, Pedagogy*, Feuerherm and Ramanathan (2015) discuss these matters with a focus on the USA. In Lytra and Martin (2010) *Sites of Multilingualism; Complementary Schools in Britain Today*, authors offer contextual examples of students learning their mother tongues on the weekends that provide a way for them to nurture their first culture roots.

The **seventh factor** of Safont (2005) is the language environment involving the number of minority languages in use, which is the contextual domain. In *The Multilingual Turn in Language Education: Opportunities and Challenges*, Conteh and Meier (2014) extolled the benefits for individuals and society for embracing diversity by implementing equality in the classroom to promote social cohesion. Mohanty (1994, 2009) explained the negative impact of poverty on the multilingual environment in India.

Finally, the **eighth factor** of Safont (2005) is knowledge of the target language culture. Knowledge of the target language culture involves an interface of domains. While greater knowledge of the target language culture is an advantage, we know from Jessner (2008) that students learning third languages in first, second, third, and fourth language environments still outperform bilingual and monolingual students in higher education. The discussion will turn to the domains of human development as depicted in the model depicted at the transition from Chapter Five to Chapter Six on page 62. The interconnected domains include: Cognitive, Affective, Psycho-Motor, Identity-Motivational, Educational, and Contextual.

Chapter 7. Human Development

The human development chapter covers language acquisition research on infants and children, and differentiates between bilingual and trilingual research. The information in the Human Development Chapter sets the stage for explaining the complexity of speech production in the multilingual mind of the next chapter. Subsequent chapters correspond to the human development interface with the curriculum and instruction model offered at the beginning of Chapter Six. Factors differentiating between L2 and L3 learning follow.

Language Acquisition

Three essential factors differ between second and third language learning: psycholinguistic processing, sociolinguistic influence, and sequence of languages learned (Cenoz, 2009; Jessner, 2006, 2008; Safont, 2005). The main difference between second language learners and third language learners is that third language-learners use the foreign language learning strategies acquired in the second language learning process. One sociolinguistic factor concerning third language acquisition involves dominance, prestige, number of local speakers of the language, and mother tongue status. Psycholinguistic factors include the cross-linguistic influences of previous languages learned, the level of proficiency attained in each language, and whether the languages were learned simultaneously or in sequence as well as what age the languages were acquired. Recentness of language exposure is another factor (Bharati, 2009).

Infant Studies

Performance on switch task experiments revealed how phonetics influences monolingual and bilingual infants. Mattock, Polka, Rvachew, and Krehm (2010) stated, "Both monolinguals and bilinguals are developing adaptive speech processing skills that are specific to the language or languages they are learning" (p. 229). Learning languages simultaneously does not pose a problem. Based on comparisons of a study similar to their own, Tonzar, Lotto, and Job (2009) reasoned that learning two languages concurrently does not inflict a disadvantage for bilingual learners. Case study findings indicate that children master prosody (tonality) before they learn words (Cruz-Ferreira, 2006).

Trilingual Tot Language Accuracy Study

Montanari (2009) studied a two--year-old trilingual child for two months before her second birthday in research that could fall into the sociolinguistic or pragmatic category. The small child was a speaker of Tagalog, Spanish, and English. Montanari (2009) explained the child could always select the appropriate language to use based on the presence of a particular interlocutor. However, the child demonstrated vocabulary gaps that caused code-switching. The multilingual family did not repress the code-switching because it was a common family practice.

The author met a four-year-old Vietnamese boy in the border town of Cheb, Czech Republic who spoke German and Czech because of his German-Czech caregivers while his Vietnamese parents tended to their kiosk. But, Sesame Street on television was teaching him English as a fourth language (L4). The boy was never confused about when to use Vietnamese, Czech, German, or English. For these children and their parents, Wang (2011) explains the teaching of reading and writing to multilingual children and Wang (2015) explains how to maintain three languages during the teenage years.

Developmental Language Intervention Studies

Mannel and Friederici (2008) offered a number of coordinates that correlate with the developmental stages of language production that offer multiple possibilities for providing interventions if symptoms suggest a learning problem. The research by Mannel and Friederici (2008) also provided ways for monitoring for normal development as well as creating experiments for learning more about language learning and development processes that can further inform teachers, curriculum designers, and educational leaders.
Mannel and Friederici (2008) confirmed four developmental stages in experiments with event related potentials (ERP) of the brain; the four stages are:

a) Identification of word boundaries
b) Identification of intonational boundaries
c) Lexical processing
d) Sentence processing.

Three of these stages subdivide and all stages correlate with a particular age. In the *word identification stage*, infants discriminate among

parameters of phonemes at the age of two months and later at five months infants recognize word stress patterns. In the *intonational boundary identification stage*, babies demonstrate sensitivity to intonation at the age of eight months. In the *lexical processing stage*, babies are aware of lexical form at 12 months and lexical semantics at 14 months. In the fourth stage of *sentence processing*, babies at 19 months are aware of the selection restrictions of verbs, but later at 32 months toddlers begin constructing phrases.

Voice Modulation Signaling Word Order

Prosodic bootstrapping (Mannel & Friederici, 2008) refers to the way vocal melody facilitates speech segmentation into comprehensible elements of structure that support lexical acquisition within the framework of syntactic units. This modulation of prosody (voice melody) is the precursor of deriving the ordering principles of syntax (word order). Understanding these concepts by teachers in a multilingual educational system may be important for the early development of simultaneous bilingual and multilingual children. The implication is that correct vocal tonality in learning a new language may correlate with learning of syntax. This hypothesis may be an area for further research.

Age of Ideal L2 Acquisition

The age of ideal second language acquisition is an issue of concern and debate among educators, researchers, educational leaders, and policy-makers. Bloch et al. (2009) determined that brain activity variability increases in a progression from simultaneous bilingual exposure to late L2 exposure. This L2 exposure indicated a subtle transition from early to late bilingual modes of language representation. Early passive L2 exposure has the same low brain activity variation as children brought up in dual language environments according to Bloch et al. (2009). Prepubescent exposure to L2 contributes to native-like pronunciation and fluency (Missaglia, 2010).

L2 age acquisition is linked to cerebral linguistic representation. Bloch et al. (2009) considered early learning as the ages between one and five, and late language acquisition as occurring after the age of nine. The 44 participants in the Bloch et al. (2009) study were multilingual with active or passive simultaneous exposure to two languages or consecutive exposure to L2. All participants acquired L3 late. Bloch et al. (2009) explained that as the age of learning or exposure to L2 increases, a common language-

processing network decreases. As age increases of L2 acquisition, greater cortical activation variability also increases. Learners of any age can acquire an L2, L3, or L4 and beyond. Pronunciation tends to be more native-like for early learners of other languages.

Early L2 Acquisition Recommendations

Gosy (2007) corroborates with Navricsics (2007), Safont (2005), and Herdina and Jessner (2002) in that second language acquisition should begin early. Gosy (2007) demonstrated that bilingual children acquiring a second language from age six to nine were superior at text comprehension and phonological performance in comparison to children acquiring a second language in pre-school. Gosy (2007) recommended starting L2 at the same time students learn to read and write in L1.

Simon (2007) corroborated with Gosy's (2007) findings that processing abilities in the mother tongue should be emphasized in L2 acquisition due to the important relationship between L1 and L2 comprehension. Simon (2007) demonstrated that strategies for communication production are as important as communication and perception. Negative associations should be repressed while positive associations are enforced. Simon (2007) recommended that selection of appropriate material is crucial for explicating L1 and L2 cross-linguistic influences on language development. Cenoz and Egiguren (2009) found no difference in L3 acquisition between beginning L3 at age four or age eight. Brain development allowed eight year-olds to advance quickly to the acquisition level of students who began L3 at age four.

Human development with respect to language acquisition was the topic of discussion in this section. The overlapping domains that follow include the cognitive domain (neurolinguistics and psycholinguistics), affective domain (sociolinguistics and psycholinguistics), psychomotor domain (neurolinguistics and pragmatics), motivation and identity (sociolinguistics), and the domain of schools (curriculum, instruction, materials, technology, media, performance, assessment, and educational models). The final sections in PART TWO include discussions on policy and the meta-literature of multilinguistics.

Chapter 8. Multilingual Speech Production Model

Safont (2005, p. 31) offered the depiction of De Bot's speech production model that is designed for one language. Safont (2005, p. 34) and De Angelis (2007, p. 66) shared Levelt's adaptation of De Bot's speech production model depicting Levelt's concept as processing two languages. Figure 2 (following) is an extrapolation of De Bot's and Levelt's speech production models with alterations to depict the speech production of individuals who have knowledge of three or more languages. Color or various intensities of shading offer implicit categorization of system similarity, overlap, or interconnectivity of the four discrete systems of speech functions. The model also portrays that the interconnectivity is simultaneous as an electrochemical interface and not a sequential process, although the discursive aspect is cyclical by nature of two or more persons communicating. Listeners formulate responses and observe non-verbal cues with continual cognitive activity. Automaticity depends on the level of proficiency attained in the target languages (Gut, 2010; Wrembl, 2010). Cross-linguistic transfer depends more on language dominance than the length of time exposed to a foreign language (Rah, 2010).

Another innovation in the multilingual speech production model is the inclusion of the observation of visual and tactile non-verbal cues received by the listener. People with hearing disabilities rely more on visual and tactile cues while people with visual disabilities rely on hearing and tactile modalities. Processing models should not exclude minority groups. Deaf communities endure linguistic and cultural oppression similar to other linguistic minorities (James & Woll, 2006). Visually challenged or disabled individuals focus more on the auditory cues of hesitation, pauses, stammering, intonation variability, and manner of speech delivery such as slurred, staccato, normal, or stylized speech. As individuals age, sight or hearing impairments result in changing focuses to enhance communication and mitigate the potential receptive inaccuracies caused by fading sensory abilities.

Tremblay and Sabourin (2009) wrote, "Thanks to their extensive language learning experience, multilinguals develop superior learning and processing skills" (p. 75). Multilingual individuals invent appropriate language in newly learned languages based on previously acquired meta-linguistic skills (Kemp, 2009). The greater cognitive flexibility of multilingualism also includes more extensive parameters in the phonetic and phonological repertoire of abilities and potentialities (Marx & Melhorn,

2010). Factors for the ways L1 and L2 influence L3, L4, L5 and Ln speech production and acquisition include typology (language distance from prior languages learned) and language order (L1, L2, L3, etc.) or dominance status (Llama, Cardoso, & Collins, 2010). Alonso (2016) reported replication of earlier research and emphasized that educators should understand the omnipresence of cross-linguistic influence in the bilingual [and multilingual] mind.

Mills (2015) delineated types or aspects of literacy in *Literacy Theories for the Digital Age; Social, Critical, Multimodal, Spatial, Material and Sensory*. Particularly relevant to the multilingual speech production model is the multimodal aspect of literacy that the brain has cognitively connected every language learned in every aspect of that language that was learned and it cannot be turned off. Simultaneous translators practice extreme concentration on receiving one language while producing another language instantaneously. This type of communication takes extreme discipline and language reorganization in the brain. Teachers [the author] tend to store language syntagmatically so they can readily respond to any of the immediate needs of students. Just as Mills (2015) demonstrated relationships between each paradigm of multifaceted literacy theory, the multilingual speech production model demonstrates the connectivity relationship between and among the auditory receptive and vocal productive aspects of communication that are heteromodally connected to the multiple vocabularies of the conceptually and semanitically interconnected multilingual mind.

Superior sensitivity to *phonological contrast* implies developing new *auditory cortex* memory traces. Perceiving phonetic contrasts requires plasticity (neuronal and synaptic growth) in the brain. The implication is that multilingual individuals have developed the neuronal and synaptic circuitry to more readily adapt to the input of new phonological information (Zeffiro & Frymiare, 2006). During reciprocal communication, the cerebral cortex (the brain) of the seeing person automatically monitors the facial expressions and gestures of the interlocutor with a mechanistic computational active visual search (Taylor & Cutsuridis, 2011). The multilingual speech production model follows.

Conceptualizer (*Start here*) **Message generation** (*proceed downward*)				**Reciprocal Input; Observation of Non-verbal auditory, Visual, & Tactile cues.**	**L1**	**L2**	**L3**	**Ln**
L1	L2	L3	Ln	Visual cortex neural patterns resemble shapes of observed objects (Damasio, 1999).	Discourse model, situational knowledge, encyclopedia L1 Memory is most compact and efficient. Ln are stored separately unless as proficient as L1.			
Monitoring								
L1	L2	L3	Ln	**<Monitoring connection>** **Heteromodal system maps between different representational systems** (Booth et al., 2004). **Mechanistic computational active visual search** (Taylor & Cutsuridis, 2011)	PARSED SPEECH << Return to Monitoring Conceptualizer **Activation of language(s) based on received input and desired output.** Codeswitching possible PLURILINGUAL ACTIVATION Activation variability depends on age of L2, L3, Ln acquisition (Bloch et al, 2009)			
Pre-verbal message, which activates one or more languages Metalinguistic strategies and phonological awareness increase with exposure to more languages, recency, and proficiency (Bharati, 2009)								
Formulator				**<<<Lexicon>>>** **L1** **L2** **L3** **Ln** **Nouns** are produced in **sensory** processing area, **Verbs** in **proprioceptive** area of position and movement **(Cangelosi & Parisi, 2004).**	**Speech Comprehension System L1, L2, L3, Ln** 3 Processes of Word Recognition: • Lexical Access • Lexical Selection • Lexical Integration (Brink & Hagoort, 2004) **Understanding is neurologically instantaneous** (Pulvermuller, Shtyrov, & Hauk, 2009)			
Grammatical encoding								
Surface structure								
Phonological Encoding Stimulation results in brain plasticity neurogenesis & synaptogenesis (Mesulam, 1999; Snell, 2010)								
Phonetic planning				< Phonetic connection >				
L1	L2	L3	Ln	Overt Speech	L1	L2	L3	Ln
Articulator				<<INSTANTANEOUS>>	**Audition** (go up)			
L1	L2	L3	Ln	INTERFACE	L1	L2	L3	Ln
Articulator for L1 or L2 or L3 or Ln Speech articulated output >>>>>>>>> and >>>>>>>> Listen for response (go up) ^^^^								

Figure 2. The Hobbs Speech Production Model for Multilingualism (Hobbs, 2011, 2012) was adapted for multilingual speakers from Levelt's bilingual adaptation of De Bot's [monolingual] speech production model (De Angelis, 2007, p. 66; Safont, 2005, p. 34). *Ln* refers to the number of languages that may exceed the first three, such as L4, L5, L6, and so on. Added were non-verbal cues and cited neurolinguistic and neurological information.

Description of the Hobbs Speech Production Model for Multilingualism

In the center at the top of the model, a bulleted explanation reveals the model represents reciprocal input in two-way communication that is cyclical with listening and responding to an interlocutor (De Angelis, 2007; Safont, 2005). The model of communication operates counter-clockwise, but the processes are simultaneous at the speed of electricity. The *conceptualizer* receives auditory input and recognizes which language the speaker used, or if the speaker mixed languages. Pulvermuller, Shtyrov, and Hauk, (2009) explained the neurophysiological evidence for the mechanistic circuitry of language in the *Brain and Language* scholarly research journal: instantaneously, message generation occurs in the brain with phonetic receiving and [conscious or subconscious] planning of communication. The listener prepares a response by formulating [formal or casual] grammar, syntax (syntax is sentence structure word order), and phonological representation with voice articulation, prosodic expression, and oral enunciation.

The listener responds with the appropriate language or mix of languages based on the received communication code. During the formulation of the coded message, simultaneous extraction occurs from the lexicon (the brain's dictionary). The lexicon appears in the center of the model. The lexicon also simultaneously interfaces with the global encyclopedic memory. The individual responds and listens for a return response and the cycle continues. In the corners at the top, bottom and in the center of the model, *L1, L2, L3,* and *Ln* signify the availability of multiple languages for reception, cognitive processing, response formation, and output of oral response. *Ln* signifies the fourth, fifth, sixth, or other languages that may be stored in the cerebral lexicon (Jessner, 2006). Hudson (2008) reported that some entire communities are fluent in several languages. The highest intensity of hyperpolyglots (six or more languages) is located in [South] India (Zeite, 2009). Strategies increase (Bharati, 2009) and pronunciation improves (Marx & Melhorn, 2010) with Ln experience. Interlocutors automatically assess similarity of mutual language repertoires.

The Hobbs speech production model would be **better** represented in a three-dimensional hologram in the shape of the brain depicting the actual locations. For these types of representations, see *Reading in the Brain* by Stanislas Dehaene (2009). Dehaene is a French neuroscientist. The model would **best** be represented video-graphically with the fourth-dimension of time added so the viewer could see **in motion** the electrical impulses sent through the neurons, dendrites, and synapses.

Chapter 9. Other Models, Interface, and Exchange

In the monograph *Receptive Multilingualism: Linguistic Analyses, Language Policies and Didactic Concepts*, Hufeisen and Marx (2007) presented a six-factor model that explained the influence of linguistic factors based on previous languages learned and language specifics, as well as multiple cognitive, affective, external learning, and neurophysiological factors. The neurophysiological factors include cortical adaptation and growth of neurons and synapses in the *cerebral cortex* (the brain). This neural and synaptic growth accommodates learning as explained by Nelson, De Haan, and Thomas (2006) in the *Neuroscience of Cognitive Development; The Role of Experience and the Developing Brain*. In "Brain Research, Learning and Emotions: Implications for Education Research, Policy and Practice," Hinton, Miyamoto, and Della-Chiesa (2008) explained that the major cortical networks indicated in *neural stimulation studies* facilitate learning in recognition, strategic, and affective networks. Hinton et al. (2008) assert that the outcomes of neurological studies should determine research in education, teaching practice, and educational policy.

In "Dominant Bilingualism Influencing Direct Language Learning Strategies in Third Language Acquisition," Biro (2009) emphasized the importance of exploring what strategies of language learning belong in the curriculum. More research is needed to rethink perceptions of conventional instruction in classrooms. Teachers need more didactic knowledge to help immigrant children according to Abel, Guadatiello, and Plathner (2009) in their submission to the Third Language Acquisition Conference at University of Bolzano. Educators should contemplate the most significant learning strategies, methodologies, and teaching techniques that seemed to have the greatest impact on multilingual learning, empirically or according to evidence-based recommendations.

Allgauer-Hackl (2009) recommended offering multilingual seminars in schools to promote multilingual awareness and inspire lifelong learning of languages. Allgauer-Hackl (2009) suggested that metalinguistic awareness can be trained in multilingual learners. Perhaps a great deal of metalinguistic awareness is already intuitive in multilingual individuals. Especially helpful to speakers of different languages is to immerse students in mainstream courses delivered in foreign language medium, according to researchers Van de Craen, Mondt, Allain, and Ceuleers (2009). The author concurs with Van de Craen et al. (2009) based on experience as a principal in a bilingual school in the Middle East where students took science, math, and social

studies in their second language. Core subject immersion propelled second language fluency in the Middle East bilingual school setting for middle school and high school students. Teachers from India, Pakistan, Australia, South Africa, and the USA did not speak the L1 Arabic of the students; therefore communication had to be in English in math, social studies, science, and computer classes.

In "Training Experts for Languages," Vetter (2009) offered results that indicated that multilingualism should be incorporated into teacher training. After analyzing their data, Lapresta, Janes, and Querol (2009) wrote, "Students of immigrant origin who felt integrated and positively valued in the host society developed more favorable attitudes toward [host languages] and displayed higher proficiency in these languages" (p. 51). The authors in Pavlenko and Blackledge (2006) emulated the same message that children who feel valued and appreciated adapt better to new cultures and better assimilate new languages. Immigrant children have blended identities that include the languages and histories of at least two countries. This blending of identities is superior for learning and adapting success than the separate identities of children who feel alienated. Hence, educators need to make all students feel incorporated and integrated into the fabric of curriculum, instruction, constructed learning, negotiated deliverables, projects, presentations, alternative assessments, and feedback.

Interface of Models, Theories, and Research

As a basis for the education models resulting from this study, selected multilingual theories will be enhanced by a proposed syntactic cognitive operations model based on an interface of neuroimaging studies with language processing studies to serve as the supporting framework for developing the model for multilingual education. Initial influence for designing the models in this model-driven study came from "Imaging Technologies," by Abutalebi and Della Rosa (2008); "Neuroplacity and Rehabilitation," by Hallet (2005); *The Psychology of Language*, by Harley (2008); *Crosslinguistic Influence in Language and Cognition*, by Jarvis and Pavlenko (2008); "What Drives the Foreign Language Curriculum," by Long (2007); and *Handbook of Cognitive Linguistics and Second Language Acquisition*, by Robinson and Ellis (2008). Educational leaders, curriculum designers, stakeholders, and ultimately students should benefit from a new multilingual model that promotes multiple language learning to increase critical thinking skills and abilities to meet 21st century technological and communicative demands.

Information Exchange for Education

Concepts from "The Linguistic Issue in Some European Bilingual contexts" by Huguet and Lasagabaster (2007) will be used to sum up this interface of models, theories, and research section with their recommendations for multilingual education. Recommendations from Huguet and Lasagabaster (2007) follow.

Multilingual schools should provide a guidance service that can become model schools for other schools to learn from. Educational leaders should implement pilot project studies and focus on primary education as well as formats among schools for information exchange. School leaders should provide information programs for parents and community members. Educational leaders across borders should exchange knowledge and experiential information. School and district leaders should collect and disseminate data. Governments should legislate mandatory third language teaching. Huguet and Lasagabaster (2007) recommended that school leaders should enhance information exchange by improving channels among researchers, practitioners, and policy-maker networks.

Language policies should empower teachers to develop transformative pedagogical interpretations to respond to student individual and collective needs (Helot & O Laoire, 2011). Flexible multilingual education should be the protocol followed in communities of superdiversity (Weber, 2014). Identities of bilingual students should be empowered with bilingual education (Baker, 2011). Students should be accurately assessed with no confusion between Specific Language Impairment (SLI) and second language (L2) development (Armon-Lotem, Jong, & Meier, 2015). Intercultural learning exchange should be the norm (Kearney, 2015). Languages should be integrated in the curriculum (Nikula, Dafouz, Moore, & Smit, 2016). Language planning in communities should take place (King & Carson, 2016). All students should benefit from understanding cross-linguistic lexical similarity and teachers should use similar cognate motivational strategies (Otwinowska, 2015). This discussion turns to first language support in education and health.

Chapter 10. The Cognitive Domain

The cognitive domain includes discussions of language activation in memory and cross-linguistic influence. Also included are the overlapping areas of neurolinguistics, psycholinguistics, cognitive linguistics, psychomotor skills, and pragmatics.

Benefit of Ambiguity in Cognitive Stimulation

Semantic ambiguity stimulates adjacent brain areas to harness extra deciphering power (Stowe, Paans, Wijers, & Zwarts, 2004). Cognitive processing efficiency increases due to augmentation of adjacent cortex regions to interpret vague meaning couched in abstract, figurative, or covert language. The implication is that inherent ambiguity in learning foreign languages stimulates greater amounts of the brain due to the higher needs of interpretive concentration (see Tokowicz & Kroll, 2007). Despite 20th-- century myths, humans use most of their brains most of the time (Geake, 2008). Humans exploit hemispheric brain interconnectivity for every task. Neuroimaging research (Stowe et al., 2004) contributed to the neurological literature that has dispelled many of the myths concerning the brain.

Neurolinguistics

Cortical adaptations refer to the growth of neurons and synapses in the cerebral cortex (the brain). This neural and synaptic growth accommodates learning as explained by Nelson, De Haan, and Thomas (2006) in their research on cognitive development. Neurological investigation even detects phonemic (the smallest units of sound) of foreign language learning (Winkler et al., 1999). Hinton, Miyamoto, and Della-Chiesa (2008) explained that the major cortical networks indicated in neural stimulation studies facilitate learning in recognition, strategic, and affective networks. Hinton et al. (2008) assert that the outcomes of neurological studies should determine research in education, teaching practice, and educational policy.

Sublexical modal routing. Explained in Schwartz (2009), the lexical route includes three lexicons: orthographic, semantic, and phonological; the sublexical route conforms to rules of grapheme-phoneme correspondence. This research revealed that each of these lexical processes is a different brain function. Children can have a writing problem with semantic and phonological processing intact, or they can have a semantic or phonological problem with the other systems functioning properly. This research

corresponds with the brain degenerative research done by Mesulam and his colleagues in the 1990s when they conducted neurological studies of patients with Alzheimer's and Parkinson's diseases (see Mesulam, 1999; Booth et al., 2004).

Reciprocal modalities. Schwartz (2009) also offers the Seidenberg and McClelland connectionist reading model that explains reciprocal relationships between:

a) Semantic and orthography;
b) Semantics and phonology; and
c) Orthography and phonology.

In other words, meaning, writing, and sound have mutually reciprocal relationships in brain functions. Frauenfelder and Tyler (cited in Harley, 2008) referred to the third stage of identification in their model as "word recognition" instead of the term "integration" used in the neurological literature. This terminological variation signals a difference between psycholinguistic and neurolinguistic perspectives.

Syntax Correlation with Synaptic Electrochemical Activation

Evidence from the research discussed in this study (Abutalebi & Della Rossa, 2008; Stowe et al, 2004; Meyer et al., 2004) supports the assertion that the function of syntax is reflected in different systemic electrical impulses in the neurons and synapses to coordinate word order. In essence, syntactic processing in the mind is physiologically occurring as neuroplasticity in the neocortex (Hobbs, 2000). This assertion is based on explanations in the literature that learning a language with similar syntactic rules is faster and easier than learning a language that performs to different rules of syntax (Berthele, 2009). Deductively, syntactic electrochemical impulses must perform the prosodic and intonation functions of languages as well. Krishnan and Gandour (2009) explained that neuronal tuning characteristics "…enhanced sensitivity to linguistically-relevant, rapidly changing sections of pitch contours" (p. 135). This hypothetical assertion based on neurolinguistics literature should be tested in future research to inform educators and neurologists of the implications for possible therapeutic interventions.

Psycholinguistics

Cognitive linguistics is another way to refer to psycholinguistics (Harley, 2008). Since the focus of psycholinguistics is the individual, one could categorize some of the research under pragmatics or pedagogical studies. The ERP (event related potential) methods are the same for psycholinguistic, cognitive, and neurolinguistic studies. The fields overlap. A review of psycholinguistic or cognitive linguistic studies follows.

Priming and timing study. Cheng and Howard (2008) found in their study of bilingual participants that if subjects were told that using either language for responding was appropriate that answer processing time did not decrease. However, if bilingual participants were told that only one language was appropriate for responding, then processing time increased. Cheng and Howard (2008) results supported Grosjean's language mode hypothesis that argued that cost of mixed-language processing is the result of context and not the cost of switching the code. Grosjean (2001, 2004) has long asserted since the 1980s that multilingual speakers are not at processing disadvantages despite the claims by monolingual researchers (Wei & Moyer, 2008). The advancement of neurological tools has been instrumental in deriving research that has supported Grosjean (2001) assertions.

Cognitive linguistic research. Linguistic scientists realize that bilingualism or multilingualism is the norm in most of the world, not monolingualism (Gal, 2007). Kroll, Gerfen, and Dussias (2008) said, "Because cognitive science seeks to identify universal properties of thought, the bilingual has become a model subject of study rather than a marked case" (p. 108). Cognition identification and its universal properties are a primary goal for language researchers. Bilingual and multilingual people serve best to inform developing models of cognitive processing.

How do bilinguals and multilingual speakers cope with extra languages in their minds? Bialystok (2005, 2007) and Bialystok et al. (2008) demonstrated that the processing of two or more languages forces the mind to develop cognitive negotiating skills to manipulate the interconnectivity of linguistic rule interface to comprehend and produce discourse that is written or spoken. Bialystok (2007) and Bialystok, Craik, and Ryan (2006) demonstrated that bilingualism has greater benefits as the individual ages.

Previously, Stern, Albert, Tang, and Tsai (1999) had demonstrated a correlation between the rate of brain degenerative decline and the patient profiles of occupation and educational levels attained. Stern et al. (1999) suggested that *cognitive reserve* slows brain degeneration based on their discovery that greater brain density correlates with higher education and jobs

requiring more cognitive intensity. Based on the discovery by Bialystok and colleagues, an additional language in the mind also qualifies as cognitive reserve generated by greater brain density.

Does language affect reality, or does reality affect language? Tohidian (2009) explained the reciprocity between reality and language via linguistic relativity hypothesis. Evidence indicates that language does not guide reality or thought, but language has an impact on the perception of reality and does influence the thought process. Words, syntax, grammar, culture, and custom variation among peoples combine to form a unique identity that reflects the reality of each set of people sharing a similar dialect or language. Neuroscientist Dehaene (2009) demonstrated that culture is an innate aspect of what is recorded in the brain and how the brain records memory. Wen, Mota, and McNeill (2015) determined that L2 processing, development, and performance has complex and dynamic relationships with working memory. Thus, cross-linguistic influence exists in every aspect of acquiring, developing, and processing L2 (Alonso, 2016).

Controversy of Automaticity

Similar to the concept of prosodic bootstrapping is the semantic bootstrapping hypothesis. Snedeker and Thothathiri (2008) explained semantic bootstrapping as learners making vast generalizations about relationships between verbs based on semantic and syntactic categorizing as they learn new languages. Snedeker and Thothathiri (2008) investigated another feature of semantic bootstrapping that involved the proposition that mapping (extrapolating rules or functions) is innate and automatic in humans. Other theories on the early grammar of children oppose the notion of innateness and automaticity. These refuting theories focus on conceptual categorization or combined semantic and syntactic connections. Psycholinguistic prosodic and semantic bootstrapping is facilitated by the neurolinguistic function of electrochemical circuitry of neurons, axons, and synapses (for seminal research, see Booth et al., 2004; for pictorial explanations, see Foer, 2007; for neurological explanations of amplitude correlated with language fluency, see Abutalebi & Della Rosa, 2008).

Neural Recruitment Facilitates Complex Processing

Gayraud and Martinie (2008) investigated in their research if the complexity of embedded clauses posed a more difficult processing task. Their hypothesis was that a more integrated clause would be more difficult to

process, but the opposite held true. The authors attributed this paradox to the planning costs at the sentential level instead of the clausal level. These findings revealed that pauses were not indicative of difficulty in processing. Neurological research has demonstrated that learners recruit from adjacent neural areas to the degree necessary to cope with the syntactic demands of a given task (Indefry, Hellwig, Herzog, Seitz, & Hagoort, 2004). Multiword phrases are processed faster (Arnon & Snider, 2010). Word processing is also influenced by the cognate phonemic and graphemic (sound and written) similarity (Freeman, Heathcote, Chalmers, & Hockley, 2010). Multiple languages activate during lexical (word) searches in multilingual learners (Jessner, 2006; Letica-Krevelj, 2009).

Conklin and Schmitt (2008) found through their research that formulaic speech was processed much faster by native and non-native speakers of English whether the formulaic speech was idiomatic or not. Implications for teaching are significant. Language syntax aids order recall in support of short-term memory (Perham, Marsh, & Jones, 2009). Students would benefit if teachers employ more formulaic speech when offering instruction and direction, but teachers should use creative speech to inspire critical analysis or aesthetic response. Research is needed on the least understood language skill of listening comprehension (Vandergrift, 2007).

Benefit of Ambiguity in Cognitive Stimulation

Semantic ambiguity stimulates adjacent brain areas to harness extra deciphering power (Stowe, Paans, Wijers, & Zwarts, 2004). Cognitive processing efficiency increases due to augmentation of adjacent cortex regions to interpret vague meaning couched in abstract, figurative, or covert language. The implication is that inherent ambiguity in learning foreign languages stimulates greater amounts of the brain due to the higher needs of interpretive concentration (Tokowicz & Kroll, 2007). Despite 20th-century myths, humans use most of their brains most of the time (Geake, 2008). Humans exploit hemispheric brain interconnectivity for every task. Neuroimaging research (Stowe et al., 2004) contributed to the neurological literature that has dispelled many of the myths concerning the brain.

Psychomotor Domain

Individuals with problems such as lesions in the brain can reorganize information in their memories to avoid difficulties. Teachers should realize that difficulties can be overcome, but time, patience, and rehearsal are

necessary. Mbwana et al. (2009) revealed that intra-hemispheric reorganization took precedence over inter-hemispheric reorganization in their work with the epilepsy population. Mbwana et al. (2009) argued their results are relevant to the general population. Their neurological study demonstrated that recruitment of adjacent locations varied during activation, but within the normal constraints of typical regional activation. Reinforcement of each linguistic system complements learning integration and transfer to long-term memory. This information correlates with the neurological evidence found in the research by Ullman (2008) differentiating between procedural memory and declarative memory.

Inter-hemispheric reorganization also occurs when translators train to become simultaneous translators. The discipline of simultaneous translators requires cognitively processing input in one language while processing output in another language instantaneously. In conversations face-to-face and online between 2001 and 2015 with simultaneous translators, the author [Hobbs] and research participants [another study, ongoing] realized they store, process, and retrieve languages differently from most people. Simultaneous translators also described the cognitive change that occurred to them as they acquired their automatic translating skills.

One translator said, "I have to pull out of one language and go into the other [target] language in order to think of a word in that language." In comparison, the author when teaching readily retrieved words in other languages – syntagmatic representation in memory – because that was required at that time in advanced English analytical multiple language discussions with bilingual and multilingual students who spoke French, German, Italian, Spanish, Japanese, Russian, Luxembourgish, and Romanian in the melting pot of Luxembourg as L1 and English as L2, L3, L4, L5, L6, or L7. One student learned Luxembourgish, German, French, Spanish, Portuguese, and Italian as a child before learning English because of family (Spanish, Portuguese, and Italian) and Luxembourgish education (Luxembourgish, German, and French before English).

Pragmatics

Moyer (2008) indicated that pragmatics deserves to be a separate division of research from psycholinguistics and neurolinguistics. The pedagogical nature of pragmatic research fits conveniently between psycholinguistics and sociolinguistics by focusing on task differentiation instead of individual cognition or social interaction and identity. For example, Bjork-Willen (2008) found that deviation from routine in a multilingual classroom

confused preschool students. Bjork-Willen (2008) studied children in a Swedish-English-Spanish classroom revealing that regimentation is necessary as a systemic learning framework for small children coping with a three-language classroom. As long as the routine was in the same sequence every day, then the children could deal with three languages being spoken to them, and being the focus of the lessons. Hence, regimentation may be a requirement for a classroom where three languages are being taught until the children reach a threshold in the three languages. When the author [Hobbs] first first viewed Spanish films with two rows of subtitles in Dutch and French, severe headaches results during or after the first few films. Later, the headaches subsided and never occurred again after the author's brain got accustomed to multilingual processing. The pragmatic function of a classroom serves as the focus in Bjork-Willen (2008) rather than social interaction or the individual. The focus will turn to the motivation and affective domains of human development.

Chapter 11. Affective and Motivation Domains

Ushioda and Dornyei (2009) stated, "L2 motivation is currently in the process of being radically re-conceptualized and re-theorized in the context of contemporary notions of self and identity" (p. 1). Dornyei (2009) revealed findings of a 15-year longitudinal study involving 13,000 participants. The multilingual motivational self-system comprises the ideal self, the "ought-to" self, and the language learning experience. The "ideal self" forms with the creation of a vision. Stable self-perceptions emerge in adolescence. Motivation is contextual, dynamic, and intrinsic to learner thought processes (Dornyei & Ushioda, 2009).

Identity Integration

Integrating conflicting motives is vital for establishing stable multilingual self-perception (MacIntyre, MacKinnon, & Clement, 2009). The implication is that learning environment attitudes and projections have a powerful influence on successful language acquisition. Successful self-concepts vary. Japanese, Chinese, and Iranian learners of English in their home countries have categorically different self-identity profiles that achieve success (Taguchi, Magid, and Papi, 2009). Ideal L2 self is the new label for integrativeness according to Taguchi et al. (2009). Al-Shehri (2009) demonstrated that visual learners perceive more vivid images of their ideal selves.

Affiliation and Proficiency

Not having a feeling of belonging to a group can have negative consequences for obtaining desired proficiency (Segalowitz, Gatbonton, & Trofimovich, 2009). Examples of the negative impact of feeling separate are: the Quebecois in Canada (Segalowitz et al., 2009); the immigrant youth in the poor suburbs of Paris (Doran, 2006); Italian immigrants in Canada (Giampapa, 2006); immigrants in Australia (Miller, 2006); immigrants in Japan (Kanno, 2006); and immigrants to Germany and Britain (Blackledge, 2006). The "ought-self" can undermine the investment in learning a requisite foreign language (Lyons, 2009). Perea (2009) revealed that immigrants to the USA from the Dominican Republic who had accepted their bilingual identity achieved a higher proficiency in English.

Sociolinguitics

Biseth (2009) stated, "Multilingualism broadens the repertoire for interaction and promotes mutual respect, tolerance, and equity, which are key democratic values" (p. 17). Biseth (2009) also wrote that multilingualism is an important determinant for distinguishing identity as well as expanding horizons that provide links between diverse members of society with a view for protecting the rights of minorities. The five connecting aspects between multilingualism and democracy are: a) individual rights; b) identity; c) education of citizens; d) shared power instead of exclusive power for the elite; and e) access to public discourse that is key to deliberative democracy.

Codeswitching. Gardner-Chloros (2008), explained the data developed in bilingual studies; this data extrapolates to include multilingual studies. Gardner-Chloros (2008) explored code-switching data on different levels: morphological, lexical, syntactic, phonological, or semantic (word parts, words formation, word order, sounds, or meaning). Code-switching studies involve the way multilingual speakers change languages in the middle of a word, between words within a sentence, between sentences, between speakers, and so on. Muysken (cited in Gardner-Chloros, 2008) divided codeswitching into three categories:

a) Alternation or code-switching - languages are identifiable;
b) Insertion - speakers insert elements of a language into speech by altering the structure of the language; and
c) Congruent lexicalization – the sharing of the structure of different languages.

Gardner-Chloros (2008) also explained that *Triggering* is a phenomenon studied in code-switching. The study of what causes speakers to change languages is code-switching. Another aspect of code-switching includes diglossia and domains. Strict diglossia refers to domains in which code-switching is not allowed, but Gardner-Chloros (2008) used the word "leaky" to imply that sometimes code-switching occurs in domains in which it is forbidden or improper. *Domain* refers to school, church, family or branches of family, and so on. Examples of recent sociolinguistic studies follow.

Role of language typology. Li, Dunham, and Carey (2009) demonstrated that perceptions vary based on language typology. Japanese is a classifier language whereas English is a count and mass language. Japanese and English speakers differ in their conceptions if they respond to a novel noun couched in neutral syntax. One example offered in the Li et al.

(2009) study is the lexeme "plastic whisk." The Japanese speakers assumed the label referred to the substance plastic, but the English speakers assumed the label referred to the object, whisk. This concept is known as lexical projection. Li et al. (2009) conclude that lexical projection is inherently connected to the cultural linguistic aspect of the perceptions and conceptions of people who speak any given type of language.

Translation for Identification. Greer (2008) used the analyses of conversation and membership categorization in a qualitative study of teenagers coping in schools with one-language policies. Teens in this situation often find themselves in the situation of translating when monolingual individuals of either their first or second language is present. However, Greer (2008) observed that sometimes the person being translated to claimed to understand. Greer (2008) wrote that in this circumstance the translation could have served to identify the person being translated to as a non-native speaker. Impromptu translations may be viewed as identity markers in society as much as [or more than] facilitating interlocution.

Intergenerational study. Bani-Shoraka (2008) used a sociocultural framework from Bucholtz and Hall to study two principles of identity co-construction: relationality and indexicality. Bani-Shoraka (2008) recorded the interactions among the members of multigenerational bilingual Azerbaijani families living in Iran. Younger members of these families created oppositional identities that offered safe environments for violating strict social hierarchies by employing registers within the families' second language (their environmental language), but not their family language. Alternation of language distinguished these speakers through interactions observed by the researcher as contesting social identity. Cordela and Huang (2016) suggest that intergenerational communities can be useful for reinforcing first languages of children of immigrant families.

Kalan (2016) interviewed world experts in linguistic human rights and mother tongue, bilingual, and multilingual education to foster awareness of the monolingual Farsi education in a country with 70 minority languages. Change could be slow in the linguistically and politically complex theocracy of Iran with a highly educated population and thriving industry of English language teaching. The author [Hobbs] is connected to hundreds of Iranians on LinkedIn and the invitations pour in daily. Many of the invitations are from published Iranian scholars, translators, researchers, and professors. Most Iranians are bilingual or multilingual. Several are simultaneous translators. Although Farsi is the official language, Farsi is not the mother tongue of most Iranians.

Multilingual family typology. Braun and Cline (2010) revealed three categories of multilingual family typologies in England and Germany. The three types were based on parents with one, two, and three native languages that were respectively types one, two, and three. The evidence indicated that maintaining trilinguality was more successful if parents spoke one native language other than the community language. Monolingual grandparents who did not speak the community language served as an important motivation factor for maintaining parental native languages. Wang (2011) explains ways to fostering multilingual reading and writing in early years as well as maintaining trilinguality throughout the teenage years (Wang, 2015).

Hispanic-American study. Cashman (2008a) investigated how preadolescent Spanish-English bilinguals employed impoliteness for the purpose of stance-taking, identification, and alignment. The wider context for the analysis in Cashman (2008a) is the politics of language and immigration. Cashman (2008b) attributed to Bucholtz and Hall in the field of linguistic anthropology four processes of semiotics to create social identity through language manipulation:

a) Practice or praxis,
b) Indexicality,
c) Ideology, and
d) Performance.

Practice is habitual action. Indexicality is the deixis of entity juxtaposition. Deixis is the general term for deictic items - the linguistic term for modifying words that point, such as *this*, *that*, *these*, *those*, *there* (Quirk, Greenbaum, Leech, & Svartvik, 1995). Indexicality is the linguistic modification by one entity indicating another entity. Ideology is the organization of power relations, and performance is the deliberate display of stylized linguistic social interaction (Cashman, 2008b). Cashman (2008a) observed in her study that preadolescent Spanish-English bilinguals employed linguistic interactions that connected their speech patterns to their linguistic regional, national, and ethno-racial communities. Fuller (2012) warned that many young Hispanics were losing their mother tongues for lack of support in schools. Losing a mother tongue is similar to losing a treasure source of creativity considering that Kharkurin (2012) views multilingualism as a great source of facilitating and generating innovative capacities of creative thinking within the realm of a culturally complex phenomenon.

Hong Kong study. Chen (2008) used Bucholtz and Hall's notion of tactics and intersubjectivity as the foundation for a sociolinguistic

explanation. In the Hong Kong setting, Chen (2008) noted that distinctive code-switching identified returnees to Hong Kong as outsiders. Distinctive code-switching socially positioned returnees as recipients of discrimination via perceptions they were less Chinese due to their extended absence abroad. Chen (2008) examined positioning and repositioning of identity using ideology and observing language interplay when the insiders and outsiders interacted as well as when the outsiders interacted with one another. Returnees to Hong Kong had to adjust their self-identities to accommodate the perceptions of others and cope with the realization of their different status. Participants observed by Chen (2008) were young Hong Kong Chinese citizens who had graduated from universities in the USA, then returned to Hong Kong. Weber (2014) focused on Hong Kong, China, and Singapore as a Chinese-speaking subset of major locations of diversity and superdiversity as well as migration and globalization.

Australian study. Miller (2006) reported that more than 25% of the children in Australian schools are from immigrant families that are non-native speakers of English. Data sources in Miller (2006) include attendance at school ESL staff meetings, classroom observations, conferences with administrators and teachers, focus groups, semi-structured interviews with students in English and L1, student diaries, and phone conversations with students. Sources of data were different at each school site. Miller (2006) concluded that politics is connected to speaking English as a non-native speaker because voice receptivity is not value free and is valued differently. Miller (2006) recommended that curricula representing students' social lives and tasks should involve activities that connect students to their languages and cultural roots.

Milana (2008) and Miller (2006) are in concert by insisting that multicultural perspectives must be addressed in education to sustain democratic learning processes and to foster each student's sense of belonging. Similarly, Martins (2008) communicated that intercultural themes belong in the center of educational focus and offered a model to depict the welcoming and inclusive aspects of education that surround the intercultural themes. Schneider (2014) mentioned that Australians who learn Salsa develop an affinity for Latin culture and the Spanish language. The implication is that joyous movement of the human body in dance creates a kinesthetic language intrinsically linked to language and culture as negotiating a transformative identity.

Chapter 12. The School Domain

Natural language refers to language assimilated without schooling. A more technical explanation with esoteric terminology follows. Holliday (2008) extrapolated the Herdina and Jessner (2002) model by differentiating between language assimilation without the benefit of formal schooling (natural language) and language learning assisted by schooling. Holliday (2008) explained language development in the following technical terms as occurring in two stages: the first stage is *congruent semiosis* and the second stage is *non-congruent* (*metaphorical* or *synoptic*) *semiosis*; congruent semiosis occurs naturally, but non-congruent semiosis requires schooling to inspire comprehension of symbolic metaphor (essential for advanced language acquisition). To avoid first language attrition, schooling in the native language is essential for immigrants.

Attrition refers to the way language skills fade from memory if not used; however, relearning a language is much faster than initial learning (Jessner, 2006, 2008; Safont, 2005). Language maintenance avoids language attrition. Avoiding language attrition is important because language and cognition create one another; language and cognition are not mutually exclusive (Ellis & Robinson, 2008). Using several similar languages at once for student focus can stimulate receptive multilingualism (Marx, 2009; Thije & Zeevaert, 2007). Missaglia (2010) demonstrated the need for metalinguistic training for teachers and students, also.

Deficit Model of Education

The deficit model of education is the assertion that limited instruction results from limited vision by Brannon et al. (2008). Limited vision specifically refers to teachers seeing diversity of languages as a problem in the classroom instead of an advantage. Brannon et al. (2008) wrote that students from the lower socioeconomic demographic receive stigma that depict them as ignorant, in need of remedial education, or labeled as learning disabled. Formulaic practice is antiquated practice and educators need to be more imaginative, creative, and flexible. Brannon et al. (2008) complained of teachers rigidly teaching five-paragraph essay format with no variation, thus failing to allow students to be more innovative in their creative efforts. Meaning is made in countless ways. Brannon et al. (2008) expressed that students should be free to adapt their writing to the genre they wish to create.

Control causes creativity to be strangled. Inspiration allows students to construct their knowledge in their own ways, but first students need to be respected for their individuality, ideas, and desire to respond differently from what is prescribed.

ZPD, Assessment, and Self-management

Designing materials that use Vygotsky's concept of the zone of proximal development for formative assessments in stages promotes metacognitive reflection (Hobbs, 2009). Stage one demands total recall, then self-assessment. Stage two involves teachers offering an answer bank so students complete more answers, then reassess to derive their recognition scores. Stage three suggests student collaboration in small groups to share knowledge and synergize a collaborative score. Hobbs (2009) three-stage formative assessment conforms to the warning from Healy and Montgomery (2006) that sentence intelligibility is never 100%. Comparative retrieval enhances remembering. Dudokovic, Dubrow, and Wagner (2009) demonstrated "attentive retrieval is critical for learning through remembering" (p. 953). Learner cooperative evaluation facilitates a collaboration consensus of understanding and serves to create a relaxed learning environment conducive for a multilingual setting. Student enjoyment enhances assimilation of multiple languages and multilingual identity (Bossart & Fischli, 2009).

Self-efficacy Study with Arabic-English Students

Al-Jardani (2006) conducted a study in his fifth grade English class in the Arabic speaking Muscat Region of Oman on their abilities to accurately self-assess themselves. The findings revealed that most learners tended to overestimate their achievement the first few times they assessed themselves while a few learners underestimated their achievement and a few learners were accurate. With each self-assessment of performance on two different tasks, students increasingly became more accurate in their self-assessments. Al-Jardani (2006) noted that in addition to increased student accuracy with each trial, students also assessed themselves more quickly. Al-Jardani (2006) demonstrated how elementary students could self-assess with increasing accuracy and speed over time with practice. Al-Jardani (2006) wrote that student accurate self-assessment is important for increasing self-awareness.

Dual Coding Theory Adapted for Education

Hartland, Biddle, and Fallacaro (2008) applied dual coding theory into their multimedia program for nursing that includes audiovisual and distance education, which could offer viable alternative modalities for a multilingual educational model. Hartland et al. (2008) asserted that the incorporation of the verbal and nonverbal input offer a feasible and effective way of simulating teaching interventions. Coding occurred independently or dually through the interconnectivity of the mental images and the graphic or verbal images. Simulations offer a risk-free environment in nursing and in lan guage learning.

The hypothesis in Hartland et al. (2008) suggested that audiovisual vignettes enhance cognition in the learning process. Dual coding theory states that information is easier to retain and retrieve when students code the information verbally and nonverbally with images. The respondents in the Hartland et al. (2008) study indicated that realistic and relevant video vignettes made a significant impact on learning. These findings correspond to reports in the foreign language teaching literature that audiovisual modalities enhance student learning:

a) Videotext has a positive impact on comprehension when combined with listening strategy instruction (Cross, 2009);
b) Multimodal texts benefit second language learners (Ajayi, 2009);
c) Multimedia language learning motivates students because they find it pleasurable (Ponniah, 2009);
d) Video and captions enhance learning in second language learning (Chai & Erlam, 2008); and
e) Multimedia promotes speaking and listening abilities in foreign language learning (Wang Bei-lei & Ni Hui-min, 2008).

Digital Video Effectiveness Study

Goulah (2007) designed and implemented a case study to ascertain the effectiveness of digital video as a tool for foreign language instruction that he referred to as transformative. Three main multi-pronged purposes reported by Goulah (2007) included learning, cultivating, and augmenting second language. The first purpose of learning subdivided into three areas of acquisition: technology skills, content knowledge, and foreign language. The second purpose of cultivation involved critical multiliteracy development in the areas of environment and geopolitics. Augmentation of portfolios was

the third purpose. Theories supporting Goulah (2007) were transformative learning, sociocultural, and processing strategy observation (Taylor, 2005).

The three--part research question in Goulah (2007) framed an investigation to explore the relationship between:

a) The quality of foreign language learning and digital video production based on content;
b) Transformative learning, multiliteracy development, and content-based learning;
c) Student attitudes and subject-based participation.

Students reported this study had a positive impact on their learning of content, vocabulary, and implicit grammar. The assignment required the English-speaking students to use only Japanese. Two weeks after the study finished, students could still use the target language without prompting. Goulah (2007) demonstrated this video production assignment facilitated students meeting most of the national foreign language standards at the two--year study level.

Multilingual Educational Models

Multilingual education offers a rigorous foundation for symbolic analysis because languages are systems of symbols (Harley, 2008). Interpretations of law, engineering, and software codes are examples of symbolic analysis. Due to polysemy - the concept of multiple meanings per word (J. Taylor, 2008; Zgusta, 1971), languages are more abstract than numbers. Searching for equivalent meaning among languages is complex due to the variability of significations cast against contexts unique to specific cultures (M. Taylor, 2008). This complexity of cognitive processing explains the higher performance of multilingual individuals discussed in the research by Bialystok, Craik, and Luk (2008), Cenoz (2009), De Angelis (2007, 2009), Jessner (2006, 2008), Riemersma (2009), and many others.

Jessner (2008) described three multilingual models of education within her descriptions of schools serving European Institution personnel children, citizens of Luxembourg, and the Vienna International School (VIS). EU schools in 14 countries offer a first foreign language in the first grade. In the eighth grade, children of EU personnel study their second foreign language; any language available in the school may be chosen. In the 10th grade students may choose to study a third language. History, geography, and economics are taught in the first foreign language of

students in the ninth and tenth grades. The UK offers a Saturday solution for extra language acquisition that will be discussed below.

Variety of European models of education. Variations on the European model are offered in Vienna, Luxembourg, and other areas where populations speak more than one language. Vienna International School (VIS) employs English for instruction while offering German as a subject to native and non-native speakers who have mastered English (Jessner, 2008). VIS offers French and Spanish as the next foreign language to students proficient in German and English; Latin and mother tongues of children are offered if available.

Luxembourgish children begin school with Luxembourgish as their first language, but begin learning German immediately in the first grade and French in the second grade (Jessner, 2008). English is usually introduced at the beginning of secondary school in Luxembourg as a fourth language. In the Luxembourgish model, three foreign languages are compulsory for Luxembourgish speaking children: German, French, and English. Adding a fifth language or sixth language is optional.

Knudsen (2010) reported that the school system in the Faroe Islands is similar to the Danish system except that Faroe is taught in grades one and two. Danish is a compulsory language from grades three to nine. English is compulsory from grades four to nine. German is compulsory in high school. Similar to Luxembourg, the Faroese school system requires students to learn four languages.

Cenoz (2003, 2005) listed other studies that involved more multilingual variations. In Spain, two variations of Spanish and English language curriculum are found in the Basque area and in the Catalan speaking area. In Switzerland, another EU model is in the Romansch-German speaking area. Canada offers a French immersion program for a minority language population. Canadian studies also included a trilingual school compared to a bilingual school. Immigrant studies have also been performed in The Netherlands, Sweden, the U.S.A., Brunei, Wales, and Singapore.

According to Cenoz and Hoffman (2003), researchers conducted studies in multilingual school contexts involving Basque-Spanish-English, Berber-Dutch-English, Catalan-Spanish-English, Turkish-Dutch-English, and other multilingual contexts in Canada, Singapore, and the Philippines. In general, these studies in Cenoz (2003, 2005) and Cenoz and Hoffman (2003) reported on the beneficial effects of second language learning on third language learning. One unpredicted finding was the disproving of the hypothesis that language typology would have a major difference. Studies

have shown that regardless of the language typology of previously learned languages, significant third language learning benefits occurred in every study (Cenoz, 2003, 2005, 2008, 2009).

Saturday schools. The authors in Lytra and Martin (2010) explored the inter-relationships of social structure, language practices, and schools in various multicultural communities in Britain at three hierarchical levels: social-interactional (micro level); educational-institutional (meso level); and broader socio-political (macro level). Complementary, supplementary, and community schools include the variety of ways used to refer to voluntary schools that occur on Saturdays to teach culture and heritage language to minority students in Britain. The ecological perspective of language advocates the initiative to support heritage languages by providing instruction to minority students on Saturdays (Blackledge & Creese, 2010).

The wide-range of complementary and supplementary schools offered in British communities serves to increase the biliteracy in the following ethnic communities from Asia, Europe, and South America. The South American minority served by Saturday schools comprises of Portuguese-speaking Brazilians (Souza, 2010). European minorities served by Saturday schools are: Albanian (Sneddon, 2010); Cypriot-Greeks, Cypriot-Turks, Greeks, Turkish (Prokopiou & Cline, 2010; Robertson, 2010); and Portuguese (Barradas, 2010). Asians served by Saturday schools are: Bangladeshi (Blackledge & Creese, 2010; Ruby, Gregory, Kenner, & Al-Azami, 2010); Chinese, including Cantonese (Francis, Archer, & Mau, 2010; Wei & Wu, 2010), Mandarine (Wei & Wu, 2010), and Putongua (Francis et al., 2010); Indian, including Gujarati (Lytra, Martin, Barac, & Bhatt, 2010) and Punjabi (Conteh, 2010); and Pakistani (Prokopiou & Cline, 2010).

Previous to this current wave of immigration, Saturday schools began serving Hindu, Muslim, and Sikh communities in the 1970s and African-Caribbean families in the 1960s (Lytra & Martin, 2010). This research on extra schooling for minorities in the UK demonstrated heightened self-esteem and increased academic success among participating students. Concern for medium-sized language communities, Boix-Fuster (2015) examined the multiple languages spoken in Brussels (Belgium), Vigo (Spain), Helsinki (Finland), Barcelona (Spain), Talinn (Estonia) Copenhagan, and Valencia (Spain.

New York City also offers Saturday schools. Garcia, Zakharia, and Otcu (2012) offered a long list of languages that ethnic groups could pursue on the weekends in NYC that includes: Arabic, Bangla, French, Greek,

Haitian Creole, Hebrew, Hindi, Japanese, Korean, Mandarin, Persian [Farsi], Russian, Sikh, Spanish, Turkish, and Yiddish.

Asian models of education. Asian students have consistently outperformed American students on the "Programme for International Student Assessment" (PISA) and the "Trends in Mathematics and Science Studies" (TIMSS), another cross-national exam (Jeynes, 2008). Belief that strong effort can overcome a lack of innate ability plays a motivating role for Asian students. The implication is the USA would benefit by examining the components for success in Asian education. Asian students are required to study English throughout their school years as well as the dominant language or dialect of their country. For instance, the Yunnan Province in China, Vietnam, Thailand, Myanmar (formerly Burma), Laos, and Cambodia promote English as the language of communication in Asia (Stroud & Wee, 2008).

Kirkpatrick (2007) asserted that China, Japan, and Korea serve as exemplary models of providing native-speaker models to achieve student bilinguality in English and the official language. In Hong Kong students learn Cantonese, Mandarin, and English with the objective of bi-literacy in Chinese and English. Cantonese is the language of multilingual Hong Kong in the province of Canton, but Mandarin is the official language of China. Attention now turns to sociolinguistic concerns of multilingualism.

Educational Models: Rights, Capability, and Human Capital

Robeyns (2009) analyzed models of education based on human rights discourse, human capability, and human capital theories. The capability approach is relevant to multilingualism because research has shown that students need to be adept at language to have maximum benefit from instruction (Lo Bianco, 2008). Adeptness at language entails essential developmental readiness, especially in regard to language of instruction proficiency (Bardovi-Harlig & Comajoan, 2008).

Not enough is known about the consequences of teaching students in a language in which students lack proficiency. Walter (2008) indicates that educators do not know the ramifications of the teaching of immigrant children in a new language. Walter (2008) wrote that over two billion children in the world do not have access to education in their native languages.

Chung (2006) indicated graduation rates between native and non-native speakers demonstrate adverse impact on immigrants. Goretskaya (2006) referred to non-native speakers of English as disadvantaged in the

study of alternative instruction methodology. Alonzo (2008) found that household income and the educational level of the mother were factorial predictors of absenteeism and grade point average in Latino males. Medina (2008) revealed that more at-risk youth are hindered by low English language proficiency. Medina also demonstrated that large and increasing numbers of language minority students enroll in English language remediation programs. Medina (2008) wrote that only 43% of the English for Academics Program (EAP) students qualify for non-remediation courses upon completion of the EAP courses.

Laguerre (2008) wrote that only 40% of foreign born students over age 24 obtain high school or college education. Donlon (2008) explained that high school graduation rates in 2007 were between 68% and 71% in the USA and that the achievement gap grew between demographically advantaged and disadvantaged youth. Perea (2009) reported that her study of immigrants from the Dominican Republic in the Providence Rhode Island area (USA) revealed that school girls who embraced bilingualism outperformed girls stating a language preference. This array of research indicates that children who are not proficient in the language used for instruction do not do as well as children who are proficient.

Dalmau (2014) discussed how major corporations try to impose a dominant language on their clients, but Dalmau (2014) reveals how resourceful immigrants in Spain use technology to use whatever languages they want. The implication from Dalmau (2014) was that people have the right to use whatever languages they want and corporations should assist their clientele, not try to control their communication. The discussion will turn to education policy. The irony is that students from Asia, Europe, America (North, South, & Central), Africa, and Australia travel to other countries to pursue higher education and advanced degrees where universities may or may not accommodate them even though they have demonstrated mastery of the dominant language, but in communication with family members on other continents, students want to communicate in their mother tongues, and in many circumstances, communicating in the mother tongue is a necessity because mother might be monolingual and not be able to complete the call at a call center where no one on staff speaks her language. The discussion will move on to education policy.

Chapter 13. Education Policy

Moeller and Catalano (2015) are concerned that schools and teachers may not be meeting the needs of students if they conform to policies and rhetoric of the last century. Catalano (2016) wants school leaders and policy makers to be aware of global migration and to have schools ready to meet the needs of the non-native speaking immigrants. Where schools cannot support mother tongues of immigrant students, the school leaders need to reach out to the intergenerational resources available (Cordella, Marisa, & Huang, 2016). Refugees should not be perceived as victims or burdens but instead as linguistic and cultural resources for the classroom (Feuerherm & Ramanathan, 2015). Teachers should be trained in the most current literacy theories for the "Digital Age" (Mills, 2015). Rather than separate new arrivals, Wingate (2015) recommends an inclusive practice with teachers involved in academic literacy. Helot and O Laoire (2011) write that schools should meet students' needs and those needs in the global world require multilingual policies for the classroom.

Hornberger and Hult (2008) reiterated similar concerns in discussions involving policies in education related to the ecology of language on global and national levels. Related to the ecological language issue, Reaser and Adger (2008) conducted research on the use of vernacular languages in education. Reaser and Adger (2008) reported that misdiagnosing features of dialects as learning disabilities can damage the motivation of students and perpetuate segregation, racism, and intolerance. In Armon-Lotem, Jong, and Meir (2015) published seven years later, the concern is still that non-native speakers are being classified as Specific Language Impaired (SLI) instead of being categorized as an L2 or L3 speaker of the official language. These immigrants will catch up with the native speakers in the official language, but it will take time.

Munch and Solis (2004) implied that many bilingual students are incorrectly placed in special education because of American funding policies. Frattura and Topinka (2006) wrote that bilingual students suffer impairment of academic growth combined with an adverse emotional impact. McGroarty (2008) expressed the view that language policy has been more related to political agenda than related to linguistics and exhorts disdain for No Child Left Behind (NCLB) performance targets in high-stakes testing that do not take into account that English is not the language of some students. McGroarty cites Walter (2008), Bachman and Purpura (2008), and Chalhoub-Deville and Deville (2008) as discussing in greater

detail several issues she mentions. In brief, assessments in language can serve students well if used to guide teachers in preparing instruction based on needs of students (Bachman & Purpura, 2008). In addition, assessments should not be generalized to whole populations when those populations are different by language level proficiency reflective of an immigrant demographic. Thus, an immigrant demographic renders a population as an insufficient measure for accountability (Chalhoub-Delville & Deville, 2008).

Lewis and Trudell (2008) discussed the political nature and power differential involved in language policy formation, but from the global perspective of dozens or hundreds of minority languages competing for prominence next to the few languages designated as majority languages. Teacher attitudes toward minority languages affect student performance (De Angelis, 2009). Too often migration languages are treated as inferior in classrooms (Bleichenbacher, 2009). Scholars with sociolinguistic concerns inevitably want to see policies throughout education reflecting the needs of individuals and communities that surface via social research, which is the focus of the next section.

Policy Alignment: Human Rights and Language Development

Language policy and fair assessment issues of the previous section align with the rights and capabilities models of education of Armon-Lotem et al. (2015) and Robeyns (2009) that inherently relate to multilingual models of education. Robeyns (2009) faults the human capital model because this economic view of education fails to value multiculturalism and gender issues of inequality, but applauds the efficiency aspect of the human capital model as an instrument for including appropriate content as long as human capital never guides educational, fiscal, or budgetary policies. Multilingual education models emulate multiculturalism as a basis for making budgetary, fiscal, and educational decisions with human capital enhancement as a long-range beneficial consequence that is consistent with the perspectives of Cenoz (2003, 2005), Cenoz and Hoffman (2003), Herdina and Jessner (2002), and Hornberger and Hult (2008).

Application of Expand Empowerment Education Model

Empowering teachers is a theme of Helot and O Laoire (2011) and Downey, Ahyaegbunam, and Scutchfield (2009), who described the empowerment education model as useful for involving the community in forums, focus groups, and surveys with a focus for improving community health.

Empowerment is central to Freire's educational theory that denounces oppressiveness and advocates critical reflection, mutual respect, group participation, caring, and concern that those lacking control over resources improve their access. This framework could also be applied to multilingual communities concerning language issues. Teachers should never communicate that any language is inferior (Bleichenbacher, 2009). Three transferable issues from health to language include: a) focus on the positive assets of a polyglot community; b) encouraging healthy behavior could transfer to encouraging the use of more languages; and c) putting the economic advantages first. Teacher proactive behaviors are essential for promoting equality (Kubanyiova, 2009).

Downey et al. (2009) reported on the consensus that improvement of economic conditions would improve local resident health; therefore, one could extrapolate that better use of languages could indirectly have an impact on health. Berry (2006) quoted Barry Su saying that languages present an obstacle for the Internet. Su's company, Tyloon, has been developing simplified multilingual search methods. Tyloon translated American yellow pages into Chinese and Spanish with French, Japanese, and German yellow page translations underway. Tyloon is an American company with native Chinese and Spanish speakers and tech support in Slovenia. Berry (2006) recommended that breaking down language barriers will help companies find appropriate companies for doing business around the globe.

Prior (2015) offered case studies with powerful stories of immigrants coping with a new language, new culture, and new country with different laws. Atkinson and Connor (2008) cited case studies that demonstrated how free-writing or journal writing can transform a shy student who does not participate into an animated student motivated to share his stories, and how one small child catapulted to biliteracy as soon as her mother demonstrated the Gujarati script of her native language in an English kindergarten. According to Atkinson and Connor (2008), detailed descriptions of case studies offer a rich representation of reality that cannot be matched by a chart displaying statistics. Class observations in diverse settings motivated Degi (2009) to suggest that teachers can facilitate multi-competence by using a multilingual mode for class discussions and assignments.

Chapter 14. Meta Literature Review

According to Moyer (2008), four approaches to language research include:

a) Pragmatics and social interaction;
b) Perception through language and production of language;
c) Tacit knowledge and language competence; and
d) Linguistic perspective of form and structure.

Practitioners of the previously mentioned professional divisions of multilingualism target linguistic form and structure perspective in their investigations. The trend has been toward interdisciplinary research according to Wei (2007, 2008). Jessner (2009) stipulated that a multilingual perspective is essential to doing research on metalinguistic awareness.

Skinner (2008) differentiated between learning levels and learning rates. Research implications are that journal reviewers and editors should not demand constancy in learning trials because variation in time offers better answers to basic questions of applied learning instead of catering to theory to improve relevance for practitioners. Relevance for multilingual learners would be mirroring immersion in foreign languages to capitalize on acquired multi-competence (Gorter, 2009). A mistake of education design is tying multilingual learning to monolingual standards. By combining knowledge gained from learning research from different perspectives, a more dynamic model of education can be constructed.

Feasibility Study Impact

The purpose of educators knowing the early development of language is for them to recognize developmental problems as early as possible. Fey and Finestack (2009) complain that most of the intervention research has been unreplicated. Armon-Lotem et al. (2015) found that assessments were inaccurate causing interventions that should not have been occurring. Key clinical issues concerning empirical, methodological, and theoretical concerns have not been properly established. Clinical trials refer to the controlling of variables with the intent of enhancing learning and performance. Lacking are pre-efficacy investigations.

Fey and Finestack (2009) also distinguished between the terms *effectiveness* and *efficacy*. Causal relationships studied in ideal laboratory conditions that are replicable, bias free, and demonstrate internal validity are

representative of *efficacy studies* whereas *effectiveness* describes external validity. Studies representing effectiveness are conducted among typical populations, not laboratory conditions, are more generalizable. Fey and Finestack (2009) proposed a plan in five phases to study language intervention effectiveness that began with pre-trial studies followed by feasibility studies. After the two initial phases, the research continues in a cycle that progress from earlier and later efficacy studies to effectiveness studies, then back to an earlier or later efficacy study and another effectiveness study. Six years later, Armon-Lotem et al. (2015) declare that better diagnostics are needed.

Fey and Finestack (2009) indicated that the drawback to the procedure they designed is the lack of published feasibility studies in child language effectiveness. However, the importance of this procedure put in place is the ability to generate hypotheses as well as to test them. Another feature of feasibility studies is that well-executed studies have a greater opportunity for publication. Well-executed studies will spawn further rigorous research with improved methods for increasing child language interventions.

Consent Forms and Bilingual Studies

According to Nortier (2008), sociolinguitic information is important for discerning the proficiency in each language when doing a multilingual or bilingual study. Lanza (2008) said that bilingualism, which infers multilingualism in this context, is a socially embedded phenomenon whether the study is on the individual as in psycholinguistics or on groups as in sociolinguistic studies. According to Lanza (2008), the number of informants is not as crucial as the selection criteria so that researchers can make comparisons. Differences between or among the participants are significant for interpreting findings.

Lanza (2008) offered a consent form that had 10 parts. The first part stated the agreement was between the researcher and the participant with details concerning the affiliation of the researcher. The second part stated the purpose. The third part stated how often and how long the researcher would meet with the participant as well as the duration and methodology of the study. The fourth part stated the type of instrument, such as recording or journal, used in the study. The fifth part specified who would be listening or reading and analyzing the data and that identity would be kept in confidence. The sixth part stipulated that friends or family of the informant would not be identified. The seventh part offered the parents of a child the opportunity to listen to recordings, which infers viewing of videos, and the right to erase

any part. The eighth part of the consent form made the stipulation that the researcher would be the owner of the instrument used for data collection for future scientific or educational purposes. The ninth part named the authority and that adherence to the guidelines of the authority would be fulfilled. The last part was a place for the signatures of the participant or participant's parents and the researcher. The focus will turn to data and codeswitching.

Proficiency Bias Study

Bang, Suarez-Orozco, Pakes, and O'Connor (2009) cautions with the revelation of their four main findings in their research. First, regression analysis demonstrated that teachers scored students higher if students did their homework and higher proficiency in English. Second, English proficiency was unrelated to homework completion. Third, Teachers evaluated students based on: behavior, English proficiency, and completed homework. Fourth, English proficiency influenced teacher assessments of homework. Thus, the overall finding of Bang et al. (2009) was that lower English proficient students' grades were not positively influenced by doing their homework; therefore, lower proficient students received lower evaluations whether they did their homework or not. The results of these findings should send a clear message to educational leaders that evaluations may need monitoring so that lower English proficient students do not suffer discrimination in the mainstream classroom, and that effort should not go unrecognized, which could exacerbate the low self-esteem and isolation some students may feel.

Prominent Research Themes

Janzen (2008) revealed four themes prominent in the literature on teaching English to non-native speakers. The first theme is deeper language understanding is critical to student understanding content areas. The second theme is that explicit instruction is necessary for reading strategies and cognitive behaviors. The third theme includes four criteria for instructional improvement that teachers need to do:

a) Explore language of their disciplines in depth,
b) Integrate language instruction with content,
c) Understand their own attitudes on diversity that includes second language and minority learners, and
d) Adapt knowledge base into teaching.

The fourth theme noted by Janzen (2008) in the pedagogical research literature is that culture and discourse literacies have an impact on academic success. Prior (2015) and Kearney (2015) concur. Prioritizing the role of the student in the learning process is crucial for the success of the non-native speaker of English. The focus of this discussion will now turn to the sociolinguistic aspect of multilingualism.

Narrow Margin Analysis Impact

Chiao et al. (2009) observed in their neurological research that humans took longer to compare numbers close in value as well as similar status rankings. Numbers and hierarchies of social status share similar properties. Chiao et al. (2009) pointed out the ubiquity of status across species and the implications for preferential circumstance based on status. The authors offered four plausible explanations for their findings, but more important, the implication is that future research should focus on how neurological adaptations reflect human comparisons to discern value and hierarchy or other dimensions of social perception. Chiao et al. (2009) exemplifies a study that overlaps between neurolinguistics and sociolinguistics. Normally, psycholinguistics, pragmatics, and neurolinguistics overlap due to neurological studies focusing on the individual or a particular task relevant to pedagogy or cognitive processing.

Policy Implications of Neurological Research

According to Hinton, Miyamoto, and Della-Chiesa (2008), the core concepts of emergent educational neuroscience research indicate that educational practices and policies need re-examined to correlate with the research implications. The key concepts (Hinton et al., 2008) needed to influence decision-making are:

a) Synergized biological and experiential development comprise human development,
b) Emotions affect learning significantly,
c) Learning depends on the process of development,
d) Multiple developmental pathways create the literate brain, and
e) Instruction facilitated by biology creates math in the brain.

According to Magnan (2008), foreign language standards are not being met and need to be realistically reprioritized.

Stathopoulou (2015) stipulated several objectives to be met:

a) Administer assessments that favor cross-language mediation practices,
b) Allow students to mingle languages and use the mother tongue,
c) Analyze linguistic, pedagogical, and social contexts,
d) Add a plurilingual perspective:
e) Learning of L1, L2, and L3 is dynamic and reflexive in nature.

Several brain-informed research outcome policy recommendations by Hinton et al. (2008) follow.

- First, educational leaders should restructure learning environments to enhance learning.
- Second, school leaders should embed guidelines in the curriculum to align with formative assessments.
- Third, teachers should reduce student anxiety by promoting positive learning outlooks and train learners to regulate their emotions to support enhanced learning.
- Fourth, policy makers should mandate starting foreign language learning in preschool and primary school to facilitate ease of implicit grammar and accent acquisition.
- Fifth, university leaders need to update teacher training programs to include the biological learning connection to numerical and spatial concepts to enhance learner math skills.

Bailey, Burkett, and Freeman (2008) assert that teaching teachers to be linguistically aware and cognizant of what is transparent and opaque for learners based on linguistic decipherability. Otherwise, learning will not take place. Paradis (2008) said that both implicit and explicit language learning are essential for students. Implicit language competence refers to incidental acquisition, implicit memory storage, and automaticity, which procedural memory supports. Explicit memory combined with metalinguistic knowledge of a language refers to the conscious learning of a language stored in explicit memory and retrieved by conscious control while supported and sustained by declarative memory. Paradis (2008) indicated that language proficiency requires implicit and explicit learning. Thus, the reciprocity of integrated neurolinguistic, psycholinguistic, sociolinguistic, and pragmatic research combined with pedagogical practice is essential to stimulate the learning curve for students.

Convergent Model Implications for Policy Makers

Polzenhagen and Dirven (2008) assert that two opposing viewpoints are actually compatible. Rationalists see language as a tool. Romantics believe language is an identity marker. Polzenhagen and Dirven (2008) asserted that language is both a tool and an identity marker that divides into three stages:

a) Foundation of linguistic and philosophical analysis;
b) Concepts of standardization and globalization; and
c) Under the consideration of language variation.

The rationalists view language as:

a) Medium of communication;
b) Neutral medium for democratic social participation; and
c) Multilingualism as a variation.

The romantics perceive language as:

a) Medium of expression;
b) Local identities can be threatened if policy makers exclude languages; and
c) Multilingual individuals express layered identities through levels of language variation.

Polzenhagen and Dirven (2008) advised the refining of these models, and that a compromised perception would best serve the individual learners and speakers.

SUMMARY OF PART TWO

The literature survey reviewed studies in the fields of neurolinguistics, psycholinguistics, sociolinguistics, and pedagogically oriented pragmatic research. Studies revealed the benefits and advantages of multilingualism while offering a view of the language acquisition process as well as the necessary concern for language maintenance. Issues of identity and linguistic rights emerged as well as the importance of learners accepting their bilingualism. PART TWO included a hypothesis for future research that syntactic linguistic operations correlate with synaptic and neuronal electrochemical operations in the brain. This assertion should have implications for therapeutic interventions by educators and neurologists to grapple with developmental problems and aphasia pathologies in school and healthcare settings. The brain organization difference between teachers – syntagmatic – and simultaneous translators – exclusive Ln processing – was discussed. Great discipline is required by simultaneous translators to silence the *multilinguistic noise* that is normal for most multilinguals. PART TWO also included the Curriculum and Instruction Interface with Human Development Model with a hypothetical Synergistic Equation for curriculum input and output, as well as a Multilingual Speech Production Model. The following chapter will explain the methods for obtaining information to construct a multilingual model of education.

PART THREE: STRATEGIC METHODOLOGY

The purpose of the systematic grounded theory qualitative study was to assess multilingual models of education by investigating how and when to incorporate second and third languages into the curriculum to improve language acquisition. The model should assist policy makers in understanding the cognitive benefits of increased diversity in communicative abilities. Policy makers need to be better informed of when and how to offer children adequate foreign language learning opportunities. The most current findings in multilingual research should be used to guide curriculum for improved language learning.

The qualitative aspect of the study is appropriate due to the contextual and experiential nature of the participants' answers (Moyer, 2008). Knowledge from experts can best be expressed in qualitative data (Codo, 2008). The research variables include knowledge from researchers in neurolinguistics, psycholinguistics, and sociolinguistics located in various countries around the world. Open-ended interview questionnaires tested intrinsic assertions and assumptions esoteric to a new model. The outcome of this study benefited from various research perspectives of multilingual researcher participants.

Trilingual students outperform bilingual students, and bilingual students outperform monolingual students (Bialystok et al., 2008; Cenoz, 2009). The benefits of a multilingual educational model of education include: improved communicative abilities, economic security on global and community levels, increased safety from misunderstandings or potential dangers, enhanced cognitive and critical thinking skills, and increased job opportunities (Barenfanger & Tshirner, 2008; Cenoz, 2009; Holliday, 2008; Jessner, 2008; Lasagabaster & Huguet, 2007; Oleksak, 2007; Riemersma, 2009).

Chapter 15. Details of the Research Method

This chapter contains the rationale for choosing a grounded theory qualitative design to explore multilingual participants' perceptions, ideas, and experiences. A discussion presents other possible designs and why the grounded theory design was the most appropriate to achieve the goals of this study. Also presented is the informant selection process and how theories, methodology, and data will be analyzed. The informants self-reported their language learning experience and observations that yielded insights into possible variables that are not in a format permitting quantitative analysis at this time.

The selection of informants was based on a stratified approach to obtain a cross-section of multilingual researchers. In *Constructing Grounded Theory; A Practical Guide Through Qualitative Analysis*, Charmaz (2006) wrote that a variety of perspectives contribute to data enrichment. The pilot research study was set up the same way: researchers from each branch of multilingual research were systematically asked to participate. Interdisciplinary information enhanced the knowledge gathered in the neurological published research by Bloch et al. (2009) in *Neuropsychologia*; Chiao, Harada, Oby, Li, Parrish, and Bridge (2009) also in *Neuropsychologia*; Krishnan and Gandour (2009) in *Brain & Language*; Mbwana et al. (2009) in *Brain*; and Navricsis (2007) in the monograph *Second Language Lexical Processes; Applied Linguistic and Psycholinguistic Perspectives*, as well as other branches of multilingual research.

Research Method and Design Appropriateness

This section on research method and design appropriateness divides into four subsections.

1) The **first** subsection explains the rationale for using the **qualitative** method.
2) The **second** subsection offers an explanation of the **grounded theory** qualitative method and appropriateness.
3) The **third** subsection elaborates on specific details of the research design and systematic **process** rationale.
4) The **fourth** subsection tells why the chosen design is the **optimal** design choice for accomplishing the goals set forth in this study.

Qualitative Method Rationale. According to Moyer (2008), qualitative research treats experience holistically rather than as divisible into separate variables as in quantitative research. The holistic exploration approach was appropriate for this study because of the various perspectives of language acquisition. This study incorporates the neurolinguistic, psycholinguistic, sociolinguistic, pragmatic, and pedagogical perspectives of acquiring languages. Qualitative methodology is appropriate due to the holistic approach of synthesizing the experiences reported by informants.

To fully understand the qualitative and quantitative differences between monolingual and multilingual processing, mixed method studies are appropriate according to Abutalebi and Della Rosa (2008) in their article "Imaging Technologies" and to Kroll, Gerfen, and Dussias (2008) in their article "Laboratory Designs and Paradigms: Words, Sounds, and Sentences." The current study was not an experiment. In this study multilingual researchers were asked questions that reveal differences among the processing of monolingual and multilingual individuals. The current study had the benefit of the experience of multilingual researchers who had conducted quantitative studies in addition to reporting on their experiences qualitatively in other studies, or in mixed method studies. The qualitative method of interviewing is the best way to learn about attitudes, beliefs, motivation, and values, but language awareness must be heightened to achieve the desired results, according to Codo (2008) in *The Blackwell Guide to Research Methods in Bilingualism and Multilingualism*. The assertion made in this study is that multilingual researchers have the heightened language awareness to achieve the goals of the current study for understanding how to improve education toward multiple language acquisition.

Moyer (2008) advised that qualitative research is appropriate for theory building due to the inductive method that forms a set of hypotheses, whereas quantitative research uses hypothetico-deductive ways for testing hypotheses. The purpose of the current study was to establish a model based on variables that emerged from the respondents concerning how to improve language acquisition. Interviewing is a qualitative method of acquiring data (Hua & David, 2008; Merriam, 2009; Moyer, 2008). Using the qualitative methodology, the responses from the participants were expected to yield the variables that contribute to the model. One qualitative research design specifically used to develop models is the grounded theory design.

Grounded Theory Design. Grounded theory divides into three approaches to design: constructivist, emerging, and **systematic** (Charmaz, 2006; Glaser & Strauss, 1967; Strauss & Corbin, 1998). Incorporation of

systematic and emerging designs is possible. The constructs of the multilingual model of education emerged from the systematic approach of analyzing the data. **Six** characteristics common to all three approaches are:

1) Core category,
2) Process approach,
3) Memos,
4) Theory generation,
5) Constant comparative data analysis, and
6) Theoretical sampling.

The current study reflects these six characteristics.

The **core category** for the current study was multiple language acquisition. Backus (2008) recommended transcribing the most useful data to achieve the goal of the study within time constraints. For the current study, the data transcribed was relevant to how to improve education to better facilitate learning multiple languages. The participants offered information useful for knowing when and how to introduce new languages into the curriculum as well as how to maintain and develop skills in those languages.

The case study qualitative method could not have achieved the specific answers needed from multilingual researchers in this study. Observing multilingual researchers would not have divulged their perceptions compared to open-ended questions directly asked. The case study is useful for observing the behavior of multilingual individuals (Hua & David, 2008). To learn what multilingual individuals know or perceive, then the researcher must ask them directly. Multilingual researchers who have done case studies have added valuable information to this study due to specific examples not subject to the time constraints of this multilingual study.

Similarly, an ethnographic method was not going to achieve the goals inherent to the current study. Participants who have used ethnographic methods enriched this study by having captured "complexities, contradictions, and consequences" (Heller, 2008, p. 250) of multiple language usage in their in-depth explanations and descriptions. The researcher enhanced the validity, reliability, transferability, and generalizability of the current study by including as participants published multilingual researchers who have used a variety of multilingual research methods. Answers to the research questions concerning how to improve multilingual education benefited from these multiple perspectives.

Process Approach. The process of analyzing the data occurred in three phases: initial coding, focused coding, and axial coding. Charmaz (2006) wrote, "Through comparing data to data, we develop the focused code" (p. 60). According to Charmaz (2006), focused coding occurs after initial coding to allow the categories or properties to emerge. After the categories emerge, then relationships between and among the variables are subject to analyses in the axial coding stage from which a model may emanate.

Simultaneous Constant Comparative Data Analysis

Involving data collection with its simultaneous constant comparative analysis is an important component of the grounded theory process (Glaser & Strauss, 1967). Allowing the construction of categories as the data emerges is another important component of the grounded theory process (Glaser, 1992; Strauss, 1990). When new information is deemed likely not to occur, then the subjective judgment of data saturation is made as depicted in Figure 14.5 in Creswell (2005, p. 406). Samples can be closed at the saturation threshold as indicated by the data repetition (Wisker, 2008).

Research Design Elaboration

Moyer (2008) wrote that the methodology should be connected to the research questions and offered five bases and alternative procedures for obtaining the answers to the research questions. The first basis is the reflexivity of connecting the nature of the study to the design. The second basis constitutes knowledge. In the current study, knowledge is the reported experiences, perceptions, and intuitions of the expert participants concerning their own language acquisition and what they have observed in others. Third, Moyer (2008) indicated the researcher must determine the best way to engage the informants with the questions.

Assessing Models

Several models were designed for the current study as potential components of a multilingual model of education. For the pilot study, the pilot participants answered questions based upon the component models. Model-Testing is common among grounded theory studies (Lin, 2009; Son, 2009; Wolf, 2010). Model-driven grounded theory studies are also common (Fu, 2009; Kang, 2009; Kaveh, 2010; Lewis, 2009; Solomon, 2009). In the

seminal publication on grounded theory, Glaser and Strauss (1967) invited researchers to use the strategies of grounded theory according to "their own pursuits" (Allen, 2010, p. 1606).

Internet Distribution and Piloting

In the current study, written communication using the Internet was appropriate because of the global distances among the participants and researcher. According to Charmaz (2006) and others (AbuAlRub, 2006; Hou, 2008; Mangunkusumo, Brug, Duisterhout, De Koning, & Raat, 2007; Wolford et al., 2008), asynchronous use of the Internet is a valid and reliable method of conducting research. More specifically, asynchronous and web-based use of the Internet is also used in data collection by novice researchers involved in grounded theory terminal degree dissertation projects (Breland, 2009; Dangerfield, 2010). Charmaz (2006) explained in reference to data-gathering that how the participants in studies "invoke ideas, practices, and accounts" (p. 40) within participant cultures must be considered. The participants in the current study are multilingual researchers. Asynchronous written communication via the Internet is the common way that multilingual researchers from different countries exchange ideas, submit articles, and report outcomes of research. Thus, using the Internet asynchronously to gather written data from the academic culture of multilingual researchers is normal and appropriate.

Piloting the Questionnaire

Piloting the questionnaire was essential (Codo, 2008) to test if the instrument would be effective in meeting the goals of the researcher. Strauss and Corbin (1998) support the application of grounded theory in flexible and creative ways including preconceived questions. Charmaz (2006) wrote, "Questions must explore the interviewer's topic and fit the participant's experience" (p. 29). For the current study, participants representing different branches of multilingual research were invited to pilot the study (see Appendix C: Invitation to Pilot Research). Thus, the selection of the pilot participants was suitable for the topic and fit the criteria for experience with multilingualism.

Sampling, Data Collection, Procedures, Rationale

The type of sampling used to locate the specialized population of multilingual experts was the purposive sampling technique described by James and Woll (2004). Purposive sampling is useful for locating a specific population that is difficult to discern. Lanza (2008) explained that these sampling techniques need to be used in circumstances where the researcher is seeking specific variables to study, such as speakers with certain characteristics, and in situations in which the theory of probability is not applicable or the number of people in a particular category cannot be determined.

Population

Potential informants were identified based on their published research in peer- reviewed journals, monographs, and conference brochures where email addresses were obtained. The informants were divided into categories of neurolinguists, psycholinguists, sociolinguists, and multilingual education researchers (see Appendix: Professional Research Affiliation). Informants were also identified based on geographical location and name typology. The combination of name and geographic location may indicate multilingual repertoire. The intention was to achieve a variety of perspectives from language repertoires and types of multilingual investigation (see Appendix: Participant Demographics Form).

Reputational Sampling: Stratified Systematic Grounded Theory Design

Neuman (2003) referred to the selective technique used in the current study as reputational sampling. Pavlenko (2008) wrote that personal experiential narratives may be a superior source of data than the controlled questioning with limited response. Creswell (2005) referred to selecting people who best understand the phenomenon of focus as falling into the category of purposeful qualitative sampling. Creswell (2005) also mentioned that a pre-selected sample may give voice to people normally unheard. In this study, the voices heard were multilingual researchers who may not have had the opportunity to share their own personal experience with multilingualism. Charmaz (2006) explained the symbolic interactionist perspective of the dynamic and interpretive nature of how participants and researcher construct meaning related to the issues of concern. Thus, issues may be illuminated not previously discussed in the literature published by the participants.

Saturation

Charmaz (2006) depicted the systematic grounded theory process as cyclical. The implication is the cycle is completed when the emerging data becomes redundant and no new categories emerge. Creswell (2005) explained that participant number is a subjective decision and exemplified an adequate study with 20 participants. Qualitative studies may reach saturation with fewer participants than quantitative studies (Codo, 2008). When 10 (arbitrary number) consecutive interview questionnaires reveal no new information categories or variables, then the researcher may assume saturation is reached for the current study.

Confidentiality

An informed consent attachment (see Lanza, 2008; Moyer, 2008; Nortier, 2008) was sent as the first contact inviting the scholars to participate in the pilot and the survey of experts (see Appendix F: Confidentiality Statement). Volunteer participants were assigned a code so that the interview data would be confidential. The code changed with every question so that anonymity could be maintained. Anonymity afforded the experts the license of voicing opinions, concerns, or observations not normally written in research documents bearing authors' names.

Review of Research Questions

The general research question was: What theory will emerge to propose improved instruction and curriculum design to best facilitate multiple language acquisition and learner cognitive skill development? Two research questions comprised different components that led to the emerging model. The first component was when to introduce new languages in the curriculum. The first specific research question was: How should languages be systematically incorporated throughout the curriculum over time to meet the needs of learners? The second specific research question had to do with what teachers should do to teach multiple languages. The second specific research question was: What types of teaching methodologies, strategies, and techniques contribute best to construct learning, identity, intuitions, and retention of second and third languages regarding listening, speaking, reading, writing, grammar, and vocabulary?

Pilot Study Data Collection Instrument

For informed points of view, open-ended questions were the best way to provide a format for informants to share knowledge, experience, and observations. Pavlenko (2008) expressed that less controlling open-ended questions provide a more authentic response from participants. Written responses guided the construction of a multilingual model of education to blend perspectives and incorporate ideas offered by the informants of established expertise. The interview questions for the pilot study followed with an explanation of how the answer to the question should offer an explanation desired for one or more research questions. See the Appendix for the Pilot Study Instrument.

Pilot interview question one. How could curriculum in schools be improved to enhance multilingual acquisition in the learner with developmental considerations of when and how to introduce new languages? Pilot interview question one should have elicited components needed for both specific research questions: a) improving curriculum; b) when and how to introduce languages into the curriculum. Answers to interview question one would help form a model for designing multilingual schools.

Pilot interview question two. What teaching techniques, strategies, or methodologies of instruction do you feel most enhance multiple languages learning considering the age appropriateness at different levels of development and acquisition? Answers to interview question two should have answered the components of both research questions: a) what teachers should do when teaching; b) at what ages, stages of development, and level of acquisition should teachers consider when teaching. Answers to pilot interview question two should have helped construct a model for improving multilingual education.

Pilot interview question three. How could school leaders employ a theory of notional-functionalism interfaced with pragmatic-aestheticism to enrich the multilingual development of reading, writing, speaking, or listening while diversifying student self-perception of identity? This pilot question was a theory-building question that would have satisfied the general research question. Components of both specific research questions also comprise interview question three: a) development of multilingualism; b) notions of self-identity; c) teaching and curriculum components of reading, writing, speaking, and listening.

Pilot interview question four. After reflecting on the multilingual speech production model, what do you think teachers, curriculum designers, and school leaders should know concerning your accumulated intuitions in

acquiring languages that would benefit multilingual learners (younger and older) in developing and maintaining vocabulary and grammar in multiple languages? Pilot interview question four had six major components: teachers, curriculum designers, intuition of informants, learner developmental age, grammar, and vocabulary. Components of both research questions comprised pilot interview question four. Answers to pilot question four should have contributed to the general research question concerning how to construct a multilingual model of education.

Pilot interview question five. After reflecting on the implicit-explicit passive-active learning analysis table, what should educators know about your learning experience that could enhance teaching practices or curriculum design to improve instruction to future learners? Answers to pilot interview question five should have reflected the learning experiences of multilingual researchers or the experiences they observed in their research. The pilot participants were asked to connect what they learned to improve curriculum and instruction. These responses could have contributed to answering both specific questions as well as helping to construct a model as asked in the general research question.

Reliability of the Instrument

The pilot study revealed the weaknesses of the instrument because the participants were experienced researchers. Five multilingual researchers were selected to pilot the study. Researchers in neurolinguistics, psycholinguistics, sociolinguistics, and interdisciplinary investigations were asked to pilot the study. To be certain to have this variety, the researcher had a list of three researchers in each branch and followed up every two days until five volunteers accepted to do the pilot study. Alterations to the questions reflected the suggestions made by the participants in the pilot study. Models were not used in the main study per unanimous suggestion of the pilot participants. Reliability was established after saturation was achieved in the main study.

Validity: Internal, External

Glaser andl Strauss (1967) explained that validity is strengthened by systematically analyzing data for logical consistency and accuracy. Charmaz (2006) wrote that the systematic grounded theory approach “remedies weaknesses” (p. 25). Creswell (2005) said that validity and reliability could be strengthened with planning, piloting, and revising. Thus, the plan for this

study involved constructing a questionnaire, then establishing face validity and reliability by piloting with a few invited members of the sample. The questionnaire was revised based on feedback from experts on multilingual research (see Appendix: Main Study Instrument). Charmaz (2006) wrote that the questionnaire instrument should "fit" the research questions. Asynchronous web-based questionnaires with grounded theory design are acceptable for research (Breland, 2009; Charmaz, 2006; Dangerfield, 2010). The pilot study contributes to the internal validity of the main study by contributing purposeful focus.

Reliability of the Study

Codo (2008) recommended the questionnaire should be short to contribute to reliability so that participants do not answer questions randomly. After the questionnaire was revised based on recommendations from the pilot study, it was sent to the rest of the sample (see Appendix: Invitation to Participate in Research). Data was analyzed as it was received and data collection ceased when saturation was reached when the data was redundant.

Appropriate Sample

According to Creswell (2005), using 20 to 30 participants should suffice as an appropriate sample. The sample study offered in Creswell (2005) used 20 participants. Lanza (2008) wrote that "representativeness" is the primary issue for the sampling process. Lanza (2008) also asserted that the ability to generalize the findings depends on the selection process. Since all of the participants were published authors of articles on multilingualism that have appeared in peer-reviewed journals, then validity, reliability, and generalizeability concerns should be adequately served. External validity should be achieved if the results from the study can be used in other studies (transferability).

Threat to Validity

Deviating from the systematic strategies established within the study would pose a threat to validity (Charmaz, 2006). Threats to validity involve selection, mortality, and interactions with selection (Creswell, 2005). The way to avoid interactions with selection is to adhere to the procedure of sending identical letters of invitation to all potential participants

accompanied by the guarantee of anonymity. In the current study, the systematic strategies endured.

Data Analysis

Turrell and Moyer (2008) wrote that adherence to transcription reliability requirements is necessary to guarantee internal and external validity of the research outcomes. Merriam (2009) explained that qualitative researchers must search for relationships and patterns in the data. The procedure for data coding adhered to the initial coding followed by focused coding, then axial coding of the systematic grounded theory qualitative process as described by Charmaz (2006). In the event of need for clarification, the participants made contact for the opportunity to communicate further. The transparent initial coding process offered the most possibilities for themes to emerge. The focused coding process facilitated organizing the themes into categories. Then, the axial coding process afforded the opportunity to explore relationships between and among the categories. Thus, constructs emerge from the thematic relationships discovered in the data that can contribute to theory generation (Charmaz, 2006).

Themes

Themes offer opportunities to engage theoretical perspectives of experts, theorists, and theories (Wisker, 2008). The data analysis technique was appropriate for the current study due to the structured nature of offering a framework model of education and a learner-centered development model. Educational models are not unknown. Comprehensive research took place on education models, learning research, and countless studies on curriculum and instruction. The current study built upon established research and added to the research by synthesizing the most current studies and incorporating them into a model unique to other models supported by knowledge, experience, and intuition of the informants.

SUMMARY OF METHODOLOGICAL DETAILS

Relevant variables are discovered by the systematic grounded theory qualitative procedures inherent to the study design (Charmaz, 2006). Variables emerge from the transparency of the initial coding process that gives way to the second phase of focused coding to categorize the themes that emerge from the first phase (Charmaz, 2006). The third phase of axial coding consists of selecting relationships among the variable themes from which to draw constructs for a multilingual model of education. This data comes from the answers to a brief questionnaire.

Expertise Established

The researcher established expertise by creating a list of potential participants whose articles appeared in peer-reviewed journals, monographs, and conference abstracts. The experts specialized in neurolinguistic, psycholinguistic, sociolinguistic, pragmatic, and pedagogical multilingual research. Contact information was obtained from the published articles and abstracts of potential participants. The questionnaire was to be piloted by three to five multilingual researchers with no prior knowledge of the proposal for this dissertation. The experts would refine the questions used in the survey of multilingual researchers.

The questionnaire explored matters central to language acquisition and maintenance that may contribute to the construction of a multilingual model of education that offers preferred strategies and methodologies for teaching in a multilingual environment (see Cenoz, 2009; De Angelis, 2007).

Beneficiaries of the Multilingual Study Outcomes

Educational leaders, curriculum designers, and teachers should be served by the information offered by experts in multilingual research concerning how to enhance education to facilitate learning of multiple languages. Learners should benefit from the educational model because of the inherent critical thinking skills and intuitions they will garner due to acquiring other languages (Bialystok, 2005; Bialystok et al., 2006; Bialystok et al., 2008; Gibson & Hufeisen, 2009; Jessner, 2008).

Students will learn how to learn languages, and teachers will learn how to enhance linguistically diverse classrooms. Multicultural learning will foster tolerance and appreciation of diversity while reducing the marginalization of minority language students (Barenfanger & Tshirner,

2008). Students will have brighter futures because they have the necessary skills to compete in the international world (Oleksak, 2007). Indeed, multilingualism is the norm in most of the world (Llama, Mullany, & Stockwell, 2007). Adaptability and resiliency may be the most advantageous personal characteristics in the age of high technology. Attention now turns to the following chapter in which the discussion evolves into explaining how the pilot study changed the questionnaire instrument, how respondents shared their knowledge, and what variables emerged from the data.

PART FOUR: DATA ANALYSIS RESULTS

The general problem was that monolingual educational systems hinder competitiveness on the world stage and educational progress of individual learners (Tochon, 2009). The specific problem was that monolingual learners are deprived of opportunities to enhance critical thinking skills and communicative advantages (Cenoz, 2009). The purpose of the study was to find new variables for multilingual models of education based on the input of multilingual researchers to enhance language assimilation. The systematic grounded theory qualitative design allowed open-ended questions to explore perspectives based on participant experience in qualitative or quantitative education investigations. The Internet was the vehicle for gathering data for the study.

The purpose of this chapter is to present the data from the research. The study relied on applying a grounded theory qualitative methodology to explore how multilingual researchers believe multilingual education could be improved. A systematic grounded theory approach was useful for assessing, altering, augmenting, and integrating models to propose a 2011 model for delivering multilingual education. The qualitative method was appropriate for probing the knowledge, experience, and research of the participants to reveal new variables for a multilingual model of education. The interview questions sought answers to research questions concerning the best time to introduce second and third languages into the curriculum, how to incorporate those languages, and other issues of multilingual education. The research questions follow.

General Research Question

What theory will emerge to propose improved instruction and curriculum design to best facilitate multiple language acquisition and learner cognitive skill development?

Research Question One. How should languages be systematically incorporated throughout the curriculum over time to meet the needs of learners?

Research Question Two. What types of teaching methodologies, strategies, and techniques contribute best to construct learning, identity, intuitions, and retention of second and third languages regarding listening, speaking, reading, writing, grammar, and vocabulary?

Chapter 16. Results: From Pilot to Main Study

The explanation of results consists of the pilot study, instrument, sample acquisition, sample selection rationale, sample demographics, and main interview study. The main interview study divides into discussions of the data collection process, data analysis, and presentation of findings.

Pilot Study

Theoretical saturation was reached with the five pilot respondents from 52 invitations sent. The pilot participants fit into various (overlapping) categories of multilingual investigation. The consensus from the pilot participants was that information from the questionnaire could be used in the main study to construct new models or adjust existing models. The pilot participants also recommended simplifying questions. The interview questions of the instrument were made more specific based on the recommendations of the pilot participants. The first question changed from inquiring about curriculum to inquiring about age. The second question changed from asking about strategies and methodologies to ask for the greatest impact of literature. The third question changed from the focus on school leaders to focusing on the experience of participants. The fourth question deviated from scrutinizing the multilingual speech model to eliciting how the curriculum can be improved to promote receptive skills. The fifth question on the learning analysis table was eliminated and four follow-up questions were written instead.

The Instrument for the Main Study

Participants responded to eight questions: four open-ended questions followed by four more open-ended questions, each connected in sequential order to the first four questions. The revised questionnaire follows.

Interview Questions.

1. With developmental considerations, at what ages should second and third languages be introduced into the curriculum?
2. Given the outcomes of the most recent research in your field, what seems to be having the greatest impact on the way students are being taught today?

3. From your experience, intuition, or research, what should all teachers know to benefit learners of multiple languages?
4. How should curriculum be enhanced to promote receptive skills of whole groups of languages such as Slavic, Germanic, or Romance languages?

Follow-up Questions.

1. At what levels of education should second and third languages be used as the medium for delivering courses such as history, science, or math?
2. How could attention to the theories of notional-functionalism and pragmatic-aesthetics benefit the learning of multiple languages such as offered by Saussure and further developed by the Prague Linguistic Circle?
3. How has the sociolinguistic literature had an impact on your conception of multilingual education?
4. At what age should language group receptive skills be a part of the curriculum?

Description of Internet Interview Procedures

Informal Internet conversation between researcher and four participants followed when clarification was needed to collect additional data, enhance answers, or facilitate gathering information on related issues. One participant required Skype (www.skype.com) as an online communication accommodation. Flexibility is important in research (Moyer, 2008). Accommodating participants is common in research. One best way of collecting data does not exist (Nortier, 2008).

Acquisition of the Research Sample

The grounded theory qualitative study depended on a convenience sampling of 13 respondents from 227 invited researchers. The original invitation list for the main study included 94 researchers, but that list expanded to 227 due to lack of response in the main study. From the 227 invited to participate, 19 researchers consented to participate and requested to receive the interview questions, but only 13 researchers responded with answers. Theoretical saturation was reached with the 13 responses. Time constraints and self-

disqualification were reasons offered for not following through with questionnaire answers.

Sample Selection Rationale

Categorizing the researchers was effective to ensure that a variety of perspectives could be included into the study. As a result, a variety of research perspectives were included. Data richness resulted from the reputational sampling (Teddlie & Yu, 2007) used in qualifying participants. Reputational sampling is a type of purposive sampling (Madkour, 2009). Cooper and Schindler (2003) refer to this type of purposive sampling as judgmental: the judgment made involved discerning what entails recently published multilingual research. All of the participants published in recent peer-reviewed monographs and journals. In this study, a combination of reputational, judgmental, and stratified sampling was used. Lankshear and Knobel (2004) defined stratification as giving an equal chance to different segments of a population. The participants were stratified into different categories of multilingual research: neurolinguistic, psycholinguistic, pragmatic, sociolinguistic, interdisciplinary, and educational multilingual research. These categories overlap.

The selection of multilingual researchers who have published in peer-reviewed publications was significant for contributing to the dependability and authenticity of this study (Neuman, 2003). Different categories of research interests contributed to a greater diversity in research perspectives. Important factors and variables may have been found due to employing the perspectives of current researchers.

Sample Demographics

All 13 participants were researchers who had published in peer-reviewed monographs and journals dealing with multilingual issues, and may have presented papers at the Third Language Acquisition (L3) Conference in September 2009 at the University of Bolzano in Italy. Each participant volunteered to answer the questionnaire that was intended to construct a current model for multilingual education. Gender participation included seven females and six males. Minor differences in responses were due to research perspective or location, not gender.

The general categories of respondents included researchers in neurolinguistics, psycholinguistics, sociolinguistics, and multilingual education investigation. Researchers identified themselves as multilingual

researchers or language acquisition researchers, or more specifically as investigators of cross-cultural influence, codeswitching, cognitive psychology, immigration, cultural integration, language education, curriculum analysis, language maintenance, language shift, applied linguistics, educational theory, phonology, and program evaluation. Self-identification and an Internet search revealed that 11 of 13 participants aligned with more than one category of research.

Wei (2008) suggested interdisciplinary research as providing important information to the fields of bilingual and multilingual research. Thematic implications revealed that participants concurred with Wei (2008) concerning the importance of interdisciplinary studies. Table 3 (below) lists the types of research and the languages spoken without revealing any unique participant profile.

The participants also can be categorized in respect to language repertoires. All participants were multilingual. Eleven participants acquired their languages sequentially. At least two participants acquired languages simultaneously. English is the language all participants had in common, but the difference was that English was L1, L2, or L3. The language repertoires of the volunteers included a wide variety of African, European and Asian languages, such as: Arabic, Basque, Chinese, Dutch, English, Finnish, French, German, Hebrew, Hungarian, Indonesian, Italian, Malaysian, Polish, Portuguese, Romanian, Russian, Spanish, Swedish, Taiwanese, Vietnamese, among others.

Multilingual individuals are mobile. Nine participants resided in countries other than their birth countries during the interview or during different time periods of their lives due to advanced education, career opportunities, and research. The participants were from countries in Africa, Asia, Europe, the Middle East, and North America. Table 3 (below) includes general and specific categories of research of the participants as well as a list of languages spoken by the participants (lists are alphabetical, no correlation between the two lists).

Table 3

Participant Linguistic and Professional Demographics

Languages Spoken	Areas of Research
Arabic	Applied Linguistics
Basque	Codeswitching
Chinese	Cognitive psychology
Dutch	Cross cultural integration
English	Curriculum analysis
Finnish	Educational theory
French	Immigration
German	Interdisciplinary research
Hebrew	Language education
Hungarian	Language shift
Indonesian	Multilingual research
Italian	Neurolinguistcs
Malaysian	Pedagogical research
Polish	Phonology
Romanian	Pragmatics
Russian	Program evaluation
Spanish	Psycholinguistics
Vietnamese	Sociolinguistics

Note. There is no correlation between the list on the left and the list on the right. The purpose of the lists is to display the range of languages and specific research areas included in the repertoires of languages spoken and fields of research of the participants. Minority languages were excluded from the list to protect the identities of the participants to avoid violating confidentiality issues. Each participant was multilingual, but to explain what languages the participants speak would reveal identity. Well-known multilingual researchers number in the hundreds; so, they are familiar with one another and constantly read, cite, and reference each other's publications; they either have met or could possibly meet at conferences. Confidentiality is important for research participants to feel they can speak candidly about their expertise, experiences, and intuitions. To be objective in reporting research, one may edit subjective perspectives or judgments from the published research, but the objective of this research inquiry was for researchers to express themselves freely without concerning themselves with research protocols. This list originally appeared in Hobbs (2011) on page 111.

Chapter 17. Main Study Results

Three levels exist in collecting data according to Nortier (2008): macro, meso, and micro. Explanation of three units of analysis follows. The macro-level is census or sample surveys (group perceptions). The meso-level is the questionnaire (individual perception). The micro-level is observations (behavior). This study used the meso-level of questionnaires.

Data Collection Process

Data collection comprised of four open-ended questions with four follow-up questions related to each of the initial questions. The questionnaire was disseminated via the Internet (as an attachment) to the participants in various countries and on different continents. Participants returned consent with an electronic signature in the first half of the main study or sent a statement of consent. Participants wrote explicitly or implied that a response was an obvious indication of consent. The implication was that giving consent per the American research design was cumbersome. Thus, the method of consent was changed so that the international volunteers could respond by replying to the invitation.

In the first 11 days of the study participants had to save the attachment, fill it out, then reattach and send it back. Only four participants had responded. Twenty participants were sought. In the second half of the study, participants placed an X next to the word "Yes" or sent a statement of consent. Due to the identification of the participants as experienced researchers, sensitivity to their expectations prompted the procedural change. Consent format in the USA is different from consent in other countries. The statement of confidentiality was attached in the first half of the study, but stated in the invitation after the procedural change (see **Appendix**: Mid-Study Change for Greater Efficiency). Rewriting the invitation to succinctly include confidentiality seemed appropriate to save time for the participants. After the changes were made, 15 researchers responded to participate. The response was faster.

In the second half of the main study, including demographic questions in the questionnaire improved the quantity and quality of the data collected. The two demographic questions were also added to the questionnaire to eliminate attachments and simplify the written Internet interview protocol.

The demographic questions follow:

- What is your professional affiliation?
- What was your L1, subsequent languages learned, and age of acquisition?

The data collection process stopped when the research question answers from participants reached saturation. Creswell (2005) recommended that researchers constantly analyze qualitative data to determine saturation. When new themes did not emerge, saturation was determined. During the 33 days of collecting data, the answers for each question and its follow-up question were continually compared. Saturation is reached when no new information is discovered from the responses.

Contextual issues comprised languages used at a location (country, city, or school) and by family members (home or extended family member homes, locally or in other countries). Learner needs are contextual. Specific needs of learners vary depending on the demands made by communities for school or work and daily functioning. Learner needs also vary depending on the linguistic repertoires of family members, especially grandparents.

Eight participants (62%) declined to answer the question on notional functionalism due to unfamiliarity with the linguistic theory. The participants in the current study were in various branches of applied linguistics. Questions related to the area of research and expertise of a respondent stimulated more profuse answers to those questions. Responses that contributed answers relevant to the research questions were included in the data.

Data Analysis, Procedures, and Presentation of Findings

Responses were analyzed by listing the answers from participants under each question. Most of the responses to the questionnaire in this study were brief and similar to one another. Thus, software for identifying themes was deemed unnecessary considering the small number of participants, relative conciseness of responses, and the similarity of answers. Content analysis occurred in three coding phases: initial, focused, and axial.

Initial code phase. Charmaz (2006) recommended transparent initial coding. Transparent coding is the first coding phase of the grounded theory methodology. The researcher listed the exact written responses of 12 participants and the transcription of one participant for the initial phase of open coding of the grounded theory design.

Exact responses were saved in electronic files for 12 of the 13 participants. Paraphrased written responses were converted from the vocal verbal interview via Skype to accommodate the wishes of one participant. The spoken responses were converted to written responses; then, the data was stored with the other written responses.

Focused code phase. Charmaz (2006) recommended translucent coding for the development of analysis. Translucent coding is performed in the focused coding phase of data analysis for identifying themes. Responses of participants were succinctly paraphrased and randomized sequentially for the translucent focused coding phase. Responses were listed randomly for each question; thus, response number one for question one may not be the same participant as response number one for questions two, three, or four. This randomization of the translucent focused code was employed to further obscure the identities of the participants.

Axial code phase. Charmaz (2006) recommended axial coding to discover thematic relationships. The axial code phase is opaque for publication to honor anonymity. This final phase includes a discussion of invariant themes and summaries of participant responses. A discursive set of propositions is set forth in the axial coding phase. The propositions refer to organizing the themes from the participant data into a new model of multilingual education. To protect the identities of published participants, answers were paraphrased succinctly for this dissertation. Then, to further obscure identities participants' responses were randomized for each question (see Appendix K: Main Study Data Analysis). Details from the data that may reveal identity were excluded from publication.

First Interview Question Summary of Answers

With developmental considerations, at what ages should second and third languages be introduced into the curriculum?

When to start L2 and L3 in schools was explicitly context dependent for 5 out of 13 (or 38%) responding multilingual researchers (see Table 4 below). Context dependency is an important factor for the multilingual model of education. The context mentioned in their discussions included: adequate qualified teachers, appropriate materials, and research-based methodology. Participants asserted that L2 should be taught as soon as possible or in the early primary grades. For L3, 11 of 13 participants (or 85%) suggested learning before age 10 or as early as possible. Only 2 of 13 participants (or 15%) suggested teaching L3 after age 10 by suggesting ages 13 and 15 as appropriate.

Table 4
Invariant Constituents from Theme of Timing for L2 and L3 Introduction into Curriculum

Invariant Constituents	Number of Participants	Percent
L2, L3 before age 10	11	85%
Context dependency of when to teach L2, L3	5	38%
Minority or migrant situation earlier	2	15%
Age appropriateness [methodology]	2	15%
Continuity or frequency	2	15%
Trained staff	1	8%
Type, quality of input	1	8%
Appropriate expectations	1	8%
Socioeconomic conditions	1	8%
As early as possible (EAP)	4	31%
Minority L1: EAP mother tongue L1, early L2, L3	2	15%

Note. Minority L1 refers to established or recent migrants from other countries (Hobbs, 2011, p. 116). At what levels of education should second and third languages be used as the medium for delivering courses such as history, science, or math? For using L2 or L3 as a medium of instruction, most respondents offered contingent answers. The randomized participant numbers that follow pertain to this question only to understand the depth of each answer concerning each contingency. The contingencies for teaching course content through a foreign language included: (a) the availability of appropriate materials and methodology - five participants (#1, 4, 6, 9, 12); (b) teacher abilities – four participants (#1, 7, 9, 13); (c) appropriate learning input - four participants (#1, 4, 6, 12); and (d) policy – three participants (#3, 5, 6). The alternative suggestion by participant #13 that did not contradict other responses was to teach content in the language course if the teachers of the content courses could not teach in the target L2 or L3. Constituencies of the timing of L2 and L3 in curriculum follow.

First Question Follow-up

At what levels of education should second and third languages be used as the medium for delivering courses such as history, science, or math?

For using L2 or L3 as a medium of instruction, most respondents offered contingent answers. The randomized participant numbers that follow pertain to this question only to understand the depth of each answer concerning each contingency. The contingencies for teaching course content through a foreign language included: (a) the availability of appropriate materials and methodology - five participants (#1, 4, 6, 9, 12); (b) teacher abilities – four participants (#1, 7, 9, 13); (c) appropriate learning input - four participants (#1, 4, 6, 12); and (d) policy – three participants (#3, 5, 6). The alternative suggestion by participant #13 that did not contradict other responses was to teach content in the language course if the teachers of the content courses could not teach in the target L2 or L3. Constituencies of the timing of L2 and L3 in curriculum follow (Hobbs, 2011, p. 117).

Table 5
Invariant Constituents of Theme of Timing for L2 or L3 as Medium for Instruction

Invariant Constituents	Number of Participants	Percent
Contingent on contextual issues	8	62%
Adequate level of target Ln by learners	5	38%
Appropriate materials and methodology	5	38%
Teacher abilities	4	31%
Appropriate learning input	4	31%
Policy	3	23%

Second Interview Question Summary of Answers

The second question inquired of the greatest impact of research outcomes perceived by the participants. Five themes emerged from the data. The themes included:

(1) The need for changes in multilingual education;
(2) The need for teacher training;
(3) Dismay;

(4) Constraints; and
(5) The advantages of multilingual education.

Theme 1: Need for changes. All participants (100%) agreed that the need for change in multilingual education is imperative. Suggestions of needed changes varied, but suggestions were similar and not discrepant. Important factors for multilingual education follow.

Sub-theme 1a: More funds for teacher training. All participants (100%) mentioned the need for improved teacher training. Two participants (15%) wrote of lack of trained teachers as a constraint to education. Five participants (38%) discussed under-funded programs or lack of investment in teacher training.

Sub-theme 1b: Mitigation of constraints to education is necessary. The mitigation of educational constraints is necessary to improve teacher skills and knowledge, develop better materials, enhance teaching methodology, and offer language teaching at appropriate frequency for improved learner assimilation. Reduction of constraints means that better training and materials for teachers will be developed. Twelve participants (92%) discussed various constraints to delivering quality multilingual education.

Sub-theme 1c: Better communication of research outcomes. Better communication is needed so that teacher training can reflect the recommendations of research outcomes (five participants, 38%). Improved information dissemination to teacher training programs is needed so that L3 principles will be used in teaching L3.

Sub-theme 1d: Attitude change is necessary to support minority languages. Attitude changes are necessary so that educators stop discriminating against low status languages in order to improve student motivation for learning their mother tongues and ultimately reinforce L2 and L3 learning. Five participants (38%) expressed concern for minority population. Two participants (15%) verbalized the stipulation of early learning programs.

Sub-theme 1e: Increased funding is necessary to support education reforms. Greater funding is needed to support educational reforms (for instance, to fund teacher training). Five participants (38%) mentioned that funding was a problem.

Sub-theme 1f: Funds for teaching, not testing. Testing companies should not monopolize education; instead, more funds should be spent on teaching than testing (contextual reference to the USA). One participant said funds should be delegated toward teaching and not testing.

Table 6
Invariant Constituents of the Theme of Needed Changes in Multilingual Education

Constituents	Number of Participants	Percentage
Invest in teacher training	13	100%
Mitigate constraints to education	12	92%
Communicate research outcomes	5	38%
Increase funds to support reforms (not testing, 1)	5	38%
Respect minority languages (attitude change)	1	8%
Implement immersion curriculum	1	8%

Note. Table 6 appeared on page 119 of Hobbs (2011).

Theme 2: Teacher training needs improvement. Ten participants or 77% responded that teacher training needs improvement for question two, but 100% responded that teacher training needs improvement in question three. Teacher training is needed to enhance motivation, aptitude, foreign language strategies, and linguistic awareness of learners. Improved teacher education is necessary so that teachers have a better understanding of "what learners can actually do" (participant). More teacher training issues are discussed in question 3 below.

Sub-theme 2a: Teachers must use L2 and L3 methodologies. Multilingual education implementation is needed to increase metalinguistic awareness and learning flexibility. Eight participants (62%) stipulated that teachers must use multilingual concepts for teaching L2 and L3. The implication is that if L2 and L3 methodologies are not used in multilingual education, then valuable learning experience will not take place.

Sub-theme 2b: Learning languages must be fun for young learners. Teachers of young children need to understand that language learning must be fun and not formally taught at early ages. Fun is important in the learning process because "learning should never be forced" (participant involved in learning acquisition research). Two participants (15%) seemed distressed that children were not offered fun opportunities while learning languages.

Sub-theme 2c: Link languages. Languages need to be linked by teaching similarities and differences to support improved learning; improved teacher training would support this notion.

Sub-theme 2d: Immersion works. The benefits of immersion (massive exposure to a foreign language) such as teaching other subjects in

the language are important while concentrating on Ln comprehension interactively with conversation and dialogue.

Sub-theme 2e: Language learners should correct own errors. Teachers should ask students to correct their own errors. If students cannot correct their errors, then teachers should explain the errors and follow up with opportunities for students to demonstrate correctness. Written follow-up is important with teachers making corrections while never correcting student opinions or values.

Sub-theme 2f: Sleep induces neuroplasticity necessary for learning. Teachers should communicate to students and parents the importance of sleep for proper brain functioning.

Sub-theme 2g: Focus-on-form is preferable to grammar method. Too many teachers still rely on the grammar approach to teaching, but teachers should be employing focus-on-form techniques.

Sub-theme 2h: Accuracy is important for beginners. Accuracy-based approaches are better than communicative approaches at the onset of learning; then, later Ln learning should be supplemented by fluency-oriented activities. Table 7 follows.

Table 7
Invariant Constituents of the Needs in Teacher Training

Constituents	Number of Participants	Percentage
Teach L3 concepts; use methodologies, principles	8	62%
Fun for young learners, not formal teaching	2	15%
Increased metalinguistic awareness, flexibility	2	15%
Realistic expectations	1	8%
Link languages via similarities	1	8%
Interactive teaching	1	8%
Student self-correction	1	8%
Focus-on-form	1	8%
Awareness of necessity of sleep for neuroplasticity	1	8%

Note. Table 7 appeared on page 122 of Hobbs (2011).

Theme 3: Dismay. Expressions of dismay by 6 of 13 participants (46%) revealed the concern that lack of communication of research outcomes has caused teachers to continue using outmoded teaching methodologies, especially concerning L3 acquisition strategies. Despite improved knowledge, teacher training (theme 2) lags behind while program initiatives go under-funded. These constraints (theme 4) slow the progress of education.

Theme 4: Constraints. Constraints were mentioned by 3 of 13 participants (23%). The constraints include lack of appropriate or current materials, lack of quality teacher training, and lack of target language knowledge by teachers.

Theme 5: Advantages. The impact of the advantages of multilingual education was explicit for 3 of 13 participants (23%). Participants expressed that multilingual students experienced increased metalinguistic awareness and learning flexibility that improved their language acquisition. Participants mentioned that improved and appropriate multilingual teaching strategies increased student motivation, aptitude, learning strategies, and language awareness. These explanations are consistent with the research literature in multilingual research. Table 8 and Table 9 follow.

Table 8
Invariant Themes of Greatest Research Impact Deemed by Participant Researchers

Theme	Number of Participants	Percent
Need for change/changes	13	100%
Communicate research outcomes		
Attitude change toward minority languages		
Funds for teaching, not testing		
Immersion		
Student self-correction		
Need for improved teacher training	13	100%
Mitigate constraints	12	92%
Fun, not formal for young learners, interactive	2	15%
Use L2, L3 methodologies	1	8%
Funds to support reforms	1	8%
Link languages via similarities	1	8%
Adequate sleep for neuroplasticity	1	8%
Focus-on-form, not grammar	1	8%
Accuracy-based approaches for beginners	1	8%
Dismay	6	46%
Constraints	3	23%
Advantages of multilingual education	3	23%

Note. Table 8 appeared on page 124 of Hobbs (2011).

Table 9
Common Variables Emerging from Two or Three Themes

Common Constituents	# of Themes
Lack of communication (or impact) of outcomes of research	1, 2, 3
Formal teaching inappropriately applied to young children	1, 2
Unrealistic expectations of learners	1, 2
Lack of application of principles of L3 acquisition	1, 2, 3
Hypocrisy of support for ML, discrimination of minority L1	1, 2, 3
Accuracy-based versus communicative approaches	1, 2
Grammar approach versus focus-on-form techniques	1, 2
Self-error correction versus teacher correction	1, 2
Linking languages versus isolating languages	1, 2
Mandates without funding	1, 2, 3
Ill-informed testing companies driving education	1, 3
Too many teachers unaware of multilingual research	1, 2, 3

Note. Theme 1: Need for change; Theme 2: Teacher training; Theme 3: Dismay (Hobbs, 2011, p. 125). How could attention to the theories of notional-functionalism and pragmatic aesthetics benefit the learning of multiple languages such as offered by Saussure and further developed by Prague linguists? Two themes predominated: (a) too difficult to answer; and (b) advantageous.

Second Question Follow-up

How could attention to the theories of notional-functionalism and pragmatic-aesthetics benefit the learning of multiple languages such as offered by Saussure and further developed by the Prague Linguistic Circle?

Two themes predominated:

- Too difficult to answer
- Advantageous

Theme 1: Too difficult to answer. Eight of 13 participants (62%) responded by saying the question was too difficult to answer or by declining to answer. Participants pointed out that the fields of linguistics and applied linguistics are different. Research in various aspects of multilingual education is an extension of applied linguistics. Theoretical linguistics is a different field in which the participants may have little or no involvement.

Theme 2: Advantageous. Five of 13 participants (38%) asserted that theories of notional functionalism and pragmatic aesthetics could be advantageous if applied to multilingual education. The advantages mentioned by participants follow. Notional functionalism and pragmatic aesthetic concepts will improve student metalinguistic skills, greater language analysis, and understanding of systematic language learning. Combined with other theories, language learning will improve multiple language learning. Learner understanding of their linguistic systems and use of language will improve their learning. When teachers explain structures within contexts, learning goals and learner needs will be achieved. Contrasting how notions and functions facilitate language acquisition will improve the learning of Ln (target languages).

Third Interview Question Summary of Answers

The third interview question explored what the multilingual research participants thought all teachers should know. All respondents mentioned that adequate teacher training is paramount. The specific components of teacher training mentioned included pedagogical skills and concepts, thorough knowledge of target languages, and multilingual methodologies as well as understanding sociocultural and sociolinguistic contexts. Necessary pedagogical knowledge and skills included how to scaffold (arrange learning from easier to more difficult) and coordinate learning as well as respond appropriately to learners. Teachers should understand child and language development. Language knowledge should include structural and typological similarities and differences as well as fluency. Multilingual concepts needed by teachers include knowing how to bridge between languages, integrate languages in a plurilinguistic manner, and help learners draw on previous language learning to enhance skills. An aspect of multilingual competence includes understanding linguistic contexts, educational linguistics, adapting teaching to language background, learning styles, and differentiating between L1, L2, L3, and L4 teaching.

Table 10
Invariant Constituents from Theme of Required Teacher Knowledge in Multilingual Education

Invariant Constituents	Number of Participants	Percent
Teacher training needs improvement	13	100**%**
Teaching of multilingual concepts needed	8	62%
Teacher knowledge of target languages lacking	6	46%
Pedagogical concepts need reinforced	5	38%
Sociolinguistic (cultural) context understanding	4	31%
Ln background of each student should be known	3	23%

Note. Table 10 appeared on page 127 of Hobbs (2011).

Third Question Follow-up

How has the sociolinguistic literature had an impact on your conception of multilingual education?

Nine of 13 participants (69%) discussed concepts related to the impact that language has on society, such as public policies. Nine of 13 participants (69%) referred to the significance of the sociolinguistic impact on the individual functioning in social groups. Eight of 13 participants (62%) alluded to the importance of the sociolinguistic impact on the individual's perception of self. Eight of 13 participants (62%) acknowledged the sociolinguistic impact on education. Six of 13 participants (46%) referred to the sociolinguistic impact on the immigrant or the impact of the immigrant on the sociolinguistic environment.

Five of 13 participants (38%) alluded to the social phenomenon aspect of sociolinguistics that focuses on what languages are used in what circumstances or locations. Five of 13 participants (38%) referred to attitudes toward particular languages as an important aspect of sociolinguistics. Four of 13 participants (31%) mentioned the policy or political impact of sociolinguistics. Three of 13 participants (23%) referred to the impact of society on language, such as the way languages change over time based on attitudes and usage. Two of 13 participants (15%) stated they were not familiar with the sociolinguistic literature, but one of these two participants revealed experiences as a simultaneous bilingual learner that epitomizes circumstances prevalent in sociolinguistic literature. The summary table follows.

Table 11
Invariant Constituents from Theme of Impact of Sociolinguistic Literature

Invariant Constituents	Number of Participants	Percent
Language impact on society	9	69%
Significance of sociolinguistic impact	9	69%
Sociolinguistic impact on individual	8	62%
Sociolinguistic impact on education	8	62%
Reciprocal sociolinguistic immigrant impact	6	46%
Social phenomenon aspect	5	38%
Attitudes toward particular languages	5	38%
Policy and political aspect	4	31%
Societal impact on language or languages	3	23%

Note. Table 11 appeared on page 129 of Hobbs (2011).

Fourth Interview Question Summary of Answers

The predominant theme expressed or implied by nine participants (69%) in the answers to question 4 was the importance of teaching language group receptivity. Types of receptivity included the concepts of teaching listening, reading, vocabulary, and inter-comprehension. One participant explained that teaching language receptivity was in accordance with EuroCom guidelines (European Commission, 2007). Two of the seven participants (23%) explicitly mentioned EuroCom guidelines. The implication is that the other seven participants concur with EuroCom guidelines that provide for teaching language receptivity in the various modalities.

The second theme was devoted to the particular importance of teaching similarities of languages in language groups as expressed by nine participants (69%). A subset of language similarities, such as common cognates, was specifically mentioned by six of 13 (46%) participants. The salience of teaching common cognates of vocabulary was in accordance with teaching language similarities. The following table depicts the constituent delineation of multilingual methodology for language receptivity and similarity.

Table 12
Invariant Constituents of the Theme of Teaching Language Methodology

Invariant Constituents	Number of Participants	Percent
Importance of teaching language similarities	9	69%
Importance of teaching language receptivity	7	54%
Importance of teaching common cognates	6	46%
Following EuroCom guidelines (explicit mention)	2	15%

Note. Table 12 appeared on page 130 of Hobbs (2011).

At what age should language group receptive skills be a part of the curriculum?

Nine of 13 participants (68%) indicated that language group receptivity should begin early by mentioning: a) kindergarten or first grade; b) ages five and six; and c) as soon as possible. Five of 13 participants (38%) stated that language receptivity should begin as soon as possible or from the beginning. One participant had no opinion and another participant was not familiar with the concept of teaching language group receptivity.

Table 13
Invariant Constituents of Theme of Timeframe for Language Group Receptivity Teaching

Invariant Constituents	Number of Participants	Percent
Early* teaching of language group receptivity	9	69%
ASAP	5	38%
Receptive skills should be taught very* early	2	15%

Note. *Early = KG or grade one, ages 5 or 6; very* early refers to ages 2 or 3 (Hobbs, 2011, p. 131).

Invariant Themes

All participants discussed the importance of improving teacher training and professional development. Participants expressed explicitly or implicitly the importance of improving the communication of research outcomes to all teachers. Another expression of this same theme was depicting the lack of adequate communication of research outcomes to teachers in the field as a constraint to improving teaching. A third way of expressing this theme of

teacher training importance was the reference to contextualization. The implication was that teachers with better training and access to the most current research findings offered their students advantages in learning. Simultaneously, the implication was that teachers not privy to the most current outcomes of research put those teachers and their students at a disadvantage. A fourth mention of the importance of teacher training included the theme of contingency. For example, participants suggested that using a foreign language as the medium of instruction should be contingent upon adequate teacher training.

Thus, themes of context, constraints, contingencies, and the need for adequate teacher training emulated consistently throughout the responses. The participants were also unanimous in that change is needed to improve multilingual education. The proposal of an integrated model follows based on the data analysis of the feedback from the multilingual research participants.

Variables Important for a Theoretical Model

Data from this current study revealed important variables for constructing a theoretical model of multilingualism. An integrated model of multilingualism includes the macro, meso, and micro perspectives. The variable of multilingual teacher training improvement enhances the language production output from the micro perspective, facilitates motivational, social, and cognitive development from the meso perspective, and contributes to student outcomes from the macro perspective. The sociolinguistic and aesthetic variables are valuable to the learning equation from the meso perspective.

Variables important to the seven level macro perspective of multilingual education include:

a) Language context of school and community at level one;
b) The input and output variables for delivering multilingual curriculum at level two;
c) L2 and L3 strategies and methodologies for language instruction and appropriate materials and teachers for L2 or L3 medium of mainstream education;
d) Multilingual technology, media, material, and texts for instruction;
e) Multilingual feedback in formative assessments;
f) Alternative assessments in various modalities of reading, writing, listening, and speaking, as well as metacognitive reflection; and

g) Summative assessments of multilingual learner, curriculum, and systemic outcomes.

Other variables include:

a) Reducing constraints by improving teacher training and materials;
b) Teaching multiple languages as early as possible contingent upon available staff, resources, and expectations of parents, community, and school leaders;
c) Considering the needs of minority and immigrant students;
d) Infusing notional-functional aesthetic-pragmatic goals for curriculum development;
e) Stipulating accuracy for new learners of a language;
f) Incorporating fun activities for young language learners without formal teaching;
g) Encouraging learner self-correction; and
h) Linking languages via similar cognates and features.

Chapter 18. Triangulating Thematic Relationships

The discussion of thematic relationships will focus on repetitive themes in the order of dominance (percentage of participant responses) reflected by the data gleaned from the current research study. Related subordinate themes will be discussed with the repetitive dominant themes. After the repetitive themes have been discussed, a discussion of emergent themes follows. Repetitive themes will form the basis for recommendations to policy makers and school leaders. Emerging themes will form the basis for recommendations for further research.

Repetitive Themes

The dominant repetitive themes are: a) change is needed in multilingual education; and b) teacher training needs improvement. Other repetitive themes express the changes that need to be made. Subordinate themes of teacher training improvement and other repetitive themes follow.

Multilingual concepts for teaching L2 and L3. Teachers need to k know multilingual concepts. Participants concurred with Cenoz (2009), De Angelis (2007), Jessner (2006), and Safont (2005) on the necessity of incorporating L2 and L3 concepts, strategies, and methodologies for teaching L2 and L3. The implication is that if a classroom has a mixture of L1, L2, and L3 students with respect to the language of instruction, then teachers need to differentiate instruction. Participants want teachers to know that learning subsequent languages is easier and more efficient.

Teacher skills and fluency. Teachers need better skills, knowledge, and fluency in target languages. This assertion by participants concurs with Cenoz (2009) and De Angelis (2007). The lack of teachers proficient in target languages inhibit the delivery of three languages at all levels of schools.

Pedagogy and pragmatics. Pedagogical concepts need to be reinforced in teacher training and professional development. Participants concur with authors in Lytra and Martin (2010) and Prinsloo and Baynham (2008). Pragmatics is the branch of research (Moyer, 2008) that needs to be a focus of the pedagogical concepts taught in teacher training. Pre-school children need regimentation in a multilingual environment (Bjork-Willen, 2008). Deviation from routine in a multilingual kindergarten offers too much to cope with for small children dealing with three languages.

Sociolinguistics aspect. Teachers need to understand the socio-cultural and sociolinguistic contexts of their teaching constituency as well as

the language background of each student. Participants delineated various aspects of socio-cultural and sociolinguistic contexts common throughout the literature that concurred with the authors in Denos, Toohey, Neilson, and Waterstone (2009), Dornyei and Ushioda (2009), and Lytra and Martin (2010).

Early L2, L3 introduction. Participants supported the early introduction of L2 and L3 as demonstrated as successful by Chen (2008) in Hong Kong, Cenoz (2009) in Spain, and Reimersma (2009) in Denmark. The replication of research outcomes in various locations with different language repertoires may indicate that early introduction of L2 and L3 into curriculum may be the best decision for school leaders subject to three language contexts.

Subordinate themes of early introduction. Three subordinate themes of early introduction contribute to the dominance of this theme: a) context dependency of when to introduce L2 and L3; b) introducing L2 and L3 as early as possible; and c) the importance of teaching L1 to immigrant children as soon as possible. Context dependency was reported as an important issue throughout the literature in reference to Europe (Cenoz, 2009; Lytra & Martin, 2010), Africa, and Asia (Prinsloo & Baynham, 2008).

Teaching Ln group receptivity and Ln similarity. Teaching language similarity is important and early teaching of similar language receptivity is important. Participants may have perceived these two concepts as nearly the same theme, interconnected, or inseparable. The participants concur with Berthele (2009), Duke-Albert (2009), Hufeisen and Marx (2007), Moller (2009), and Thije and Zeevaert (2007). The interconnectedness of languages (Marx, 2009) is an important factor in the multilingual education model due to participants recommending the linking of languages as an important teaching method.

Teaching of common cognates. Cognates are the root part of words. Common cognates among languages refer to word similarities such as words for *friend(ly)*: a) *freund(lisch)* – German; and b) *amiable* in English, but friend in French is *ami,*in Italian *amichi,* in Spanish and Portuguese *amigo*. In Japanese *friend* is *tomadachi* and in Bangladeshi and Bengali *friend* is *bundu* (not common cognates with English semantic equivalents).

An important counter-point to learning cognates in similar languages was made by Moller (2009) concerning dissimilar meaning despite similar cognates. The concept of *faux ami* or *false friends* was mentioned previously as meaning common cognates that have different meanings than anticipated. For instance, *sympathy* in English does not mean *nice* or *congenial* as do the common cognates in French (*sympatique*), German (*sympatisch*), Italian,

Spanish, and Portuguese (*simpatico*) and Russian, Czech, and Polish (*sympatetsky*). *Arbeito* in Japanese means second job (more specific than the meaning of *arbeit* in German). *Skinship* is a Japanese word that many Japanese believe is English, but *skinship* is Japanese for a close friend "who you can touch." Convincing a Japanese person that *skinship* and *arbeito* are not English can be difficult.

Etymologically similar or related words do not necessarily mean easy decipherability due to the occasional circumstance of similar words in different languages having dissimilar meanings. A course in similar language receptivity must contain a component that reviews similar words with different meanings.

Contextuality of L2, L3 as medium of instruction. Using L2 or L3 for medium of instruction is contingent upon contextual issues. Participants warned that contextual issues may prevent L2 or L3 from being used as the medium of instruction for content courses. Constraints of education were recurring themes by the authors in Prinsloo and Baynham (2008) and Cenoz (2009). Constraints follow.

Subordinate constituents of L2, L3 as Ln medium. Appropriate materials and methodology may be lacking that prevent L2 or L3 from being used as a medium for instruction in content courses. Teachers may lack fluency in the target languages for delivering L2 or L3 as medium of instruction for content courses. The appropriate learning input may not be available. Learning input may include materials, methodology, and fluent teachers in target languages. These participant assertions concur with Cenoz (2009).

Policy may not support L2 or L3 as medium of instruction. Displeasure over language policies was expressed in Chalhoub-Deville and Deville (2008), Hinton, Miyamoto, and Della-Chiesa (2008), Hornberger and Hult (2008), Lewis and Trudell (2008), McGroarty (2008), Munch and Solis (2004), Oleksak (2007), Pavlenko (2006), and Salomone (2010).

Notional-functionalism aesthetic-pragmatism. Although Saussure proposed theories of notional functionalism in the early 20th century, notional functionalism is still prevalent in linguistics-oriented literature as exemplified in Mariani (2010), Olson (2007), Panek (2010), and Tomulet (2010). Reasons notional functionalism will benefit students are:

- Learners will realize language learning goals if notional functionalism was infused into curriculum;
- Learners will develop pragmatic skills;
- Notional functionalism facilitates learning analysis;

- Notional functionalism enhances metalinguistic skills.

In a follow-up interview, one participant mentioned that incorporating the Prague generated concepts of aesthetics into curriculum:

a) Has not been realized; and
b) Has inestimable benefits for curriculum improvement

(For further explanation, see Appendix: Notional-Functional Aesthetic-Pragmatic History).

Dismay. According to the researcher participants, several issues of multilingual education are cause for dismay:

a) Lack of communication of research outcomes to teachers and result of not stimulating the anticipated change for which researchers had hoped;
b) Teachers not using multilingual strategies and methodologies to teach L2 and L3;
c) Teacher training not being updated;
d) Program initiatives under-funded;
e) Constraints slow progress of multilingual education;
f) Teachers of young children trying to use formal teaching techniques when they should be creating fun activities;
g) Discrimination against minority languages and immigrants inhibits the progress of multilingual education.

Lack of communication of research outcomes to teachers. The current study is important for noting that all participants believe communicating the outcomes of multilingual research is necessary to improve student learning. References in the literature that outcomes are not communicated tend to be subtle or implied. Abel, Guadatiello, and Plathner (2009) complained that teachers need more didactic knowledge to help immigrant children. Degi (2009) discussed classroom observations that reveal a preference for separating languages despite research that indicates evidence promoting an integrated language repertoire. Geake (2008) was concerned that too many educators still think that most of the brain is not used; research has demonstrated that both hemispheres are interconnected in every task undertaken by humans. Other authors (Allgauer-Hackl, 2009; De Angelis, 2007, 2009; Gorter, 2009; Holliday, 2008; Vetter, 2009) refer to a

lack of communication of research outcomes to educators, but not as a dominant theme.

Emerging Themes

The emerging themes are interrelated to two or three repetitive themes. Emerging themes are listed among the cross-categorical common issues in Table 12 in chapter 4. Emergent themes may be related to opposing viewpoints. Lack of communication of research outcomes contributes to differences in opinions of multilingual researchers. The emerging themes follow.

Formal teaching should not be applied to young children. Participants involved in language acquisition research warned that fun activities must be implemented for small children, not formal teaching. Young children should learn the prosodic (melodic) patterns of communication because melody precipitates syntax (word order) (Mannel & Friederici, 2008). Small children learn better via storytelling and interacting with the storyteller. Experience with language (L1, L2, L3, etc.) improves learner strategies (Bharati, 2009) as well as learner pronunciation (Marx & Melhorn, 2010) whereas explicit instruction alienates learners from learning languages (Bossart & Fishli, 2009).

Unrealistic expectations of learners. Adeptness at language learning means learner readiness. Developmental readiness is important for learner achievement (Cenoz & Egiguren, 2009). Teachers must be aware of what is transparent and opaque to learners (Bailey, Burkette, & Freeman, 2008). Material should be appropriate to learner language acquisition level (Simon, 2007). Recognizing errors as indicators of stages in the developmental process instead of "flaws" is essential for realistic assessment of learner performance (Grosjean, 2001, 2004; Wei & Moyer, 2008). Deviation of routine is especially detrimental for small children acquiring multiple languages (Bjork-Willen, 2008). Realistic expectations by teachers of young learners are important for motivation both for teacher and students and dependent upon the context (Bialystok, 2005, 2007; Harley, 2008).

Lack of application of L3 principles. The multilingual literature supports using L3 for mainstream courses according to L3 principles (Bharati, 2009; Gorter, 2009; Hufeisen & Marx, 2007; Marx & Melhorn, 2010; Van de Craen, Mondt, Allain, & Ceuleers, 2008). Research has demonstrated positive correlations between the number of languages learned and accurate scores on translation tasks (Gibson & Hufeisen, 2011).

Educators must explore how to employ L2 and L3 strategies using dual coding theory via multimodalities (Biro, 2009).

Hypocrisy of support for multilingualism while discriminating against L1. Condescending attitudes toward immigrant languages inhibits learning (Bleichenbacher, 2009). Teacher attitudes should not be in conflict with school policies of integrating home languages with the curriculum (De Angelis, 2009). In Britain, Saturday schools raise learner self-esteem by teaching immigrant languages (Lytra & Martin, 2010). Bias against immigrant learners exists in teacher scoring (Bang, Suarez-Orozco, Pakes, & O'Conner, 2009). Educators must oppose discrimination against non-native speakers of languages (Asgharzadeh, 2008; Frattura & Topinka, 2006; Hornberger & Hult, 2008; Kubanyiova, 2009; Lewis & Truddell, 2008.

Accuracy-based versus communicative approaches. One participant asserted that an accuracy approach is necessary in the beginning stage of learning a new language. Automaticity in language performance is related to proficiency levels (Gut, 2010; Wrembl, 2010). Communicative approaches are useful for developing language skills of young learners (Montanari, 2009). Memory storage relates more to concept than grammar (Navricsics, 2007); procedural memory is reinforced by practice. A variety of approaches are necessary at different learning stages.

Form-on-form technique versus grammar approach. One participant stated that the grammar approach was outdated and inappropriate compared to the form on form approach to teaching languages as indicated in Harley (2008). Yet, some researchers support the grammar approach (Potowski, Jegershi, & Moran-Short, 2009). Another perspective indicates that focus on language is the standard expectation as opposed to diffused language with variation (Thije & Zeevaert, 2007). Work-based literacy (Prinsloo & Baynham, 2008) and the structure and usage perspective (Kecskes, 2010) are other options instead of grammar or focus on form. The competition model striates (maps) form to functions via the functionalist approach for investigating language (Stafford, Sanz, & Bowden, 2010). Clearly, opinions are divided on approaches for teaching.

Self-error correction versus teacher correction. One participant wrote that teachers must allow learners to self-correct. Conflicting motives are necessary in identity formation that suggests dual perspectives are necessary (MacIntyre, MacKinnon, & Clement, 2009). Self-correction can improve if monitored with feedback (Al-Jardani, 2006). Language learners reset own learning parameters (Stafford, Sanz, & Bowden, 2010). Dialogic analysis suggests inner voice can respond to conflicts due to gradual changes in perspective (Blackledge, 2006). The implication is that individuals must

cope with internal and external contradictions in the language learning process.

Linking languages versus isolating languages. Marx and Melhorn (2010) explained that the learning of new languages should be connected to L1 as well as the systemic, procedural, and strategic knowledge of Ln grammars and vocabularies. Kemp (2009) emphasized that learners automatically link languages and extrapolate new grammars in new languages based on previous experiences with other languages. Thus, integrating languages in teaching and learning is more prudent than isolating languages. Llama, Cardosa, and Collins (2010) explained how factors of previously learned languages influence learning new languages (Ln). Factors include similarity or distance to Ln, dominance of L1 or L2, and circumstances in which the languages are learned.

Mandates without funding. One participant wrote that educational reforms were initiated without funding for implementation. Supporting L1 of immigrants is not always properly funded or feasible (Lewis & Trudell, 2008; Robeyns, 2009). In the U.S. immigrants are sometimes placed in special education because of funding policies, but this practice is detrimental to the students (Frattura & Topinka, 2006; Munch & Solis, 2004; Reaser & Adger, 2008). The under-funding of No Child Left Behind (NCLB) in the U.S. has been damaging to students who speak minority languages or dialects (Bachman & Purpura, 2008; Chalhoub-Deville & Deville, 2008; McGroarty, 2008; Walter (2008).

Ill-informed testing companies drive education. One participant complained that personnel in testing companies were not qualified to make decisions in education; yet, profit-based testing companies have a disproportionate influence on education. School leaders are subject to profit-motivated biased pressure by book companies (Friedman, Harwell, & Schnepel, 2006). Research should guide curriculum instead of the bias found in private companies (Hinton, Miyamoto, & Della-Chiesa, 2008). Standardized exams from test companies are unjust for non-standard populations (Chalhoub-Deville & Deville, 2008).

Too many teachers are unaware of multilingual education. One pilot participant complained that too many teachers were 10 to 20 years behind in their teaching methods. Participants in the main study stated that research outcomes should be communicated to teachers and education leaders. Teachers in mainstream education teach culture in the classroom without understanding that students are immersed in blended culture circumstances that render tensions in identities (Lytra & Martin, 2010). Teachers understand the identity tensions among the ought-self, ought-to

self, ideal self, feared-self, hoped-for self, and possible selves that perpetrate conflict in the minds of learners (Ushioda & Dornyei, 2009). Even subtle treatment of immigrant languages as inferior negatively affects student performance (Bleichenbacher, 2009; De Angelis, 2009). The L1 of two billion students is ignored in school systems throughout the world; the ramifications of this neglect are unknown (Walter, 2008).

PART FOUR SUMMARY

PART FOUR offered a review of the current study problem, purpose, and design strategy. The discussion reviewed the research questions, pilot study results, interview questions, and rationale for selecting the participants. Demographics included participant gender, languages spoken, and types of multilingual research accomplished. For the main study, chapter 4 covered the data collection process, the data analysis, and a presentation of the findings. Finally, Chapter 18 concluded with a triangulation of themes from the data supported by the research literature. PART FIVE will offer a comprehensive integrated model of multilingual education with recommendations to school leaders and policy makers as well as suggestions for future research and tools for conducting: a) multilingual investigations, b) demographic analysis, c) student metacognitive analysis, d) curriculum design, e) suggestions for pairing quantitative, qualitative, or mixed method research with notional, functional, pragmatic, or aesthetic investigations, and f) pairing notional, functional, pragmatic, and aesthetic combinations with types of professions or livelihoods.

PART FIVE: CONCLUSIONS, IMPLICATIONS, RECOMMENDATIONS

The purpose of this stratified systematic qualitative grounded theory study was to assess multilingual models of education by investigating how and when to incorporate second and third languages into the curriculum to improve language acquisition. An open-ended questionnaire was used to interview multilingual researchers located on four continents to develop a multilingual model of education. An educational model may assist policy makers in understanding the cognitive benefits of meta-linguistic analytical abilities and enhanced diversity in communicative abilities within the K-12 academic environment. Knowing that third language (L3) learning enhances skills and knowledge in the other (L2, L1) languages learned may provide impetus for policy makers to incorporate foreign language learning of two languages in earlier grades. Policy makers should also be aware of the benefits to immigrant students and society of providing early and continued first language support.

The participants who provided data for this study were multilingual researchers in neurolinguistics, psycholinguistics, sociolinguistics, educational investigation, and interdisciplinary studies. The data provided information to construct a model with a multilingual focus to achieve the specific outcomes provided by the participants. The ultimate benefactors of this study should be primary and secondary learners of three or more languages. Identity is inseparable from the first language; educators honoring first languages of immigrant children should benefit learners and society (Denos, Toohey, Neilson, & Waterstone, 2009; Lytra & Martin, 2010).

Chapter 19. Overview and Summary of the Findings

This study comprised one general research question and two specific research questions. The general question follows. What theory will emerge to improve instruction and curriculum design to best facilitate multiple language acquisition and learner cognitive skill development?

The two specific research questions provide components essential for contributing to the emergent model. The first specific question concerning time (onset and frequency) follows. How should languages be systematically incorporated into the curriculum over time to meet the needs of learners? The second question dealing with how to implement follows. What types of teaching methodologies, strategies, and techniques contribute best to construct learning, identity, intuitions, and retention of second and third languages regarding listening, speaking, reading, writing, grammar, and vocabulary?

The focus of the study was on multilingual learning in an educational setting and the multilingual learner from various developmental perspectives. The participants of the study were involved in various aspects of multilingual research that included neurolinguistics, psycholinguistics, sociolinguistics, language acquisition, codeswitching, curriculum, teacher training, cultural, and pragmatic investigation. All participants were multilingual. The language repertoires of the participants were unique. Participants represented sequential and simultaneous language learners. Language repertoires reflected a combination of languages spoken in different countries of Africa, Asia, Europe, the Middle East, North, Central, and South America.

Figure 3 follows to give a visual explanation of the flow of the research from left to right and top to bottom: a) research questions, b) models offered to pilot participants that focused on micro, meso, and macro issues, c) refinement of interview questions, d) interviews with multilingual researchers, e) repetitive themes for recommendations to school leaders, and f) emerging themes for further research recommendations.

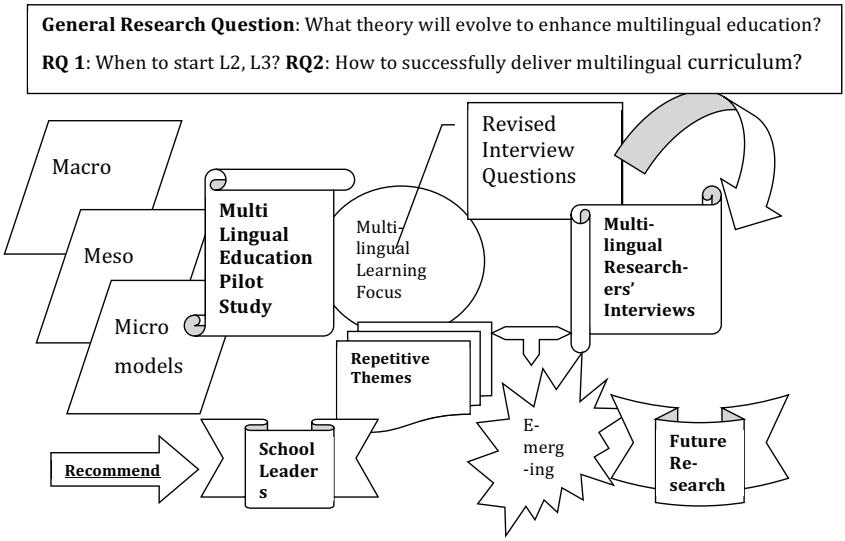

Figure 3. At the top of the Flowchart of the Multilingual Education Study, cryptic versions of the general and specific research questions explain the purpose of the study. From the left, overlapping rhombus shapes represent the macro, meso, and micro models afforded to pilot participants. The adjacent banner represents the pilot study. To the right of the pilot study banner is the Multilingual Learning Focus in a circle with a line going to a box representing the interview questions revised from the pilot study. The interview question box has an arrow going to the multilingual researchers interviewed in the main study. An arrow connects the main study to repetitive themes (to the left) and emerging themes in a starburst shape (underneath). Attached to repetitive themes is a banner representing recommendations for school leaders. Adjacent to the starburst shape of emerging themes is a banner of future research recommendations. A bottom left arrow containing the word *recommends* points to the banners for school leaders and future research at the bottom of the flowchart (Hobbs, 2011, p. 146).

Summary of the Findings

The consensus among the 13 participants was that change in multilingual education is needed. The greatest change needed is in variables of teacher education, training, and professional development. The variables should be of interest to educational leaders involved in policy development at school and district levels. According to the multilingual researchers surveyed in the current study, improved teacher training will translate into improved learner performance. Additional changes included suggest: a) L2 and L3 begin before the age of 11; b) context is important for deciding what age to introduce L2 and L3; c) L2 and L3 need to be introduced as early as possible; and d) for immigrant children that L1 needs to be supported as soon as possible and L2 and L3 should be introduced early (KG or grade 1).

Participants reported that using L2 or L3 as medium of instruction is contingent upon a few important issues: a) appropriate materials and methodology must be available; b) skilled fluent teachers; c) appropriate learning input; d) support of policy. As for the greatest impact of recent research, all participants declared that change is needed in multilingual education and advised that teacher training must be improved. The lack of impact of research outcomes was attributed to a lack of communication with an implicit expression of dismay. Constraints of inadequate materials and training also prevent research from having impact. The main impact of multilingual education research is awareness of increased critical thinking skills, enhanced metalinguistic abilities, and improved communication abilities.

Participants stated the advantages of applying the theories of notional functionalism to teaching: a) realization of language learning goals; b) development of pragmatic skills; c) enhanced learning analysis skills; and d) increased metalinguistic abilities. One participant indicated that aesthetics has "great potential for benefit to curriculum" as proposed in the notional functional aspect of this study. Aesthetics in multilingual learning would incorporate rhythm, poetry, music, drama, wit, and other creative input and output. This participant also suggested that aesthetics incorporated into curriculum has many possibilities for future research.

Concerning what all teachers should know, all participants advised that teacher training must be improved and participants suggested that teachers need to be trained according to multilingual concepts. Participants complained that too many teachers lack knowledge and skills in the target languages and suggested that pedagogical concepts should be reinforced in professional development. Participants recommended that teachers need to

understand the sociolinguistic or socio-cultural contexts as well as language backgrounds of each student.

Regarding the impact of the sociolinguistic literature, participants discussed the impact of languages on society such as the change in linguistic landscape (street signs and billboards in two languages instead of one). Participants mentioned the importance of the sociolinguistic impact on society such as the changes in language usage in private and public sectors (official forms available in more than one language). Participants acknowledged the sociolinguistic impact on individual learners such as how individuals cope with the impact of what languages are acceptable to use in what places and situations. Also, participants mentioned the sociolinguistic impact on education such as the necessity of fostering first language development in the diverse minority populations. Participants explained the sociolinguistic impact on the immigrant (or minority member) such as discrimination against foreign accents (or dialects) or the sociolinguistic impact of the immigrant on society or schools such as schools having to reformulate mainstream class grouping with equal proportions of immigrants to afford teacher manageability and student assimilation.

Participants discussed the social phenomenon aspect of sociolinguistics such as codeswitching as forms of accommodation or identity and the impact on students of negative or positive attitudes toward particular languages. Policy and political aspects of sociolinguistics has an impact on schools and society, such as laws or rules that enhance or prevent the learning of multiple languages. Participants explained the social impact on languages such as the way languages change to incorporate foreign words, new meanings, or news forms of usage.

Regarding the teaching of similar language receptive skills, participants advised the importance of teaching language similarities and recommended teaching similar language receptivity. Participants mentioned the importance of teaching the common cognates of similar languages as well as following EuroCom guidelines (European Commission, 2007). Participants also recommended teaching similar language receptive skills in kindergarten or first grade and suggested teaching similar language receptivity as early as possible (even age 2 or 3).

Chapter 20. Research Conclusions and Implications

Drawing conclusions includes comparisons to themes discussed in chapter 4 with the literature in chapter 2. The themes will be discussed in the order of the interview questions presented in chapter 4. References to the literature presented in chapter 2 will suggest how the data from this study triangulates with findings in the literature. The discussion will include the discovery of relevant variables for multilingual model construction and how the variables conform to existing theories or suggest new theories.

When to Introduce L2 and L3

Children by age 10 should have L2 and L3 in their curriculum. Variables that emerged from the current study such as brain development, context dependency, and contextual constraints of multilingual education were consistent with the literature (Cenoz, 2009; Dimroth, 2008). Context dependency was mentioned by five participants (38%) as contributing to the feasibility of introducing L2 or L3 at any given time. Participants mentioned the contextual constraints of the lack of trained teachers and appropriate materials to deliver L2 and L3 in all schools as well as funding constraints.

Context dependency. The current study extended the literature by delineating the context dependency issues, such as community demand for learning particular languages or inability to deliver instruction in a particular language due to lack of trained teachers or appropriate materials. Other variables that emerged in the current study include: a) age appropriate methodology; b) continuity and frequency considerations of L2 and L3 instruction; c) careful consideration of the type and quality of L2 and L3 instruction; d) realistic and appropriate expectations of teachers; and e) the socioeconomic conditions of the learners that also has an impact on learning. Although L2 and L3 should be introduced before age 10, constraints and context dependency issues may prevent early introduction.

Needs of immigrant children. The sub-theme that emerged was considering the needs of immigrant children as discussed in the literature (Denos, Toohey, Neilson, & Waterstone, 2009; Lytra & Martin, 2010;; Pavlenko & Blackledge, 2006; Ushioda & Dornyei, 2009). Minority children must receive L1 instruction very early and begin L2 instruction in KG and L3 in grade one. Immigrant children will assimilate greater linguistic knowledge earlier than majority language children. Consideration of minority populations (new and established immigrants, speakers of dialects)

is an important variable in the multilingual model of education that emerged from the current study.

L2 and L3 as Medium of Instruction

Using L2 or L3 as the medium for instruction depends on contextual issues. The findings were consistent with the literature on content-based learning (Janzen, 2008), but with the important difference of constraints (Cenoz, 2009). Not all schools are capable of delivering medium of instruction in three different languages due to the lack of trained and fluent teachers as well as appropriate materials in the target languages. The following discussion includes consistencies with the literature and variables that emerged.

Contextual considerations. Contextual issues vary in different parts of the world based on the conflict of whether to use the world language (English), national language, regional language, or combination of languages for content delivery. Context refers to the language demands of society and communities and the capability of teaching the languages in demand. In Spain, content (math and science, for example) is taught in Basque and Catalan in those regions as well as English and Spanish. In Denmark, content is taught in Faroes as well as Danish and English in that region. In China, content is taught in the regional language as well as Mandarin Chinese and English. In Hong Kong, students learn content in Cantonese Chinese, Mandarin Chinese, and English. Contextual reasons for multilingualism may include the need to communicate with relatives, for example.

Contingencies. English is the third language in each of the locations mentioned above. Contingencies of trained teachers, appropriate materials, community demand, and supporting policies comprise important variables for a multilingual model of education. Assessing the circumstances is important for determining where, when, and if immersion into L2 or L3 for course content is practical as described by the participants of the current study. A teacher may be fluent in the target language, but not capable of discussing economics or chemistry (for example) in the target language.

Greatest Impact of Research

Concerning the greatest impact, the themes include: a) the need for changes; b) need for improved teacher training; c) dismay; d) constraints; and e) advantages. Changes needed include: better funding for multilingual

education, enhanced teacher training, improved communication of research outcomes, reduction of teaching constraints (lack of content-based material in L2 or L3), and improved teaching methods. Improving teacher training will include: a) realistic expectations of learners; b) focus-on-form techniques; c) accuracy (not fluency) techniques for beginners; d) fun activities for young learners, not formal methods; and e) prompt students to self-correct.

Constructivism. One cross-disciplinarian EFL (English as a Foreign Language) researcher commented on the greatest impact on teaching by writing:

> Constructivist learning theories address multiple language learning and learner development in all skills. Within the learner-centered approaches, constructivist or social constructivist theories provide a fair theoretical basis for understanding what learners need. Krashen's comprehensible input and contextualization (Krashen, 2003, 2009) to foster understanding is a crucial element of language acquisition concerning various language skills and abilities.

Lack of communication of outcomes. As one pilot participant wrote "We say it to each other" - meaning that multilingual researchers are aware of the multilingual research, but mainstream teachers are not aware of the outcomes of the multilingual research. One participant involved in teacher training on various continents declared that outcomes of research are not communicated throughout the globe. Improved networks of communication among researchers, leaders, and teachers are essential to improving education.

Need for codeswitching. Concerning teacher training and professional development, teachers need to understand the necessity for learner codeswitching (changing languages during speech) to accommodate cognitive processing of new concepts for memory reinforcement and comprehension. Codeswitching helps learners: a) achieve understanding; b) reinforce information; c) facilitate discussion abilities; d) reinforce identities; e) increase motivation. These assertions on codeswitching are supported by the sociolinguistic literature (Lytra & Martin, 2010; Ushioda & Dornyei, 2009).

Using L2 and L3 Principles. The participants asserted the importance of using the multilingual perspective for teaching and doing research as described in the literature (De Angelis, 2007; Jessner, 2006, 2009; Safont, 2005). The current study gives tribute to diverse populations in

schools who will benefit from a multilingual perspective. To improve the programs for English language learners, curriculum designers must use multilingual strategies and methodologies that target cognitive, affective (honoring L1 and minority identities), and motivational aspects of learning languages as indicated in the literature (Alonzo, 2008; Chung, 2006; Goretskaya, 2006; Laguerre, 2008; Medina, 2008; and Perea, 2009).

Linking languages. In answer to the greatest impact question, the participant involved in multilingual competence research wrote:

> Children should be taught in a way to acknowledge and exploit their knowledge in other languages. The main purpose is to teach languages in some kind of linked way, not to separate them. If you make your students more aware of the similarities and differences among the languages that they learn, it is easier for them to acquire those languages.

Communicative approach. Another participant involved in English and linguistics research responded in a similar way, but with a slightly different focus that offers a transition from the theme of *greatest impact* to the theme of *dismay*:

> Generally, English is taught following a communicative approach, but teachers still rely too much on formal grammar teaching. Teachers are made aware of focus-on-form techniques and apply some of those ideas in classes, but I am afraid that does not apply to most language teachers.

Dismay over Lack of Impact and Other Issues

Participants expressed dismay by writing that in spite of all the multilingual research, not enough change was taking place. Participants shared dismay over under-funded programs, lack of multilingual concepts in teacher training, and the lack of communication of multilingual research outcomes to mainstream and multilingual teachers. Dismay was directed at teachers discriminating against minority languages, testing companies lacking knowledge and monopolizing education, and constraints of legislation similar to Salomone (2010) on NCLB federal education legislation in the USA: advocating monolingualism constrains 12 million immigrant learners. Dismay is common in the literature (Huguet & Lasagabaster, 2009) that advocates and promotes linguistic human rights.

Constraints. Variables emerged including constraints of negative expectations and two constraints against teaching in a minority language: a) sufficient number of teaching staff capable of teaching course content in L2 or L3; and b) the availability of materials in the target language for primary, secondary, and tertiary levels of education. Some teachers have adequate fluency for teaching the language as a subject, but not enough fluency to teach a content course in social studies, science, or math. Negative expectations constrain student performance (Cheng & Howard, 2008), but inappropriate expectations constrain accurate feedback on student performance.

Discrimination against immigrants. Hypocrisy exists that some educators praise the benefits of minority language support while discriminating against minority languages in the classroom. Teachers must demonstrably change their attitudes about minority languages to have the necessary positive affect for multilingual education to succeed. Minority language discrimination is detrimental to learning and motivation for immigrants. Mitigating bias against minority students and minority languages is essential for upgrading education (Feuerherm & Ramanathan, 2015).

Inappropriate methodology. Using an inappropriate method for teaching could also be viewed as a constraint for multilingual education. One interdisciplinary researcher commented on this constraint under the question on greatest impact:

> Adopting a communicative approach right at the onset of learning has negative persistent impact on the accuracy of the learner's fluency. An initial accuracy-based approach is better but should be gradually supplemented by fluency-oriented activities.

Advantages of Multilingual Education

An important theme is the advantages of multilingual education. The participants reported that bilingual research outcomes suggest second languages improve cognitive skills (Bialystok, 2007) and that bilingualism contributes to cognitive reserve as individuals age (Bialystok, Craik, & Ryan, 2006). Greater brain density of multilingual individuals reduces the effects of brain degeneration. Participants explained that L3 improves skills, knowledge, and performance in L2 and L1 in reference to their experience and the literature (Cenoz, 2009; De Angelis, 2007; Jessner, 2006, 2008; Riemersma, 2009). Also, participants emulated responses consistent with the

sociolinguistic literature (Lytra & Martin, 2010; Pavlenko & Blackledge, 2006; Ushioda & Dornyei, 2009) concerning recognition, tolerance, and respect for minority populations and their languages, but implied that mainstream schools should improve in serving the needs of minority students.

Notional-Functional Aesthetic-Pragmatism

Notional functionalism could be of benefit to multilingual education in four ways for students: a) realizing language learning goals; b) developing pragmatic skills; c) facilitating learning analyses; and d) enhancing meta-linguistic skills. The literature refers to Saussure's notional analysis of relationships between referents and meaning (Mariani, 2010). The Prague Linguistic School further developed Saussure's theory of notional functionalism and augmented it with aesthetic aspects. Concepts of aesthetics and concretization are useful for literary analysis (Olson, 2007). Concretization refers to the synthesis of various sources to discern the impact of aesthetic, political, and social conditions of a particular era. Saussure's theories are also used to analyze philosophies and structural aspects of myths (Panek, 2010) as well as theories of intellect (Tomulet, 2010). Thus, recent studies substantiate theoretical relevance of Saussure and the Prague School of Linguistics (Andrews, 2008). More explanations of these theories are available from authors in Chloupek and Nekvapil (1993), Dirven and Fried (1987), Gvozdanovic (1997), Harris (1987), Luelsdorff (1994), Thibault (1997), Tobin (1988), and Vachek and Duskova (1983).
An interdisciplinary applied linguist wrote:

> This fundamental difference between *langue* [linguistic system] and *parole* [language use] should form a basis for teaching methodologies today. Students should not be taught structures outside of context but according to what their language goals and needs are. Students should have some knowledge of both *langue* and *parole*, but the pragmatic element of language learning should be emphasized.

What All Teachers Should Know

Teacher training must be improved. Aside from the need for change, teacher training is the most dominant theme in this study. The literature does not emphasize the great necessity for change in multilingual education. Yet, the

current study is important for pointing out that multilingual researchers were in agreement on the need for change.

Teachers need to know multilingual principles as indicated in the literature (Cenoz, 2009; De Angelis, 2007; Jessner, 2006, 2008, 2009; Safont, 2005). Teachers needing reinforcement of pedagogical concepts concurs with Denos, Toohey, Neilson, and Waterstone (2009), De Angelis (2007), and authors in Lytra and Martin (2010). Teachers need to understand sociolinguistic and sociocultural concepts as indicated by Ushioda and Dornyei (2009).

Variables important for the multilingual model of education within the context of improvement of teacher training include: a) the need for teachers to understand and use multilingual concepts in their teaching; b) the importance for teachers to thoroughly know the language they teach with demonstrated fluency; c) the necessity of demonstrating pedagogical concepts in teaching; d) acknowledging and honoring minority languages; and e) connecting with students by becoming familiar with student language backgrounds. The implication from the important variables of the current study is that teachers must make students feel that uniqueness is an asset to every class and all learners are valued.

Excerpts and succinct versions of participant comments on *what all teachers should know* follow.

> Participant 3: Teachers should know that multilingual students have complex and unpredictable language systems. Teachers shouldn't assume anything such as: a native speaker of Italian will not have trouble pronouncing a trill. Multilinguals may get bored in regular classes, so placement must have careful consideration.

> Participant 8: Foreign languages should be taught interactively through immersion, massive exposure, writing essays, and fun enjoyable activities for students who have had enough sleep to facilitate rule consolidation and generalization.

> Participant 9: Teachers should know students' motive for learning a target language, the language repertoire of each student, and typological similarities and differences between L1 and the target language.

Sociolinguistic Impact

Variables of sociolinguistic impact include: a) impact of language on society, such as policies on languages; b) impact on individual participants, such as languages used in everyday circumstances in commerce, government, hospitals, and education; c) impact on immigrants, such as attitudes toward minority languages. The implication from the current study is that teachers must be aware of negative impacts on students to alleviate adverse affects as much as possible.

Consistent with the literature, one participant wrote that the sociolinguistic literature has had an impact on teaching German as L2 to immigrants to Germany. The literature referred to the sociolinguistic impact of language on society as contextualized in reference to Australia, Britain, Canada, France, Japan, and the USA (Lytra & Martin, 2010; Pavlenko & Blackledge, 2006; Ushioda & Dornyei; 2009).

The social phenomena aspect impact of the sociolinguistic literature refers to the locations (urban or rural, public or private, specific or general) and settings (government, hospitals, schools, familial) in which languages (L1, L2, L3, or Ln) may be allowed or prohibited for what purpose (by whom, for whom, or with whom) and under what circumstances (normal, special, or emergency). The important variable in the current study was allowing and not inhibiting the codeswitching habits of developing multilingual learners as they process thought in various languages to reinforce clarity, comprehension, understanding, remembering, and identity. One participant delineated four dimensions of sociolinguistics that have an impact on multilingual education:

a) Theory and research on languages in contact and conflict in the situations of acquiring minority and majority languages as well as border regions of neighboring countries with different languages;
b) Bilingual education for migrant children resulting in a cognitive advantage for the children and a strategic advantage for the host society;
c) Plurilingual advantages for solving communication problems in private and public sectors;
d) Studies in ethnographics and language creativity that focus on pluricompetence in the situations of daily life and literature.

This response encapsulated issues in the literature of social constructionism (Canagarajah, 2006; Pavlenko & Blackledge, 2006), social control (Egbo,

2006), social differentiation (Giampapa, 2006), social inequity (Egbo, 2006; Kanno, 2006; and Pavlenko & Blackledge, 2006), social networks (Cenoz, 2009), and social theory, sociocultural theory, and the socio-educational model (Ushioda & Dornyei, 2009). Similar concepts resonating from the current study include social theory on contextualizing social practice and discourse analysis (Ushioda, 2009); social justice, socialization teaching, and socio-educational guidance (Lytra & Martin, 2010); and more issues in education (Alonzo, 2008; Donlon, 2008; Laguerre, 2008; Prinsloo & Baynham, 2008; and Walter, 2008).

An important variable revealed was that teacher training should alleviate negative attitudes toward minority languages. One participant stipulated that designing language teaching material and curriculum must take into consideration the attitudes and perceptions of the society on the target languages. By this stipulation of designing material reflecting societal perceptions of languages, the participant augments the literature (Denos, Toohey, Neilson, & Waterstone, 2009; Pavlenko & Blackledge, 2006) on attitudes toward particular languages. The current study complements and extends the literature on L2 culture and communities (Taguchi, Magio, & Papi, 2009) and research on vernacular in education (Reaser & Adger, 2008) by boldly stipulating that teacher training must alleviate negative attitudes as the participants in the current study assert.

The implication from the current research is that policies should not discriminate against minority languages in multilingual education. One participant stated:

> Sociolinguistic factors have had a huge impact because complex political situations have far more to do with what transplanted teachers take back to their home countries than what they actually learn.

The implication from the participant's assertion is that immersion in another country contributes to an intrinsic knowledge much deeper than the mere ability to communicate in a language. Politics and language policies are an inherent aspect of language learning (Hinton, Miyamoto, & Della-Chiesa, 2008; Hornberger & Holt, 2008; Lewis & Trudell, 2008; McGroarty, 2008; Oleksak, 2007; and Robyns, 2009).

The mention of societal impact on languages by participants concurs with Doran (2006) in an analysis of idiomatic French (slang) of immigrant youth as well as the discussion of wave theory by Herdina and Jessner (2002). Wave theory is an explanation of how languages change by variation

of speech pattern spreading through a community. Individuals gradually adapt their idiolects (individual speech) to accommodate the new variation. The implication in the current study is that teachers should be aware of language change and how languages change. Understanding language change in the multilingual classroom will facilitate teacher acceptance of the gradual process necessary for students to assimilate a new language.

Multiple identity factors influence language assimilation and how teachers should design lessons and instruct. One participant mentioned Labov's theories on the influence of society and culture on the use of language as well as the effects of the use of language on society by responding in the following way:

> [The sociolinguistic] literature impacts my conception of multilingual education because it reminds me that no two learners are the same and factors such as class, gender, and age can have a profound affect on the language use of the multilingual speakers.

Another participant reported that research demonstrates that socioeconomic status plays a major role in student success. When immigrants score poorly, the underlying reason is low socioeconomic status according to the participant and the literature (Alonzo, 2008; Donlon, 2008; Downy, Ahyaegbunam, & Scutchfield, 2009; Laguerre, 2008; and Medina, 2008). While socioeconomic status is not a repetitive theme in the current study, the literature reports that socioeconomic status is related to student success in general (Cenoz, 2009).

The implication is that teacher training should include methods and strategies for supporting learners of low socioeconomic status. One participant emphasized the point on the inseparability of *learner* and *learner situation and context* by writing:

> Language learning and language education cannot be separated from other social processes and the sociolinguistic literature makes this connection very clear.

Language Group Receptivity

The focus of the fourth interview question was language group receptivity. Not all participants were familiar with the reference to language group receptivity. The implication is that the literature on teaching language group receptivity has not been adequately disseminated throughout the multilingual

research community. The linguistic literature refers to similar languages as belonging to language groups, such as Romance languages (French, Spanish, Italian, Portuguese, Romanian), Germanic (German, Dutch, English, Scandinavian), or Slavic (Russian, Czech, Polish, Serbo-Croatian, Bulgarian).

Teaching similar languages simultaneously is the focus of a movement toward language group receptivity (Thije & Zeevaert, 2007); however, the European Commission (2007) does not support the outcome of semi-lingualism. Proponents of learning receptive skills of several languages view this language-learning task as more practical than learning productive skills. Learning of receptive skills occurs at a more rapid pace. The rationale is to make several languages mutually intelligible so that speakers can speak their own languages while communicating with someone who is speaking a similar language. This phenomenon is referred to as semilingual communication or semi-communication.

Participants recommended teaching: a) language similarities; b) language receptivity; c) common cognates; and d) following EuroCom guidelines. Common cognates are a subset of language similarities. EuroCom (European Communities, 2007) refers to CLIL (Content and Language Integrated Learning), the teaching of minority languages, and strategies for raising linguistic awareness and motivation. CLIL refers to language immersion and use of L2 or L3 as the medium for teaching course content.

The specific references in Thije and Zeevaert (2007) highlighted: a) teams cooperating in German and Dutch; b) semi-communication in Scandinavian languages; c) plurilingual communication in Switzerland; and d) interlingual text comprehension. For example, an English speaker who learns German should not have difficulty reading Dutch. One who learns French, Italian, or Spanish should not have difficulty deciphering text of the other similar languages. *Semi-communication* is two speakers speaking different languages but understanding one another.

The author [Hobbs] has used Spanish to communicate with Brazilians speaking Portuguese, and Czech to speak to Polish speakers speaking Polish, which is an example of semi-communication. *Plurilingual* communication refers to speaking more than one language during communication. The author [Hobbs] has also used several languages to try to speak to someone whose language he did not know to try to find a common language or common understanding. The author is embarrassed to admit, but must be candid that his plurilingualism is more likely plurilingual semi-communication. For instance, in a conversation with a woman from Chile

working in Tokyo, the author was mixing Spanish and Japanese (because the woman understood Spanish and Japanese and Japanese was the author's dominant L2 at the time), when suddenly the woman exclaimed, "Oh, you speak French, too!" Apparently the author threw in the French word "champignon" instead of the Spanish word "hongo" for mushrooms, and could not think of the Japanese word "kinoko." *Interlingual* refers to reading and comprehending texts written in different languages. [Interlingually, the author has good days and bad days, and might be SLI for multiple languages (slightly linguistically impaired? Or, Somewhat Linguistically Impaired?]. Teachers should be made aware of the emerging movements in the field of education to better serve an increasingly diverse population, as immigration seems to be rising in volume.

On the topic of teaching similar languages by group, one participant wrote, "Probably languages from the same groups should be taught together. Learners can benefit from the positive transfer and make use of the similarities." Another participant advocating the teaching of languages by language groups wrote:

> Teachers should themselves have some degree of receptive skills in these [group] languages, and these [group] languages should not be taught separately, but through comparisons and contrasts, so that the child is aware of the actual cognates, false friends [faux ami], etc. For an example, children learning English and German [should be taught] *gift* in English is a present [for someone having a birthday], but *gift* in German means poison.

Other participants responded by suggesting: a) intercomprehension methods should be taught as promoted by EuroCom; b) a common curriculum should be used for teaching language group receptivity; and c) separate courses on reading and writing should be taught to isolate different decoding and encoding skills.

When to Introduce Similar Languages or Language Group Receptivity

The timing of when to introduce the teaching of similar languages (language group) receptivity was the focus of the follow-up question to the fourth interview question. Participants favored teaching similar language receptivity early in grade one or kindergarten or as early as possible (age two or three). One participant wrote that language receptivity should be taught from birth and as soon as students step into the classroom. Another

participant wrote “Which school? Where?” The implication is that one participant believes that teaching language group receptivity is a contextual issue of location and community demand. A third participant wrote, “Language group receptive skills should be part of the curriculum as soon as students start to learn a foreign language.”

The variables of teaching language similarities and language receptivity are important to the multilingual education model due to support of participants. These findings are revealing since literature does not indicate that most multilingual researchers are in favor of early teaching of language similarities and language group receptivity. Due to the small sample of 13 participants, the implication is that further research should be conducted to determine if most multilingual researchers concur.

Chapter 21. Proposal of an Integrated Model

The integrated model of multilingual education includes four models:

a) Foundational principles of third language acquisition;
b) Macro model of schools, curriculum, instruction, technology, media, assessment, and feedback;
c) Meso of curriculum and instruction interface with human development domains model; and
d) Micro model of processing multiple languages in the brain.

Other models follow as tools for future research, demographic analysis, instructional readiness, curriculum design, and cognitive and cultural self-evaluations. Based on the principles of L3 acquisition, the comprehensive integrated model of multilingual education implementation is proposed on three layers. The first layer (macro) comprises the curriculum, instruction, and assessment cycle of schools with students at the heart of the model, contextual factors at the top, materials, technology, and media below, and left to right the curriculum standards input on the left with student product outcomes on the right.

The second layer (meso) focuses on individual students and how schools must meet the unique developmental, social, emotional, and motivational needs of each student. The second layer bridges the first layer of the external world of society with the internal world of the third layer of the psycho-social adjustment of learners communicating in multiple languages.

The third layer (micro) involves the internal neurological, psychological, and physiological processes of each learner coping with multiple languages. The macro, meso, and micro layers of the comprehensive integrated model of multilingual education are based on the following model of third language education principles.

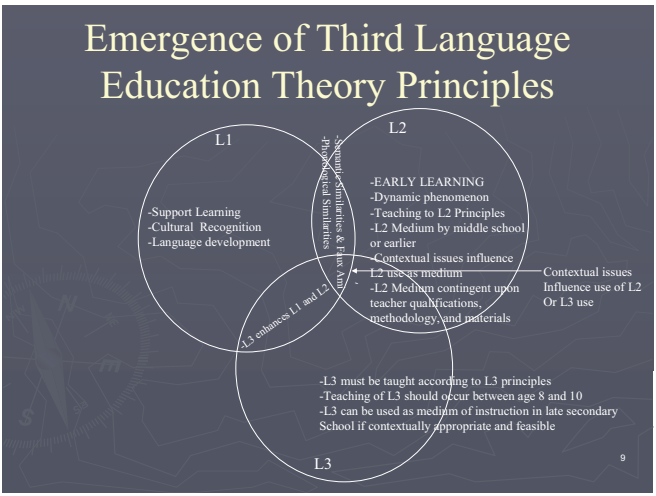

Figure 4. The Principles of Third Language Acquisition (Hobbs, 2011, p. 167; 2012, p. 212; 2014, p. 89) comprises the Venn diagram above that represents the development of three languages: L1, L2, and L3. First languages (L1) require support, recognition (including culture), and development. Second languages (L2) require teaching to L2 principles. Third languages (L3) must be taught according to L3 principles. Teachers should teach the semantic similarities and differences (*faux ami* or false friends) of the common phonological cognates between each pair of languages. Educators must be aware of the contextual issues that influence the usage of each language and that L3 enhances L1 and L2. The model was created with older software; therefore, the fonts and image could not be enlarged by the author (***I**nternational **J**ournal of **M**ultilingualism, 9(3),* p. 212).

Principles of Third Language Learning

According the participants in the current study, L1 support must start as early as possible. Teachers must recognize and acknowledge the L1 of minority children and not suppress the natural codeswitching that occurs for developmental and identity reasons. The participants in the current study recommended early exposure to L2 and L3 while acknowledging that for minority children learning may include L1, L2, L3, and L4. Children whose parents and grandparents speak other minority languages may be exposed to even more languages.

Educators need to realize that languages are dynamic. Each language improves and develops with teaching. Attrition occurs when languages are

not developed or used. Second and third languages need to be taught according to L2 and L3 principles respectively. Participants recommend that L2 may be used as a medium in middle school and L3 in high school, if not before, based on the contextual issues of trained, fluent, and qualified teachers, appropriate learning materials, expectations of the community, and policies of the local governing board.

Educators and parents also need to be aware of the replication of research that supports that the learning of L3 reinforces and enhances the skills in L2 and L1. Teachers should link the learning of languages with common cognates or similar syntax (word order). Earlier learning of languages facilitates achieving better phonological duplication of native speech. In other words, native-like pronunciation is easier to achieve if learned at an earlier age. The discussion now turns to how schools may facilitate the learning of multiple languages.

Macro Layer of Multilingual Education

The following figure has been adapted from Hobbs' Curriculum Framework Model (Hobbs, 2009) and renamed the macro model of multilingual education. The macro model proposes seven levels of education that focus on the community, schools, and the curriculum and instruction cycle.

The first level is the expectations of the community for languages to be used in communication that are contextually dependent. The data gathered from the multilingual researchers revealed that the context of the community and the availability of qualified teachers, appropriate materials and methodology influence how multiple languages are integrated into education.

The second level is the contextually influenced school purpose, vision, and mission. The second level includes the input from communities, boards of education, and school leaders concerning the language needs, standards, and goals based on student needs. The second level also includes the output of planning, implementing, monitoring, assessing, and evaluating curriculum and professional development (explicitly mentioned by multilingual researcher participants in this study).

The third level is the most important level due to focusing on the needs of learners for becoming multilingual. The third level includes applying theoretically based multilingual strategies and (L2, L3) methodologies to serve the needs of learners as suggested by participants. The meso model can be inserted into the third level of the macro model.

The fourth level comprises the application of appropriate technology, texts, media, material, and instruction to facilitate learning in multiple languages

as mentioned by participants. Appropriateness is contextually based as participants recommended.

The fifth level includes formative assessments and accurate feedback for planning future teaching and re-teaching of concepts not completely learned. The formative cycle of assessments depends upon the contextual expectations of teachers, students, and administrators.

The sixth level involves re-teaching, alternative assessments, and re-evaluation in the multiple modalities of reading and listening comprehension (decoding) and speaking and writing (encoding). Alternative assessments include: portfolios, individual or group presentations, teacher interviews with individual students or students in groups, or other contextually agreed upon methods of assessments.

The seventh and final level is the planning and implementation of summative assessments of students, evaluations of student outcomes, analysis of the curriculum, and systemic re-evaluation. Levels five, six, and seven are also indicative of the multilingual methodologies suggested by participants. The model is inherently cyclical and should be read from top to bottom and left to right. The cycle runs in both directions.

Changes to the macro model per the participant data. Level 1 changed to recognize that the values of the constituency are contextually based. Level 2 changed to note that the needs of communities and learners are contextually based. Level 3 was altered to include the concept of inserting the meso model at level three to acknowledge the multifaceted aspects of learners. Level 4 changed to include the concept that technology and media should be multilingual. Level 5 was altered to include the concept of target language feedback (Ln). Level 6 changed to include the concept of assessment in multiple modalities (reading, writing, speaking, and listening). Level 7 was altered to include learner multilingual (Ln) outcomes. The following macro model reads from top to bottom, left to right, and in internal and external cycles.

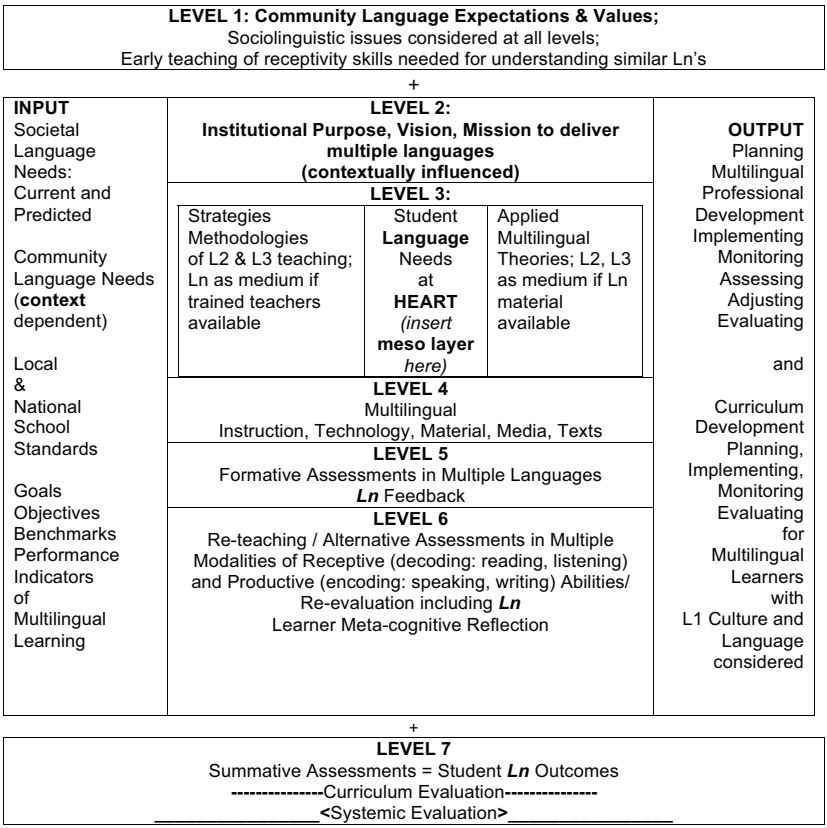

Figure 5. The Macro Layer of the Integrated Multilingual Education Model was adapted from Hobbs Curriculum Framework Model (Hobbs, 2009, p. 102; See www.auk.edu.kw *Occasional Papers*, April 2009, No. 3). Ln = languages (L1, L2, L3, L4, etc.). The Comprehensive Integrated Multilingual Education Model is compatible with the Continua of Multilingual Education Model in Cenoz (2009, p. 35). If one imagines the Cenoz (2009) model as a pyramid instead of a triangle, then the Macro Layer will wrap on the other sides of the box. The meso model fits into the heart of the Macro Layer and the Micro Layer fits into the inner folds of the Meso Layer like a Russian doll. The macro layer of the integrated multilingual education model was published in ProQuest (Hobbs, 2011, p. 171) and in the ***I**nternational **J**ournal of **M**ultilingualism* (Hobbs, 2012, p. 213).

Meso Layer of Multilingual Education

The bridge between society and the inner learner is the meso layer of multilingual education in which consideration for the uniqueness of the development of each learner is paramount. The meso layer serves as the interface of the various developmental considerations that include the cognitive domain (mental development), affective domain (emotional development), physio-motor domain (physical and kinesthetic development), identity domain (motivational development), contextual domain (social development), and the education domain (multilingual material development). The meso layer of the multilingual model fits into the third level in the location of the *heart* of learner needs and is in the shape of overlapping spheres of influence.

The cognitive domain was indicated by the mention of learning flexibility (Participant 2), linking languages (Participant 10), and focus-on-form strategies (Participant 12). The affective domain was implicated by the mention of student self-correction (Participant 11), honoring mother tongues (Participant 10), and paying attention to individual learning styles (Participants 1, 2, 3). The physio-motor domain was the inference of pronunciation accuracy (Participant 13), phonetic similarity of languages (Participants 2, 3), and the early teaching of L2 (85% of participants). Participants 4 and 5 mentioned the motivation aspect of the identity domain, and Participants 5 and 7 mentioned identity 5. The contextual domain was discussed as influencing motivation (depicted in the equation as *Drive*). All participants explained the education domain.

Changes to the meso model per the participant data. The concept of sociolinguistics was inserted into the equation under the model to precede the added word *Drive* that refers to motivation. Participants indicated that the context of the sociolinguistic environment strongly influences learner motivation and drive for the learning of target languages (L1, L2, L3, Ln). In the equation, output was altered to include the concept of multilingual (Ln) output. The equation implies that a constructivist approach multiplied by various types of development contributes to the acquisition of skills. The aesthetic aspect was added as a component to the multilingual output and multilingual skills are a component of the summative assessment. Prior to the main study, the contextual domain was labeled as the social domain. The results of the data seemed to indicate that the contextual domain comprises more factors than the mere social domain. Thus, social domain was changed to contextual domain. The meso layer of multilingual education follows.

Equation: L1 + L2 + L3 INPUT+ sociolinguistic aspect (context)} ***Drive***} Collaboration} Synergy} Performance = *Ln* OUTPUT [Cognitive/Affective/Psychomotor Development X Constructivist Approach] + Aesthetic Aspect + Technological infusion + Formative Assessments = *Ln* Skills Acquisition + Critical Thinking Adaptations; Summative Assessments} Next level or sphere of influence

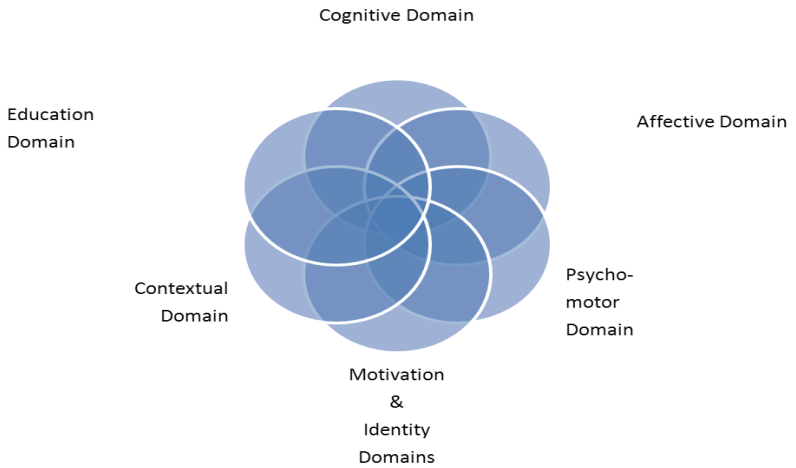

Figure 6. The Meso Layer of the Integrated Model for Multilingual Education is the curriculum and instruction human interface model consisting of six overlapping dynamic spheres and an equation representing domain synergy derived from pedagogical and multilingual education literature as well as participants in qualitative research (Hobbs, 2011, p. 174 and Hobbs, 2012, p. 215, ***I****nternational* ***J****ournal of* ***M****ultilingualism*). The micro layer can be inserted into the center of the meso model hidden behind the veil of spheres as the mind is hidden in the brain. Drive (motivation) is influenced by context per the current study data. The Meso Layer fits into the heart of the Macro Layer. The meso layer of the integrated model of education is compatible with the *continua of multilingual education model* (Cenoz, 2009, p. 35). Ironically, Hobbs (2012) was available online before Hobbs (2011).

Micro Layer of Multilingual Education Model

The micro layer of the multilingual education model can be imagined as hidden in the center of the overlapping spheres and represents the internal workings of the multilingual mind. This layer of the model was adapted from the bilingual model developed by De Bot in 1992 that was an adaptation of the speech production model by Levelt in 1989 (De Angelis, 2007, p. 66; Safont, 2005, p. 34). Information from the neurological, neurolinguistic, and multilingual literature was also infused into the model that was not previously part of the models by De Bot or Levelt (Bharati, 2009; Coggins, Kennedy, & Armstrong, 2004; Snell, 2010).

The model represents the simultaneous process of communication that incorporates listening, speech formulation, and monitoring of the reactions of the listener. Thus, the model can be observed in clockwise and counter-clockwise directions as well as from the inter-connectivity of the interior simultaneous multiphasic processes. The listener decodes the message by interpreting the language or languages used in the communication and forms a response based on the languages common to both interlocutors or represented by text. The listener also observes visual cues and responds to the dominant theme of the message, such as sincerity, humor, or sarcasm. If the speaker is unfamiliar to the listener, then metalinguistic strategies are used to discern the accent, dialect, mother tongue, and intention of the speaker to fully understand the originator of communication and the originator's purpose for the communication. If the communication is to decode a sign, map, or directions, then the heteromodal system interfaces between the different modalities of communication of what is read and heard.

The brain records everything that occurs in normal and continuous neuroplasticity operations. Possible word combinations are accessed, selected, and integrated based upon the prescriptive word order of the language in use, but if time constraints or stress place extra demand, then syntax (word order), pronunciation, or word choice may be negatively influenced that could garble the communication causing errors. The more practice the communicator has using each language contributes to the proficiency of each language in use. The participants indicated the importance of enhancing multilingual processing in various ways. Normal neuroplasticity requires adequate sleep as indicated by one participant (neurolinguist). Intercomprehension is the focus of teaching language receptivity as recommended by participants. Participants 1, 2, and 3 mentioned the plurilingual integration of languages. Increased metalinguistic

awareness also has an impact on the processing of multiple languages as mentioned by Participants 2, 3, and 5.

Changes to the micro model per the participant data. After the researcher completed the Hobbs (2011) study, the researcher compiled and analyzed the data. Two major issues emerged as having an impact on the multilingual processing of the individual according to the multilingual researcher participants. First, context influences the interpretation of all input. This notation in the center near the top of the micro model was cited as Hobbs (2011) to denote that the study was responsible for this change to the model. The second major issue was that teacher training has a positive influence on learner multilingual cognitive processing. The notation of teacher training improvement appears in the center near the bottom of the model and is cited as Hobbs (2011) to denote that participant data in the current study is responsible for this change. The micro layer of the integrated multilingual model of education follows.

The 2016 update of the research brings a new perspective. Empirical evidence demonstrates every day that languages not spoken by speakers are readily accessible. Greeting students in French, German, Spanish, Japanese, Arabic, Chinese, or Italian will often cause the student to respond in that language even if the student does not speak that language. With 21st century technology and media, people can be exposed to many languages on a daily basis. Movies and animated cartoons may have characters from different countries and the characters speak other languages. Years ago, the researcher substitute taught for a first grade class and was greeted in four languages other than English. When asked, the children responded: a) Mother studied French at university; b) Father was stationed in the military in Germany; c) Judo lessons meant learning some basic Japanese; and d) Cartoon character Dora is bilingual and teaches children Spanish. The children were surprised when their substitute teacher responded in the same language and asked in that language why they spoke that language. The average person does not realize how many foreign words he or she uses on a daily basis because of sushi, tortillas, linguine, filet mignon, smorgasbord, schwarma, goulash, kimchi, sachertorte, tiramisu, baklava, kalua pig, and many more, but words such as these words have been incorporated into first languages that name foods or unique cultural concepts, like sushi, bonsai, karate, or judo. Greetings in foreign languages, place names, and talk necessary for travel in other languages may or may not be stored separately, but in both cases will be available instantaneously. Reorganization of information is constant.

Conceptualizer (Start here) **Message generation** (proceed downward)				**Reciprocal Input;** **Observation of** **Non-verbal auditory,** **Visual, & Tactile cues**. Visual cortex neural patterns resemble shapes of observed objects (Damasio, 1999; Snell, 2010).	L1	L2	L3	L4 L5 Ln
L1	L2	L3	Ln		**Discourse model, situational knowledge, encyclopedia** Recognition of other languages not spoken (empirical, Hobbs, 2016)			
Monitoring								
L1	L2	L3	Ln	**<Monitoring connection>** **Heteromodal system maps between different representational Systems** (Booth et al., 2004). **Mechanistic computational active visual search** (Taylor&Cutsuridis, 2011) **Context influences interpretation** **(Hobbs, 2011)**	PARSED SPEECH << Return to Monitoring Conceptualizer **Activation of language(s) based on received input and desired output.** Codeswitching possible PLURILINGUAL ACTIVATION Activation variability depends on age of L2, L3, Ln acquisition (Bloch et al, 2009)			
Pre-verbal message, which activates one or more languages **Metalinguistic** strategies and phonological awareness increase with exposure to more languages, recency, and proficiency (Bharati, 2009)								
Formulator Adequate sleep required for normal processing (Hobbs, 2011)				Sublexical routing: interface of graphemic, phonemic, and semantic lexicons (Schwartz, 2009) **Lexicon: L1,L2,L3,Ln** Nouns are produced in sensory processing area, Verbs in proprioceptive area of position and movement **(Cangelosi & Parisi, 2004).**	**Comprehension System** **L1, L2, L3, Ln** 3 Processes of Word Recognition: • Lexical Access • Lexical Selection • Lexical Integration (Brink & Hagoort, 2004) Intercomprehension Hobbs, 2011 **Understanding is neurologically instantaneous** (Pulvermuller, Shtyrov, & Hauk, 2009)			
Grammatical encoding Orthographic lexicon interface								
Surface structure Phonological lexicon interface								
Phonological Encoding Stimulation results in brain plasticity – neurogenesis & synaptogenesis (Mesulam, 1999; Snell, 2010)								
Phonetic planning				**<Phonetic connection >** **Overt Speech**				
L1	L2	L3	Ln		L1	L2	L3	Ln
Articulator				**Teacher training enhances learner Ln output** (Hobbs, 2011)	**Audition** (go up)			
L1	L2	L3	Ln		L1	L2	L3	Ln
Articulator for L1 or L2 or L3 or Ln Speech articulated output >>>>>>>>>> and >>>>>>>> Listen for response (go up)								

Figure 7. The Micro Layer of the Integrated Multilingual Model of Education was adapted for multilingual speakers from De Bot's bilingual adaptation of Levelt's speech production model (De Angelis, 2007, p. 66; Safont, 2005, p. 34). *Ln* refers to the number of languages in excess of three, such as L4, L5, L6, etc. Added were non-verbal cues and cited information from neurolinguistic literature (highlighted). Participants (Hobbs, 2011, p. 177; Hobbs, 2012, p. 216, ***I**nternational **J**ournal of **M**ultilingualism*) contributed concepts of the positive impact on learners of teacher training, context influence on interpretation, and intercomprehension among languages. Researcher added, "Empirical evidence of recognizing languages not spoken" (Hobbs, 2016).

Tools for the Integrated Model of Multilingualism

To enhance the integrated models, several tools have been designed based on the input from the multilingual researcher participants in the study as well as the research from the literature. The tools are divided into categories that correspond to each layer of the integrated model. The presentation of tools for the integrated multilingual model of education will follow the same order of macro, meso, and micro layers. Theoretical and pragmatic macro tools are offered.

Macro theoretical tools. Two macro tools are theoretical tools that apply the theories of notional functionalism and aesthetics from Saussure and the Prague Circle of linguists (Mariani, 2010; Olson, 2007; Panek, 2010; Tomulet, 2010). Participants discussed the advantages of incorporating notional functionalism into the development of multilingual curriculum. Notional functionalism is portrayed on a continuum that traverses the continuum of aesthetic pragmatism that creates four quadrants. Two versions depicting this concept follow. The first tool depicts the traversing continua of the x and y axis of notional functionalism and aesthetic pragmatism (see Figure 11, next). The second tool offers a depiction of the culminating four quadrants and suggests further investigation into particular types of inquiry implicated by each quadrant (see Figure 12, following Figure 11).

Suggested categories for notional-functional pragmatic-aesthetic outcomes (Hobbs, 2012, pp. 233-234, *IJM*) :

Quadrant 1: Notional aesthetics: Musical composition, Dance, Lyrics, Literature, Poetry, Artistic expression, Sculpting, Painting, Descriptions of artistic form that is spoken, sung, or written, Concept car, Haute couture

Quadrant 2: Functional aesthetic: Architectural rendering, Pottery,Tapestry, Clothing, Transportation modality, Stylized shelter, Furnishing, Cuisine presentation, Stylish vehicle

Quadrant 3: Functional pragmatism: Engines, Machinery, Electronics, Computer hardware, Robotics, Utilitarian prosthetics, Minimalist desk and chair, Shelves and Filing cabinets, Instructions or directions thereof, Basic 4-wheel drive vehicle or truck

Quadrant 4: Notional pragmatism: Computer software, Accounting setup, Investment portfolio, Dietary variation, Alterations of personal hygiene products, Memorandum, Recipes (food presentation is quadrant 1 aesthetics), Formal and informal communication

XY Axis Interface of Intention

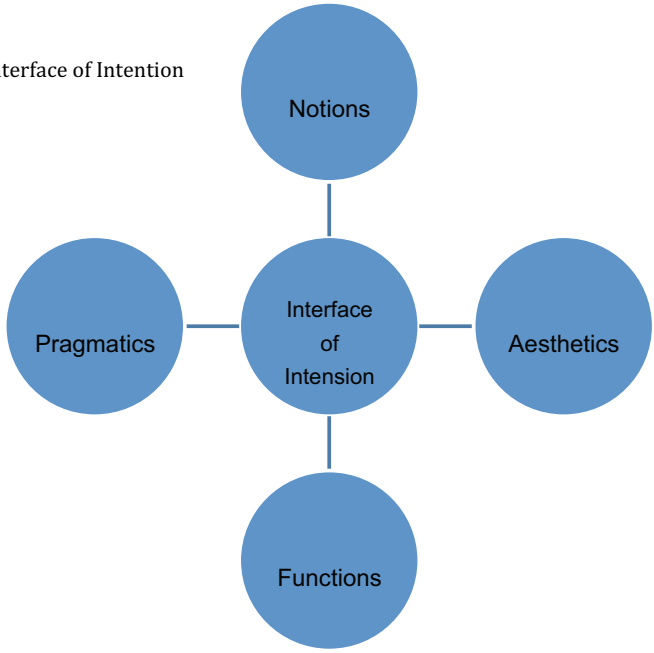

Figure 8. The Macro Layer of Multilingual Education Theoretical Tool for Future Research (Hobbs, 2011, p. 179; Hobbs, 2012, p. 220, ***I****nternational* ***J****ournal of* ***M****ultilingualism*; Hobbs, 2014, p. 94) is an Intentional Paradigm of X Y Axis Interface of the Continuum of Notional Functionalism traversing the Aesthetic Pragmatic Continuum that includes four quadrants (name of quadrant depends upon location):

- Quadrant 1: Notional aesthetics or aesthetic notionalism;
- Quadrant 2: Functional aesthetics or aesthetic functionalism;
- Quadrant 3: Functional pragmatics or pragmatic functionalism;
- Quadrant 4: Notional pragmatics or pragmatic functionalism.

Figure 8 on the previous page is related to Figure 9 on the following page in that Figure 8 has four quadrants and Figure 9 has four quadrants. The implicit message is that every project and curriculum component should have notional, functional, pragmatic, and aesthetic aspects. The functional aspect is the ability to function at writing in a particular genre, fiction, non-fiction, reportage, technical, aesthetic, recording, journaling, prospective, insightful, speculative, formal, informal, humorous, or another way; speaking in a rhetorical, narrative, discursive, poetic, argumentative, persuasive, expansive, or summative manner; doing research for hard science or social science, such as physics, chemistry, biology, pharmacology, geology, astronomy, linguistics, psychology, sociology, anthropology, neurology, or a more specific branch.

From a pragmatic perspective, one takes a function and refines that function. For instance, the five-paragraph essay is a functional component of writing that precedes the more specific genre writing. In the paragraph one of the five paragraph essay, the writer tells the reader what three things she will be discussing, then each paragraph is one of the three things, and the final paragraph is the writer telling the reader what she told him. Tell him what you are going to say, say it, and tell him what you told him. Punctuation and grammar is functional. Giving accurate directions is pragmatic. Writing a poem is aesthetic. Telling original ideas is notional.

Matrix of Four Domains of Curriculum Enhancement			
Data type	*Intuitive (notions)*	*Observable (functions)*	**Data type**
Qualitative Data (notions)	*x axis* **Q1: Notional** *Ideational, innovational*	**Q2: Functional**	Quantitative Data (functions)
Mixed Method Data (pragmatics)	**Q3: Pragmatic**	*y axis* **Q4: Aesthetic** *creative*	Qualitative Data (aesthetics)
	Intuitive & Observable (pragmatics)	*Observable (aestheitics)*	

Figure 9. The Macro Layer of Multilingual Education Methodological Tool for Future Research (Hobbs, 2011, p. 180; Hobbs, 2012, p. 223, *IJM*) is the Hobbs Balance Model of Curriculum Enhancement that includes: Quadrant 1, notional; Quadrant 2, functional; Quadrant 3, pragmatic; Quadrant 4, aesthetic. The implication by the gray shading is that qualitative data affords the interjection of intuitive input.

Macro layer pragmatic tool for professional development. The key issue for improving multilingual education as revealed by 100% of the research participants was the need for improved teacher training and professional development. Table 18 reveals the proposition that educators should view explicit and implicit learning as dual strategies. Both explicit and implicit learning can be passive or active. Further delineation separates decoding and encoding. Decoding (listening and reading) and encoding (speaking and writing) activities fall under the implicit (passive and active) and explicit (passive and active) categories. Critical discourse analysis, for instance, is an example of decoding with a great deal of concentration Blackledge (2008); therefore, critical discourse analysis in an active rather than passive activity that can either have explicit or implicit instructions, whether the teacher wants students to have similary outcomes (explicit instructions), or if the teacher wants different interpretations (implicit instructions). Cross (2009) demonstrated the benefit of explicit instructions for listening to news-videos. Teachers should vary instructions for different objectives.

Table 14

Macro Layer of Multilingual Education Professional Development Tool; Hobbs Explicit-Implicit Active-Passive Encoding-Decoding Learning Analysis

Implicit Learning		Explicit Learning	
Active Implicit	Passive Implicit	Passive Explicit	Active Explicit
Decoding	**Decoding**	**Decoding**	**Decoding &**
Listening and note-taking, many details remembered unconsciously; **Reading** quickly for specific details, but unaware of need for note-taking	**Listening**, but without note-taking; **Reading** for pleasure while unaware of the impact and affects of the texts.	**Listening**, but not responding, or **responding** in short utterances with little or no consideration for the answers. **Reading** material that explains a process, cause and effect, or sequential list that has other implications	**Encoding** Classroom lecture note-taking, note-organizing, note purposeful re-organizing.
Encoding	**Encoding**	**Encoding**	**Encoding**
Writing while responding to questions not previously contemplated, but with contextual knowledge.	Writing without understanding purpose; Writing spontaneously with little understanding Of context, such as a spelling pre-test or note-taking with no prior preparation.	Writing notes as a first draft with only a vague understanding of context.	Writing with an outline, plan, strategy, and purpose. Responding with questions, orally or written.

Note. Varying assignment types could maximize implicit and explicit learning.

- Decoding = Listening and Reading (phonologic or graphemic analysis);
- Encoding = Speaking and Writing (Oral or graphic production).

(Hobbs, 2011, p. 181; Hobbs, 2012, p. 222, ***I**nternational **J**ournal of **M**ultilingualism*)

Macro layer tool for constraint evaluation. As revealed by the multilingual research participants in this study, leaders of multilingual education need to evaluate constraints to effectively design curriculum to deliver education in multiple languages (see Table 19). One constraint may be teacher readiness for teaching L1, L2, and L3 as the medium for content delivery. Leaders will need to analyze learner language demographics (see Figure 10). Also, each student will need to be evaluated with a heritage evaluation tool (see Figure 11) that should be tailored to meet the needs for each community based on the population demographics. Teachers must show interest in student backgrounds and understand how they process language (see Figure 12).

Schools may elect to analyze migrant identities as delineated by Burns and Roberts (2010):

- *Refugees* have the fewest choices.
- *Forced labor migrants* have no choices.
- *Transmigrants* form networks across borders.
- *Marginalized labor migrants* are low-skilled or semi-skilled workers.
- *Classic immigrants* plan to return to home countries (but usually do not).
- *Long distance nationals* fight nationalistic causes in their countries of origin.
- *Middling transmigrants* have the means to remain connected to two countries.
- *Expatriates* live among themselves without forming lasting local connections.
- *Flexible citizens* have the cultural, social, and socioeconomic ability to live wherever they want.

Table 19 depicts open-ended questions for analyzing school readiness for delivering multiple languages. Next, Figure 10 offers a process for leaders to evaluate the components for delivering multilingual education:

a) Community needs analysis and school capability analysis;
b) Individual learner analysis;
c) Language repertoire demographic for each class;
d) School language demographics.

After Figure 10, Figure 11 offers a way for students to analyze the immediate and ancestral language and cultural heritage. Then, Figure 12 focuses on surveying individual students on what languages they speak, understand, read, and write, and how they process and store languages.

Meso and micro tools. The following list offers teachers and school leaders a sequence of tasks to accurately assess their classrooms and schools. An accurate assessment of demographics and needs automatically sets the tone for school readiness for responding appropriately to students and meeting their needs. Acknowledged students will connect to the teacher and school leader who appear to know them and care about them. When identity is acknowledged, then intrinsic motivation is stimulated and the affective domain of the individual student has been influenced. The task list follows.

1) School leaders should have teachers administer the student self-evaluation of language ability and mental storage (micro analysis, Figure 12).
2) Then, teachers should have students evaluate their personal heritages (meso analysis, Figure 11).
3) Next, teachers can analyze their classroom demographics (macro analysis, classroom level, Figure 10).
4) After leaders have the demographics from the teachers, the leaders can analyze the school demographics (macro analysis, school level, Figure 10).
5) Once the leaders know the language histories of all the schools, then, leaders can answer the school readiness questionnaire (macro analysis, Table 15).

On the following pages are Table 15, Figures 10, 11, and 12, in respective order. These tools should be used systematically.

Table 15
Macro Layer Questionnaire Tool for Evaluating Contextual Contingencies; Teacher and School Readiness to Teach L1, L2, L3 and Deliver Course Content in L1, L2, L3

Pertinent Questions
1. How can all the Mother Tongues of Students be supported in the school, community, or family? (This open-ended question requires contemplation and consideration of all students in the school)
2. Can teachers speak L2 fluently in regard to Decoding (Listening and Reading) Encoding (Speaking and Writing) with Accuracy (Grammar and Vocabulary)?
3. Can teachers speak L3 fluently in regard to Decoding, Encoding, and Accuracy?
4. In regard to teaching Content in the medium of L1, L2, or L3, which teachers are capable of teaching the Concepts of Content based on highly developed vocabulary and fluency in the Content area?
5. Do teachers have the necessary L2 and L3 methodological skills to teach course content in the medium of these target languages?
6. Does the school have the adequate materials necessary (texts and technology) to sufficiently teach course content in the target L2 or L3 languages?

Note. Macro Tool for Analyzing School Constraints (Hobbs, 2011, p. 184; Hobbs, 2012, p. 219, ***I**nternational **J**ournal of **M**ultilingualism*): The questions above have been formatted into a table that depicts the variables of teacher and school constraints that may limit the ability to deliver adequate instruction for L1, L2, and L3. Delivering course content in L1, L2, and L3 is a separate issue. School and teacher readiness needs to be analyzed for the ability to deliver course content against the constraints. Limited target language usage by teacher restricts quality input available to learners (Philp & Tognini, 2009). Figure 10 follows.

Context: Need
Community: What languages are needed?
School: What languages does the school support?

Context: School Capability to Support L1, L2, L3, Ln?

Methodology?	Adequate texts and materials?	Trained and fluent teachers?	Technology?

+

Individual and Group Learner Analysis

Ability in Official School Language		L1 of learner(s)		L2 of learner(s)		L3 of learner(s)		Ln (other languages)?
Fluency **Decoding?** Reading Listening **Encoding?** Speaking Writing **Accuracy?** Vocabulary Grammar		Fluency **Decoding?** Reading Listening **Encoding?** Speaking Writing **Accuracy?** Vocabulary Grammar		Fluency **Decoding?** Reading Listening **Encoding?** Speaking Writing **Accuracy?** Vocabulary Grammar		Fluency **Decoding?** Reading Listening **Encoding?** Speaking Writing **Accuracy?** Vocabulary Grammar	Fluency **Decoding?** Reading Listening **Encoding?** Speaking Writing **Accuracy?** Vocabulary Grammar

+

What were the methods used to evaluate each learner in each language?

+

What is the student language profile of each classroom?

List in alphabetical order the mother tongues of all students that differ from the dominant school language; then investigate if the school, community, or family has the adequate support necessary to develop the mother tongue.

+

What is the student language profile of the school?

Figure 10. Macro Tool for Analyzing Learner Language Demographics (Hobbs, 2011, p. 185; Hobbs, 2012, p. 219, ***I****nternational* ***J****ournal of* ***M****ultilingualism*). According to the research, students who have their first languages supported will have an advantage toward learning their second and subsequent languages. Empirically, the researcher has found that multilingual students seem more proficient in learning English than other students. Laborers from Bangladesh and Nepal who speak Bangla or Nepali and Hindi seem to quickly learn Arabic and English in Kuwait faster than monolingual Malayalam speakers from Southwest India who seem to struggle with the two languages in Kuwait. Speakers from Southeast India tend to be polyglots and hyper-polyglots who speak Kannada, Telegu, Tamil, Hindi, Urdu, English, and Arabic in Kuwait. School leaders should know the language demographics of their schools.

Mother	What languages do your mother and father speak?	**Father**

What holidays are special to your family? How does your family celebrate these holidays?

What languages do your grandparents speak?

Maternal **Grandfather**	*Maternal Grandmother*	**Paternal** *Grandmother*	**Paternal Grandfather**

Is your family more complicated than this chart? Blended family? Step-parents? Half-brothers or half-sisters? Step-brothers or step-sisters? Remarried grandparents? Close Aunts, Uncles, Cousins? Please explain in the box below so your teacher understands your unique circumstances (if it's ok with you). Cultures and Languages of Close Friends or Other Family Members

Ancestors Divide this box any way you like to tell about your great, great, great grandparents: Where did they come from? What languages did they speak? How did they meet?
The intention of this questionnaire is to promote family communication and PRIDE in family heritage. If you run out of space, then please turn the paper over and continue on the back.

Figure 11. The Meso Tool for Self-Evaluation of Personal Heritage (Hobbs, 2011, p. 186; Hobbs, 2012, p. 218, ***I**nternational **J**ournal of **M**ultilingualism*) depicts font variation to arouse visual interest. Teachers should be aware that students may be in surrogate family situations that they may or may not want to reveal that could include biological, foster, and adoptive parents as well as other related or unrelated caregivers. The researcher found that when students filled out a form like this, they held it closed to their hearts and did not want to submit the form. After being promised the originals would be returned after copies made, they submitted the forms. Be aware how precious it may be.

People store languages in their brains differently. The mother tongue is more compact than other languages and takes up less brain space unless another language is (or other languages are) equally automatic and developed.

In this box, write your dominant language.

If you speak languages equally well, then divide this box and list your dominant languages.

In this box, please write the other languages you **speak** in the order of ability or dominance from left to right.

Are there languages you **understand** but cannot speak? Please list them here.

In this box, please list the languages you can read (include % of understanding).

What languages can you write? How well?

The next question is much more challenging. People store languages differently in their brains. Some highly trained translators cannot switch between languages. Once they are "in" a language, they cannot easily think of a word in another language unless they "pull out" of the language and start thinking in the other language. Some teachers easily switch between languages because that is what they do every day.

Please think about how you store languages in your mind, how you switch between languages (Mid sentence? Certain words? Turn taking? Depends on context?), and why you switch languages (Privacy? Identity? Aesthetics? Can't think of a word in the target language? Certain circumstances?).

On the other side of this paper, please write an analysis of your language switching habits. If you have any questions or need terminology, please ask.

Figure 12. The Micro Tool of Self-evaluation of Language Ability and Mental Storage form (Hobbs, 2011, p. 187; Hobbs, 2012, p. 217, ***I**nternational **J**ournal of **M**ultilingualism*) offers font variation to arouse visual interest from students. The simultaneous interpreter information is from Christoffels and De Groot (2005).

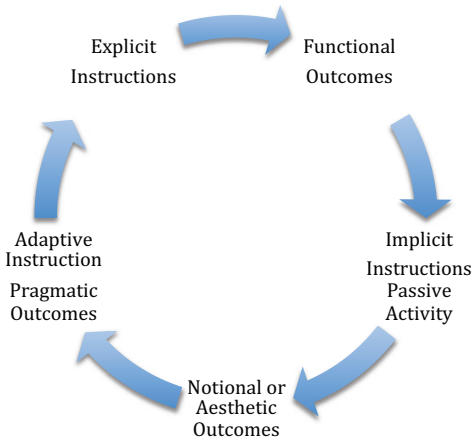

Figure 13. The Curriculum Cycle of Explicit/Implicit Input & Functional or Notional Output (Adapted from Figure 9 in Hobbs, 2012, p. 221, in the ***I**nternational **J**ournal of **M**ultilingualism*). The curriculum cycle should vary different types of instruction so that teachers can elicit different types of outcomes from students. Specific explicit instructions should lead to a predictable exact response. Functional outcomes need explicit instructions. But, for creative thinking to occur, implicit instructions that are open for interpretation should yield a notional or creative response. Varying activities from active learning to passive learning should also yield various outcomes and responses noted. Every child is unique, so instructions may vary for different children. Perhaps a menu of assignments provided with a menu of instructions would allow for the most learning growth. The research suggests that choices produce student-learning engagement and avoids oppositional defiant behavior. It is the experience of the researcher that strategic planning with complex assignments yield greater student concentration and engagement. Complex assignments for groups yield more negotiation and planning. Teachers should be on hand to help students find suitable roles for themselves in group-assignments so that every student is involved in an activity that he or she enjoys that also yields satisfactory results for the group. Artistic expectations often stimulate motivation to enhance student products for aesthetic outcomes and produce a happier ambiance. Consider playing music and varying the types of music. Get feedback from students. Students and teachers should be enjoying their learning activities. What creates a desirable ambiance for learning and teaching for each group of students who you teach?

Chapter 22. Addressing the Problem

This discussion loops back to the specific problem to evaluate if the data sufficiently explores the components and solutions to the problem. Next, the discussion turns to the alignment of data variables that emerged from the current study. One of the variables that emerged dealt with context. Various meanings of context and the relation of context to the models are essential for closure to the current study. Finally, the discussion evaluates if the current study provided answers to the research questions.

Addressing the Components of the Specific Problem

The specific problem was that monolingual students miss critical thinking development opportunities. This assertion was supported in the study findings and the current study offers a multilingual education solution to provide monolingual students with exposure to two foreign languages so students can achieve critical thinking based on metalinguistic analysis. Another component of the specific problem was that bilingual students miss opportunities because teachers do not acknowledge first languages or communicate high expectations of learners. The phenomenon of missed opportunities was also acknowledged by the study participants in that educators must recognize, acknowledge, and provide opportunities for L1 development with respect to L1 culture. Concern was also expressed that minority students must have the same learning opportunities as majority language students.

The intention of the participants is that monolingual students be provided with the skills, experience, and transferable knowledge necessary for learning languages as their careers or life circumstances may require. Other benefits mentioned in the specific problem statement important to multilingual education include: a) the ability to discern cultural cues; b) the skill of translating phonetic and graphemic information; c) and the metalinguistic knowledge necessary for analyzing cross-linguistic cognates when reading or listening to foreign languages.

The Meaning of Context

The participants explained the importance of context for making decisions on what languages to teach and when to teach those language. The general agreement was that English as a world language should be taught as L2 or L3 (if not L1). More complex languages such as French or German should

be taught as L2 and referred to supporting research. But in certain regions, such as the Basque or Catalan speaking areas of Spain or the Faroes speaking area of Denmark, the regional language is taught as L1, the national language as L2, and English as L3.

The context of when to teach each language depends on the availability of teachers fluent in the target languages who are trained in the appropriate L2 or L3 methodology equipped with an adequate supply of L2 or L3 materials. Due to contextual issues, not all languages can be introduced or taught as the medium for content in all schools at the same levels as other schools with appropriate staff and materials.

Addressing the Research Questions

The general question was: What theory will emerge to improve instruction and curriculum design to best facilitate multiple language acquisition and learner cognitive development? No specific theory emerged, but the data strongly supports the integrated model of multilingual education.

The first specific question was: How should languages be systematically incorporated throughout the curriculum over time to meet the needs of learners? Participants recommended that L2 and L3 should be introduced as early as possible and that immigrants must have L1 support even earlier. Learners should be exposed to L2 in kindergarten or first grade and L3 between the ages of eight and ten. Participants suggested that L2 could be used as the medium of instruction in middle school or junior high if not before, and L3 could be used as the medium of instruction in high school, if not before. When to introduce a language and use a language as the medium for education ultimately depends upon the contextual issues of the availability of trained teachers and appropriate material as well as district policy and expectations of the community.

The second specific question was: What types of teaching methodologies, strategies, and techniques contribute best to construct learning, identity, intuitions, and retention of L2 and L3 regarding listening, speaking, reading, writing, grammar, and vocabulary? Participants agreed that teachers should use L2 and L3 methodologies for teaching. Young learners need fun activities and not formal teaching. Learners who are beginning to learn a new language need an accuracy approach with fluency approaches gradually introduced as learners develop skills in the new language. Form-on-focus techniques should be used for teaching languages. More specific answers to the second question will require further research.

Chapter 23. Recommendations

The recommendations will fall into three categories. The first focus is educational leaders in general, but especially of nursery, kindergarten, primary, and secondary schools. The second focus is suggestions for further research. The final focus is suggestions for using the tools of the integrated model of multilingual education. The recommendations will be divided into the three layers of education represented by the macro, meso, and micro models representing layers of educational analyses. The consensus among all participants for all school leaders and policy makers to know was that change is essential for improving multilingual education.

Recommendations at the Macro Layer

According to multilingual researchers, the most pressing issue is teacher training and professional development. Teachers need to understand the outcomes of multilingual research and the importance of using multilingual principles when teaching children learning multiple languages (L1 & L2; or L1, L2, L3; or L1 to Ln). It is also necessary for teachers to acquire better skills, knowledge, and fluency. Pedagogical concepts require reinforcement in teacher training and professional development. Sociocultural aspects of education should be included in teacher training that will inspire all teachers to learn the linguistic and cultural backgrounds of every student.

School leaders should introduce L2 by ages seven or eight, grades two or three, but receptive skills of similar languages should begin in kindergarten or pre-kindergarten if feasible. Syntactically complex languages such as German or French should precede English if English is not the mother tongue. Immigrant children should have reinforcement of learning of L1 as early as possible. L3 should begin by age 9 or 10 in grades four or five as long as the schools have adequate qualified teachers who can use research-based methodology and have the appropriate materials. Whether or not L2 or L3 can be used as the medium of instruction for mainstream courses depends on the contextual issues of available qualified teachers skilled in the use of appropriate methodology and materials.

The multilingual research study participants recommend that school leaders design curriculum to teach language similarity and specifically similar language receptivity from a young age, such as five year-olds in kindergarten if possible. Teaching language similarity, receptivity, and

common cognates at an early age will facilitate more efficient productive language learning in the middle years of elementary school.

Recommendations at the Meso Layer

School leaders and policy makers should be aware that by age eight, the mother tongue is adequately developed to begin learning L3. If children are in daily contact with other languages, then instruction in those languages can begin earlier. The stipulation is that L1 must be adequately taught. Leaders and teachers need to be aware that learning L3 enhances and reinforces appropriately taught L2 and L1. Teachers and leaders also need to be aware of the developmental need for multilingual students to translate from one language to another until they reach fluency.

School leaders and policy makers should be aware that curriculum for students and professional development for teachers need to be based on multilingual concepts and principles to facilitate the cognitive, affective, and motivational aspects of learning L1, L2, and L3. Cognitive processing will be facilitated by multilingual strategies and methodologies that will use analysis and meta-analysis that maximize learning. The affective aspect of learning will be nourished by the recognition of L1 immigrant children by contributing to the ambiance of appreciation for multicultural classrooms and schools. The motivational ingredient to learning will be fostered as teachers allow learners to switch between or among languages while analyzing how and why codeswitching facilitates learning.

Recommendations at the Micro Layer

School leaders, policy makers, and curriculum designers should know that by using L2 as the medium for instruction in mainstream courses, L2 instruction will foster bilingualism in middle school. Leaders should also know that using L3 as the medium of instruction will facilitate students becoming trilingual. The multilingual processing unit in the mind will become adept by using three languages every day for course work. The stipulation for using L2 and L3 as the medium for content courses depends upon qualified teachers fluent in the target languages with the skills and knowledge of L2 and L3 methodology and materials. One participant mentioned that parents must insist that children get eight hours of sleep because the brain cannot function at maximum benefit with the neuroplasticity (brain self-repair) that occurs during nightly rest.

Chapter 24. Further Research

The suggestions for further research are based on seven emerging themes from the multilingual researcher participant data of the current study. Suggestions for further research follow.

Lack of Communication of Research Outcomes

Emerging theme one is the lack of communication of research outcomes to teacher practitioners. Research should be conducted in school districts to learn what teachers know and do not know so that professional development can be designed to fill in the gaps. Allgauer-Hackl (2009) demonstrated that metalinguistic awareness can be trained. Vocational students gained metalinguistic awareness while performing multiple language tasks. Research could also investigate what type of professional development program may achieve the best results. A mixed method design could facilitate measuring student performance quantitatively while teacher perceptions can be measured qualitatively.

Fun Activities for Children Learning Languages

Emerging theme two suggests that small children not be subjected to formal teaching. The research indicates that *prosody* (voice melody) is a major factor in language acquisition. Prosodic acquisition precedes and facilitates syntax (Mannell & Friederici, 2008). Research should be conducted to measure how much language can be taught via songs to small children. The research could be qualitative in design for investigating teacher perceptions. Curriculum should be designed according to recommendations from the teachers. Video and audio recording would facilitate research.

Accuracy versus Communicative Approaches

Emergent theme six revealed the controversy of accuracy-based and communicative approaches. Research should be conducted to determine at what levels of language acquisition accuracy-based or communicative based approaches are most appropriate. Also, a study could be designed with multiple scenarios of using accuracy-based and communicative approaches in tandem, simultaneously, and individually to compare which influence most improves [which] student acquisition of L2 or L3.

Grammar versus Form-on-Form Approaches

Emergent theme seven dealt with the important variables of grammar approaches versus form-on-form approaches. The same types of experiments could be conducted as *emergent theme six* (above) to measure differences in performance. Researchers should investigate if use of both approaches alternating may offer superior results or if the form-on-form approach is superior without the grammar approach as asserted by one participant. Three-way experiments could comprise: a) focus-on-form teaching strategies; b) grammar teaching strategies; c) grammar techniques combined with focus-on-form teaching. A mixed-method design could measure student performance quantitatively as well as student and teacher perceptions qualitatively. Neurolinguistic researchers could explore how the syntactic aspect of grammar correlates with synaptic and neuronal operations. Outcomes may have implications for therapeutic or pedagogical interventions to deal with developmental problems or aphasic pathologies.

Notional-Functional Aesthetic-Pragmatic Strategies for Curriculum

Findings from the current research study suggest that notional functionalism and aesthetic pragmatism may present an area worthy of research. Participants claimed that notional-functionalism could help students realize goals, develop pragmatic skills, improve linguistic analysis, and enhance meta-linguistic skills. Perhaps if curriculum were designed with the notional, functional, pragmatic, and aesthetic goals, multiple language learning could be improved. This notion could be combined with Bloom's taxonomy or Gardner' multiple intelligences and learning styles (Gardner, 2008). The balance model (see Figure G4 in Appendix G) could be used to guide research. The model offered demonstrates the continua of notional functionalism traversing aesthetic pragmatism that could serve as a guide to balance the notional-aesthetic aspects of assignments with the pragmatic-functional aspects.

Realistic Learner Goals

Emerging theme three suggested that teachers may not comprehend what language learners can achieve. Further research should be developed to reveal what types of curriculum can yield attainable goals so that teachers can have realistic expectations. The priming and timing study by Cheng and Howard (2008) demonstrated that stating positive or negative expectations

could foretell the performance of students. Experiments could be done to find the affects of stating unrealistic expectations to investigate which students perform better or worse (motivation versus de-motivation). The experimental design could affect results whereas implementing a variety of experimental designs should yield better evidence.

Creative Aspect of Language Production

At the processing level, notional-functionalism and aesthetic-pragmatism could offer opportunities to design studies to measure the impact of offering tasks to participants that stimulate the creative aspect of language production via notional and aesthetic cues versus pragmatic-functional cues. Studies could be designed to test if creative and notional cues in combination with pragmatic-functional cues stimulate greater learning than tasks isolated in the creative notional or pragmatic-functional directions.

Suggestions for Using the Model of Multilingual Education

Using the tools of the integrated model presupposes the school does not have a homogeneous population. The first step is to investigate the diversity of the school. School leaders should have teachers disseminate the language ability and mental storage questionnaire so students may self-evaluate. The second step is to have students evaluate their personal heritages. Teachers should compare the two forms and have students clarify if students have inadvertently omitted information on one of the forms. The third step is teachers filling out the learner demographics form for each class and submitting the demographics to the head of departments and school leaders.

After the school leaders have the learner demographics from all teachers, the leaders will need to have teachers answer the school readiness questionnaire. When the leaders have the answers from all of the teachers, then the leaders can discern if the school staff can deliver instruction in the minority L1's and designated L2 and L3. Leaders should also make certain that curriculum is conforming to the principles of multilingual teaching by differentiating between the teaching of L2 and L3.

In designing curriculum, school leaders should differentiate between active and passive learning and evaluate if the implicit learning is taking place as well as the explicit learning. The curriculum should also contain components of encoding and decoding. Students should warm up by decoding. They should listen to instructions, read the assignment, write the assignment, then discuss the assignment in groups and design a

constructivist style project. Curriculum designers should use creativity in designing the activities and assignments from a notional-functional perspective and require pragmatic and aesthetic student products as outcomes. Finally, students should present their projects to the class in oral presentations (group and individual) with creative visual displays.

Evaluators should quantitatively analyze the functional and pragmatic aspects of student products and gather qualitative data for analyzing the notional (creative ideas) and aesthetic aspects of the student products (quality of posters, graphs, essays, and presentation delivery). The qualitative data should come from the evaluators, teachers, and students. In reflection, students should self-analyze their progress in language processing development (micro analysis). Teachers should evaluate if the cognitive, affective, social, and motivational needs are met for all the students.

Students and teachers should evaluate if the materials are adequate for their individual needs (meso analysis) and for all the students as a group (macro analysis). Teachers, students, and school leaders should also analyze if student technological and assessment needs are being met. Leaders should survey the community to see if members perceive the school as meeting the needs of the students.

Chapter 25. Conclusion and Summary

The current study explored perceptions of multilingual researchers for the purpose of developing a model of multilingual education. The instrument was refined according to suggestions from five pilot participants. To find 19 multilingual researchers to volunteer for the main study, 227 were contacted; then, 13 participants answered the questionnaires. The first participant expressed desire to participate by using Skype due to a disbelief in questionnaires. The interview was transcribed and stored with the data obtained from the other participants. In the middle of the study, the invitation was redesigned to include the confidential statement. The invitation was also simplified so participants could place an X in or next to a box to symbolize agreement to participate. The simplification of the invitation discontinued the need for participants to download the form and reattach. The questionnaire was also streamlined to include the demographic questions to alleviate the need for downloading and attaching. These changes were made due to comments made by the participants. The study reached saturation after 30 days of continued re-evaluation of the data.

Significance to Leaders, Learners, and Literature

The goal of this study was to construct a model of multilingual education to assist policy makers and school leaders in designing curriculum that would reinforce mother tongues (L1) while augmenting other (L2, L3) languages. The pilot study was designed to assess models adapted or constructed with the input from the literature search. Pilot participants recommended adapting the models based on study participant responses. After the study the models were integrated to depict three layers of multilingual education. The three perspectives include schools, learners, and cognitive processing.

Significance to learners. Learning multiple languages should improve communication and metacognitive skills as well as contribute to enhancing the ambiance of multicultural schools. Tolerance of difference should be facilitated. Empathy toward immigrants learning the dominant language should improve as students who speak the dominant language as a mother tongue struggle to improve their foreign language skills.

Contribution to the field of multilingualism. Vast improvement in brain scanning technology has offered neurolinguists and psycholinguists better equipment for doing research. The assertion that syntax can be correlated with synaptic and neuronal activation is unique to this study and

deserves further investigation in neurolinguistic research for intervention research. Another implication in the literature is that vocal tonality may be correlated with syntax assimilation and could be useful as a teaching strategy.

Sociolinguistic research (Ushioda & Dornyei, 2009) has innovated the way educators should perceive dynamic identities as the ideal-selves, ought-to selves, and feared-selves. Interviewing multilingual researchers involved in an array of investigation types should have revealed consensus and controversy among their perceptions on how to improve education.

Relatively new is the field of multilingualism. Bilingualism was a focus of researchers in the 20th century. Multilingualism research is gaining momentum in the 21st century. The study participants in this current research investigation were speakers of many different languages who resided in various parts of the world and investigated different fields of inquiry within multilingual investigation.

Gap in the literature. Evidence of a literature gap prevails in the published opinions in various branches of multilingual research. Conteh (2010) stated that a well-defined model of education is needed. Whether or not the '*integrated model of multilingual education is well-defined*' is open to conjecture. The integrated model constructed from this current study is unique due to the three-layered perspective of school structure, the domains of learner development, and the internal processing of multiple languages in the mind (respective layers: macro, meso, micro).

The authors in Lytra and Martin (2010) revealed that Saturday L1 support schools offer immigrant children a venue that contributes to their self-esteem. The implication is that instruction in public schools needs to improve to adequately serve the affective and motivational needs of immigrant learners. Lapresta, Janes, and Querol (2009) demonstrated that immigrant students who feel integrated in society perform better in target languages. Improved performance in the mainstream languages has implications for higher education and job prospects. An improved model of education could better serve society, educators, and learners.

The results of this current study concur with Aronin and Singleton (2008) that a new "dispensation" of multilingual education is necessary. All participants declared that multilingual education needs to change. The consensus from all participants is that teacher training needs improvement. The need for improvement in teacher training was the implication or explication from the authors in Dornyei and Ushioda (2009) and Lytra and Martin (2010). Dornyei and Ushioda (2009) also asserted that the field of sociolinguistics had changed enough due to results from recent studies to

require a new conceptualization. The implication is that multilingual education must also be re-conceptualized. Thus, an integrated model of education that combines the perspectives of neurolinguistics, psycholinguistics, sociolinguistics, and educational research fills a gap in the literature.

Limitations

Factors compromised, excluded, or outside the control of the researcher comprise limitations (Creswell, 2005). New and varying terminology is one limitation. Zgusta (1971) asserted that terminological variation was evidence of a new field of research becoming established. The overlap and variations in terminology in this study offer evidence that multilingualism is a new area of research as indicated by the criteria in Zgusta (1971).

The limitations to interpretation of the questions or the data include the confusion that may have occurred in reference to notional-functionalism. In addition to unfamiliarity with the notional-functional theories, perhaps some of the respondents may not have understood how notional-functionalism could relate to multilingual research. Some participants wrote a great deal more of information than others. The variability of the responses could have been caused by the wording of the questions that may have lacked offering adequate parameters for the response or ambiguity in the directions.

Another limitation to interpretation was the reference to group language instruction. Charmaz (2006) referred to extant texts as texts external to the study not affected by the researcher. An example of extant texts is the literature on the development of courses to teach several similar languages at once. Some participants were familiar with this concept while other participants lacked knowledge of comparative multiple language delivery. This lack of knowledge of group language course development serves as evidence for the lack of efficient dissemination of multilingual literature that was referenced in the data by participants in the current study. The limitation to the interpretation of the data may have been another issue. Since the participants were published authors, the researcher had the advantage of reading articles written by the participants. This extra knowledge of the writing of the participants could have led to an over-interpretation of the data.

Time limit was another factor. The current study was done in the month of August. Many participants were out of the office on vacation in August. The study relied on participants volunteering. A constraint was the

availability of participants to volunteer. Time was a constraint for participants. Some participants responded with a desire to volunteer but confessed a lack of time due to an overloaded schedule and deadlines. Despite the limitations, the consistency of the responses and the resonation of assertions made in the literature seem to indicate the validity and reliability of the study outcomes.

Transferability of the Outcomes

Multilingualism is the common characteristic of the participants in the current study that focused on multilingualism. Hua and David (2008) asserted that cross-sectional studies have the advantage of being replicable. The current study focused on the perspectives of multilingual researchers from various branches of the field. Perspectives from neurolinguists, psycholinguists, and sociolinguists may be considered cross-sectional. Participants also represented sequential, simultaneous, and combination sequential and simultaneous language learners. Varieties of language acquisition typology may be another way this current study is cross-sectional. The outcomes of the current research study suggest that a survey of multilingual researchers would generate common perspectives.

PART FIVE SUMMARY

PART FIVE offered a flowchart of the multilingual education study, a summary of the findings, and conclusions and implications. The conclusions for the variables of the model included:

a) When to introduce languages;
b) When languages should be the medium of instruction;
c) Evaluation of context and contingencies;
d) Need for greater impact of research outcomes;
e) Importance of using multilingual methodology when teaching additional languages;
f) Necessity to improve teacher training;
g) Reciprocal and diverse sociolinguistic impact of learners and society; and
h) Linking languages by teaching language group receptivity and language similarities.

The proposal of an integrated model of multilingualism included four main models:

a) Principles of third language acquisition;
b) Macro layer of schools and curriculum;
c) Meso layer of individual learner development domains; and
d) Micro layer of multilingual language processing.

Tools were offered for a more comprehensive integrated model. An intentional paradigm (Figure 8) revealed a way to evaluate notional-functionalism and aesthetic-pragmatism to infuse into curriculum planning. The future research matrix (Figure 9) depicted that notions are intuitive (qualitative research), aesthetics are observable but qualitative in nature, functions are quantitatively measurable, and pragmatic intention can be assessed by mixed methods.

Another tool (Table 18) delineated implicit and explicit learner tasks as active or passive learning and attributable to decoding and encoding tasks. Table 19 queried school readiness concepts. Figure 10 offered a process for analyzing learner demographics. Figure 11 served as an example for students to discern and appreciate personal family heritage. Figure 12 was a micro tool for analyzing personal language ability and mental storage of languages.

PART FIVE included an address of the problem and research questions, the meaning of context, and recommendations. Education leader recommendations divided into macro, meso, and micro suggestions at the layers of school and curriculum, individual learner development, and language processing. Further research could involve studies on developing efficient learning activities, accuracy versus communicative methods, grammar versus form-on-form approaches, and infusing notional-functional and aesthetic-pragmatic concepts into curriculum design. Neurolinguistic research could investigate the correlation between syntax and synaptic (or neuronal) electrochemical activity to contemplate therapeutic and pedagogic interventions for learners or patients having language production difficulties.

Finally, PART FIVE listed ways for employing the integrated model of multilingual education and its tools, as well as concluding remarks. The conclusion included an evaluation of the significance to leaders and learners, contribution to (and gap in) the literature, and the limitations and transferability of the current study.

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APPENDIX

Appendix Table of Contents

Appendix A: Summary of Higher Education L3 Studies

Jessner (2008) revealed a compilation of 38 studies that demonstrated that multilingual students in higher education outperformed other students. German was the L3 of 13 studies from 1976 through 2006. The studies took place in Belgium, Bulgaria, Canada, China, Germany, Norway, Poland, Sweden, and the USA. Of the three L3 German studies in Sweden, one was with *L1 Finnish-L2 Swedish* speakers, and the other two studies were with *L1 Swedish-L2 English* speakers. Of the two L3 German studies in the USA, one study was with *L1 Spanish-L2 English* speakers and the other study was with *L1 Chinese-L2 English* speakers.

English was the L3 of 18 studies from 1987 through 2006. Of the three L3 English studies that took place in Australia, one study was with *L1 German L2-Dutch* speakers, one study was with *L1 German-L2 Hungarian* speakers, and one study was with *L1 Spanish-L2 Italian* speakers. One L3 English study took place in Austria with *L1 Italian-L2 German* speakers. Both studies in Finland were with *L1 Finnish-L2 Swedish* speakers. The L3 English study done in Germany was with *L1 Polish-L2 German* speakers. The L3 English study conducted in Iran was with *L1 Persian-L2 Turkish* speakers. Of the four studies conducted in Spain, each by a different researcher, two studies were L1 Basque L2 Spanish speakers and two studies were *L1 Catalan-L2 Spanish* speakers. The study conducted in Switzerland was with *L1 French-L2 German* speakers. The study conducted in Turkey was with *L1 Turkish-L2 German* speakers. Of the two studies conducted in the USA, one study was with *L1 Kazakh-L2 Russian* speakers and one study was with *L1 Chinese-L2 Japanese* speakers.

The other seven studies were with L3 speakers of French, Italian, Japanese, and Chinese between 2003 and 2007 inclusive. The four L3 French studies took place in Austria, Hong Kong, Ireland, and Netherlands with *L1 English-L2 Spanish* speakers in Ireland, *L1 German-L2 English* speakers in Austria, *L1 Dutch-L2 English* speakers in the Netherlands, and *L1 Cantonese-L2 English* speakers in Hong Kong. The L3 Italian study took place in Malta with *L1 Maltese-L2 English* speakers. The L3 Japanese study took place in the USA with *L1 Chinese-L2 English* speakers.

The variety of locations and languages compiled by Jessner (2008) gives the impression of repeated replication. The studies took place in L1, L2, L3, and L4 environments. The implication is that multilingual education produces the higher order thinking necessary for success in higher education.

Appendix B: Permission Explanation

Permission from Dr. Ralph Pallium representing American University of Kuwait (AUK) to adapt and use the figure designed by the author (Hobbs) that appeared in the AUK Occasional Papers 2009 for use as the Macro Level of the Comprehensive Integrated Multilingual Model of Education in the 2011 publication by Robert Dean Hobbs (the author), and for further future use. Please see the permission granted by Dr. Pallium on the following page stating that the property of the figure belongs to Dr. Hobbs and AUK states no claim on the earlier version of the figure published by AUK.

Letter from Dr. Palliam follows.

American University of Kuwait
P.O.Box 3323, Safat 13034 Kuwait **Tel:** 802040 / (+965) 224 8399

E-mail: info@auk.edu.kw
LEARN • THINK • BECOME

July 03, 2010

Lectori Salutem

Since I strongly believe that the concept of "self-plagiarism" is selfcontradictory and an oxymoron, I have no objections to Mr Hobbs further pursuing the model he developed: "The Hobbs Report on Educational Excellence: Reflective Value, Redirection, and a Way Forward" which was published by the American University of Kuwait in its annual AUK Occasional Papers; Liberal Arts and Business Series (on page 102 in Appendix A of the 2009).

It is indeed refreshing to see scholarly pursuits emanating from the AUK Liberal Arts Conference.

I welcome the opportunity to wish you well in your endeavors.

Sincerely,
Ralph Palliam
Associate Professor of Finance
Co-ordinator of the Liberal Arts Conference

Appendix C: Invitation to Pilot Research

May 31, 2010

Dear Dr. [name of recipient],

As you are well aware, a trend exists toward improving multilingual education around the globe. However, some educators still seem unconvinced of the importance of how multilingual skills contribute to cognitive operation skills. Those who are convinced of this importance are not in complete agreement of how to design multilingual education to best benefit learner development in multiple languages.

The purpose of this research project is to construct a multilingual model of education based on the knowledge, perceptions, and intuitions of experts in the field of multilingual research. The definition of expert for the purpose of this project is anyone who has edited or published didactic or research oriented articles in journals or monographs or who is at the head of a successful multilingual school. You are an expert.

Of course, your participation in this quick and easy online one-time questionnaire is voluntary, but of significant importance to the next generation of students whose education may be improved because you have answered a few probing questions based on your knowledge, experience, and intuition. Your confidentiality and anonymity are assured. The short questionnaire will be coded for the follow-up sharing of information; however, you will not be individually identified with your responses.

Please understand that use of this data will be limited to this dissertation project, as authorized by the university of the researcher. Results may appear in other formats other than this dissertation in published articles, but your anonymity is assured. If you have any concerns, then you may, Dr. Jablonski at the email address or phone numbers included in this communication.

I sincerely appreciate your time in considering an investment of a brief amount of time to participate in this research. Reviewing the questionnaire should only take 5 minutes. Please offer an improved version of these questions or additional questions that you deem more valuable and return the questionnaire today or tomorrow as a reply to this email message at this email address. Please also fill out the brief demographic form for categorization purposes.

Thank you immensely for your valued input. Please feel free to follow-up with any future comments, suggestions, or information. Hearing from you in the future will most welcome. I look forward to reading your future articles as well, and thank you for the vital information you have already shared.

Sincerely,

Robert Hobbs
Email: dr.rdhobbs@gmail.com

APPENDIX D: Professional Research Affiliation Attachment

Table D1

Professional Research Affiliation Categories

Would you please answer the following questions on professional affiliations to assist the researcher in the analysis of professional category compared to types of responses?
What professional categories fit you? Are you a school leader? If so, what capacity? Are you involved in research? If so, what types of research? Neurolinguistic? Psycholinguistic? Sociolinguistic? Educational? Inter-disciplinary? Other?

Note. According to Wei (2008), bilingual and multilingual research benefits from efforts across disciplines.

Appendix E: Participant Demographics Form

Table E1
Explanation of Terminology and Language Acquisition Categories

Explanation of Terminology	Language Acquisition Categories
Fluency in one language	**Monolingual**
Fluency in two languages	**Bilingual**
Simultaneous acquisition	Simultaneous Bilingual
Consecutive acquisition	Sequential Bilingual
Fluency in three or more languages	**Multilingual**
Simultaneous acquisition	Simultaneous Multilingual
Consecutive acquisition	Sequential Multilingual
Learned two at once, then another	Combination Multilingual
Learned one, then two at once	Combination Multilingual

Note. Participants may use this guide for language acquisition self-identification.

Table E2
Participant Demographic Analysis

Themes	Subthemes	Participant enters information
Biographical		
	Date of birth	
	Place of birth	
	Places of residence	
	Types of schools	
	Languages of instruction	
Language Use		
	Languages spoken	
	Language choice reasons	
	(work, family, travel)	
Declared Proficiency		
	(Proficient, competent, rudimentary)	
	L1	
	L2	
	L3	
Language Dominance		
	Spoken	
	Understood	
	Read	
	Written	
Language Acquisition		
	Age	
	Situation	
	Mode (school, family, travel)	
	Motivation	
Language Preference		
	Identification	
	Functional	
	Acoustic	
	Other	

Note. Demographic information will be used to analyze if common themes emerge based commonalities of participants compared with responses. (see Codo, 2008)

Appendix F: Confidentiality Statement

According to Moyer (2008), participation in a study should be on a voluntary basis. The participants in this study will be selected and invited by Robert Hobbs based on their published articles found in journals or monographs on multilingual research. Anonymity of participants and confidentiality of responses comprise the ethical protocol in this study.

The method and design of the study is a qualitative systematic grounded theory collection of responses to questions concerning the construction of a model of multilingual education using the Internet. Lanza (2008) recommended that a properly designed research study offers coherent interconnectedness of method, theory, and data. The sample consent form in Lanza (2008) implies the obligatory nature of informing participants of the purpose, objectives, and procedures of the study.

The purpose of this study is to elicit responses from multilingual researchers concerning the best way to educate children in multiple languages. The respondents will answer a questionnaire that should take only 15 to 30 minutes to answer. The data will be analyzed for common themes and published in a dissertation for the University of Phoenix. The researcher is a student at the University of Phoenix pursuing a doctorate in education in curriculum and instruction and an instructor at the American University of Kuwait.

The identity of the participants will remain confidential. Each participant will receive a neutral pseudonym known only by the researcher for the purpose of sorting and categorizing the data. Should questions arise at any time, the researcher can be contacted by email dr.rdhobbs@gmail.com.

Appendix G: Pilot Instrument

Please view the diagram on the following page and reflect on the components of educational structure; then, answer the question that follows. Please do not dwell on all the details, but answer with your first immediate response.
[Proceed to the next page]

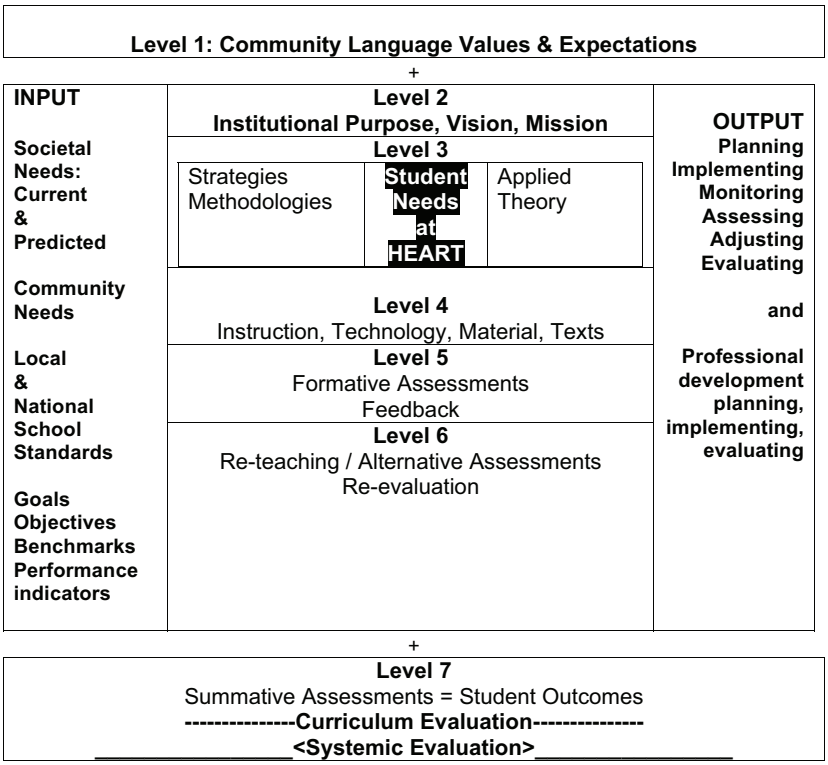
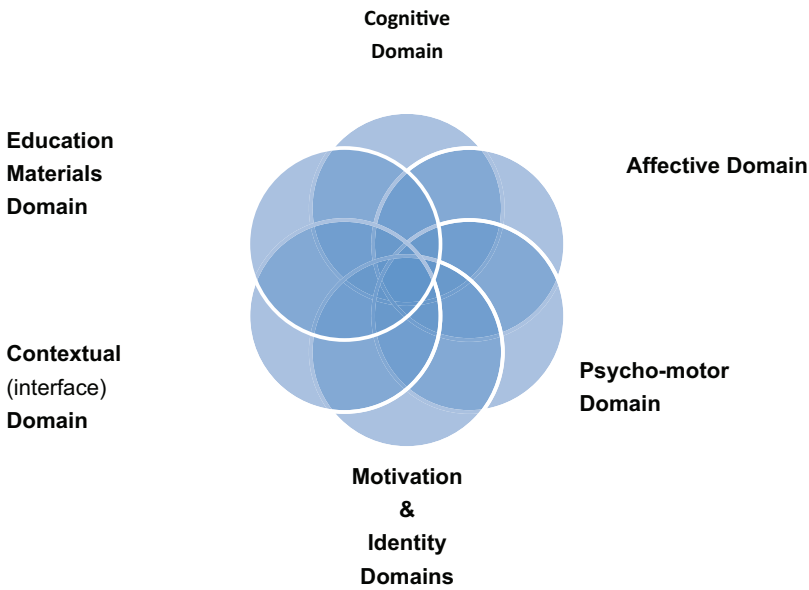


Figure G1. The Hobbs Multilingual Curriculum Cycle Framework Model was adapted from the Hobbs Curriculum Framework Model (Hobbs, 2009, p. 102; See www.auk.edu.kw Occasional Papers, April 2009, No. 3). Model reads from top to bottom, left to right, and in internal and external cycles.

Interview Question 1

How could curriculum in schools be improved to enhance multilingual acquisition in the learner with developmental considerations of when and how to introduce new languages? (If the curriculum cycle model provided on the previous page seems inappropriate in any way, then please explain.)
Answer:

Please view the model on the following page that depicts the aspects of learner dimensions; then, reflect on your own learning and answer the question on the following page. Please answer with your first immediate response.



Input}*Languages}* *Drive} Collaboration} Synergy} Performance* **= Output**
[Cognitive/Affective/Psychomotor Development X Constructivist Approach]
+ Artistic Aspect + Technological infusion + Formative Assessments **=**
Multilingual Skills *Acquisition +* ***Critical Thinking*** *Adaptations;*
Summative Assessment} Next phase/stage/level/sphere of influence.

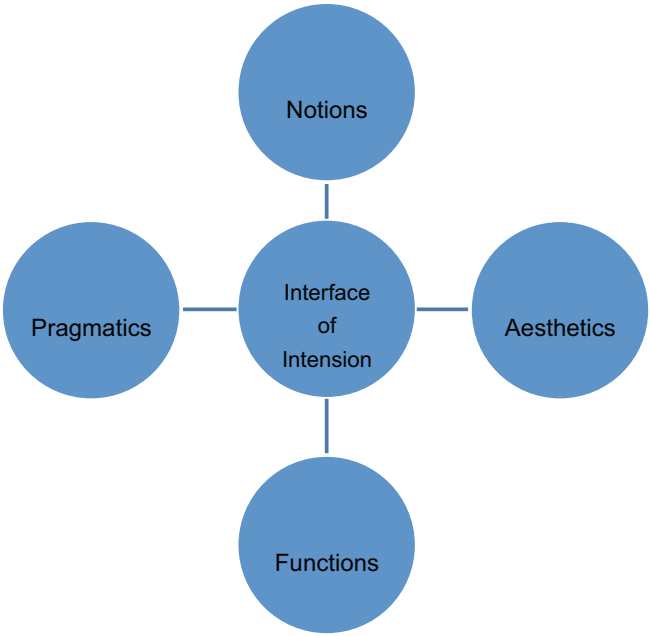
Figure G2. In the Hobbs Curriculum Instruction Human Development Interface Model, educators must consider the six overlapping spheres of development interface in individual students and instruction preparation: mental, emotional, physical, motivational, social, and material (internal and external influences).

Interview Question 2

What teaching techniques, strategies, or methodologies of instruction do you feel most enhance multiple languages learning considering the age appropriateness at different levels of development and acquisition? (If the curriculum and instruction human development interface model seems inappropriate in any way, then please explain.)

Answer:

Consider the models on the next pages with the following explanation. Reflect on notions, functions, pragmatism, and aesthetics; then, answer the next question on the page following the descriptions of the quadrants in the model. Please answer with your first immediate response.



XY Axis Interface of Intension

Figure G3. The Hobbs Intentional Paradigm of X Y Axis Interface: Continuum of Notional Functionalism traverses Pragmatic Aesthetic Continuum contains four quadrants that include (name depends on location within quadrant):
Quadrant 1: Notional aesthetics or aesthetic notionalism;
Quadrant 2: Functional aesthetics or aesthetic functionalism;
Quadrant 3: Functional pragmatics or pragmatic functionalism;
Quadrant 4: Notional pragmatics or pragmatic functionalism.
Further explanation to follow.

Quadrant 1: Notional Aesthetics exemplified

- Musical composition
- Lyrics
- Literature
- Dance
- Artistic Expression
- Poetry
- Sculpting
- Painting
- Descriptions thereof, spoken, sung, or written

Quadrant 2: Functional Aesthetic

- Architectural rendering
- Pottery
- Tapestry
- Clothing
- Transportation modality
- Shelter
- Furnishing
- Cuisine presentation
- Verbal planning and implementation thereof

Quadrant 3: Functional Pragmatism

- Engines
- Electronics
- Computer Hardware
- Machinery
- Robotics
- Utilitarian prosthetics
- Minimalist desk and chair
- Shelves and Filing cabinets
- Instructions or directions thereof

Quadrant 4: Notional Pragmatism

- Computer Software
- Accounting Setup
- Investment Portfolio
- Dietary Variation
- Alterations of Personal Hygiene Products
- Memorandum
- Recipes
- Formal and informal communication thereof

Matrix of Four Domains of Curriculum Enhancement			
Data type	*Intuitive*	*Observable*	**Data type**
Qualitative Data	*x axis* **Notional** *ideational, innovational*	**Functional**	Quantitative Data
Mixed Method Data	**Pragmatic**	*y axis* **Aesthetic** *creative*	Qualitative Data
	Intuitive & Observable	*Observable*	

Figure G4. The Hobbs Balance Model of Curriculum Enhancement includes the following four quadrants: Quadrant 1: notional; Quadrant 2: functional; Quadrant 3: pragmatic; Quadrant 4: aesthetic.

Interview Question 3

How could school leaders employ a theory of notional-functionalism interfaced with pragmatic-aestheticism (or balance model of curriculum enhancement) to enrich the multilingual development of reading, writing, speaking, or listening while diversifying student self-perception of identity? (If the intentional paradigm of XY axis interface model seems inappropriate, then please explain.)

Answer:

Please preview the model on the following page. Reflect on your own intuitions concerning languages, language processing, development, and learning. Then, answer the question on the following page.

<table>
<tr><td colspan="4">Conceptualizer
(Start here)
Message generation
(proceed downward)</td><td rowspan="3">➢ Reciprocal input
➢ Cyclical
➢ Clockwise
➢ Communciation</td><td>L1</td><td>L2</td><td>L3</td><td>Ln</td></tr>
<tr><td>L1</td><td>L2</td><td>L3</td><td>Ln</td><td colspan="4">Discourse model, situational knowledge, encyclopedia</td></tr>
<tr><td colspan="4">Monitoring</td></tr>
<tr><td>L1</td><td>L2</td><td>L3</td><td>Ln</td><td rowspan="2"><Monitoring connection>
Activation of language(s) based on received input
and desired output
(codeswitching possible)</td><td colspan="4" rowspan="2">PARSED SPEECH
<< Return to Monitoring
in
<< Conceptualizer</td></tr>
<tr><td colspan="4">Pre-verbal message, which activates one or more languages
(proceed downward)</td></tr>
<tr><td colspan="4">Formulator</td><td rowspan="5">Lexicon
L1
L2
L3
Ln
Nouns are produced in sensory processing area, Verbs in proprioceptive area of position and movement
(Cangelosi & Parisi, 2004).</td><td colspan="4" rowspan="5">Speech Comprehension System
L1, L2, L3, Ln
3 Processes of Word Recognition:
• Lexical Access
• Lexical Selection
• Lexical Integration
(Brink & Hagoort, 2004)</td></tr>
<tr><td colspan="4">Grammatical encoding</td></tr>
<tr><td colspan="4">Surface structure</td></tr>
<tr><td colspan="4">Phonological encoding

(proceed downward)</td></tr>
<tr><td colspan="4">Phonetic planning</td></tr>
<tr><td>L1</td><td>L2</td><td>L3</td><td>Ln</td><td>< Phonetic connection ></td><td>L1</td><td>L2</td><td>L3</td><td>Ln</td></tr>
<tr><td colspan="4">Articulator</td><td rowspan="2">Overt Speech</td><td colspan="4">Audition (go up)</td></tr>
<tr><td>L1</td><td>L2</td><td>L3</td><td>Ln</td><td>L1</td><td>L2</td><td>L3</td><td>Ln</td></tr>
<tr><td colspan="9">Articulator for L1 or L2 or L3 or Ln
Speech articulated output >>>>>>>>>> and >>>>>>>> Listen for response (go up) ^^^^</td></tr>
</table>

Figure G5. The Hobbs Multilingual Speech Production Model was adapted for multilinguals with neurolinguistic information added (De Bot model cited in De Angelis, 2007, p. 66 and Safont, 2005, p. 34).

Interview Question 4

After reflecting on the multilingual speech production model, what do you think teachers, curriculum designers, and school leaders should know concerning your accumulated intuitions in acquiring languages that would benefit multilingual learners (younger and older) in developing and maintaining vocabulary and grammar in multiple languages? (If the speech production model seems inappropriate in any way, then please explain.)
Answer:

Please preview the table on the following page.

Table G1

Hobbs Implicit-Explicit Passive-Active Learning Analysis

Implicit Learning		Explicit Learning	
Active Implicit	Passive Implicit	Passive Explicit	Active Explicit
Decoding	**Decoding**	**Decoding**	**Decoding &**
Listening and note-taking, many details remembered unconsciously; **Reading** quickly for specific details, but unaware of	**Listening**, but without note-taking; **Reading** for pleasure while unaware of the impact and affects of the texts.	**Listening**, but not responding, or **responding** in short utterances with little or no consideration for the answers. **Reading** material that explains a process, cause and effect, or sequential list that has other implications	**Encoding** Classroom lecture note-taking, note-organizing, note purposeful re-organizing.
Encoding	**Encoding**	**Encoding**	**Encoding**
Writing while responding to questions not previously contemplated, but with contextual knowledge.	Writing without understanding purpose; Writing spontaneously with little understanding Of context, such as a spelling pre-test or note-taking with no prior preparation.	Writing notes as a first draft with only a vague understanding of context.	Writing with an outline, strategy, and purpose. Responding with questions, orally or written.

Note. Decoding = Listening and Reading (phonologic or graphemic analysis); Encoding = Speaking and Writing (Oral or graphic production).

Interview Question 5

After reflecting on the implicit-explicit passive-active learning analysis table, what should educators know about your learning experience that could enhance teaching practices or curriculum design to improve instruction to future learners? (If the implicit-explicit passive-active learning analysis table seems inappropriate, please explain.)
Answer:

Pilot Final Questions

Thank you for your time and kind consideration in pondering your answers to these questions. Please review each of the following interview questions that were used above and evaluate each interview question by using the questions that follow.

Question 1:
How could curriculum in schools be improved to enhance multilingual acquisition in the learner with developmental considerations of when and how to introduce new languages? (If the curriculum cycle model provided on the previous page seems inappropriate in any way, then please explain.)
Were the instructions clear?
Were there any confusing words, phrases, or clauses in the question?
Was the question easy to read?
Was the question vague in any way?
Did you have any uncertainty about the model or use of the model to answer the question?
Does the question appear valid regarding multilingual education?
Do you have any presentation oriented comments for question one?
Question 2:
What teaching techniques, strategies, or methodologies of instruction do you feel most enhance multiple languages learning considering the age appropriateness at different levels of development and acquisition? (If the curriculum and instruction human development interface model seems inappropriate in any way, then please explain.)
Were the instructions clear?
Were there any confusing words, phrases, or clauses in the question?
Was the question easy to read?
Was the question vague in any way?
Did you have any uncertainty about the model or use of the model to answer the question?
Does the question appear valid regarding multilingual education?
Do you have any presentation oriented comments for question two?
Question 3:
How could school leaders employ a theory of notional-functionalism interfaced with pragmatic-aestheticism (or balance model of curriculum enhancement) to enrich the multilingual development of reading, writing, speaking, or listening while diversifying student self-perception of identity? (If the intentional paradigm of XY axis interface model seems inappropriate, then please explain.)

Were the instructions clear?
Were there any confusing words, phrases, or clauses in the question?
Was the question easy to read?
Was the question vague in any way?
Did you have any uncertainty about the models or use of the models to answer the question?
Does the question appear valid regarding multilingual education?
Do you have any presentation oriented comments for question three?
Question 4:
After reflecting on the multilingual speech production model, what do you think teachers, curriculum designers, and school leaders should know concerning your accumulated intuitions in acquiring languages that would benefit multilingual learners (younger and older) in developing and maintaining vocabulary and grammar in multiple languages? (If the speech production model seems inappropriate in any way, then please explain.)
Were the instructions clear?
Were there any confusing words, phrases, or clauses in the question?
Was the question easy to read?
Was the question vague in any way?
Did you have any uncertainty about the model or use of the model to answer the question?
Does the question appear valid regarding multilingual education?
Do you have any presentation oriented comments for question four?
Question 5:
After reflecting on the implicit-explicit passive-active learning analysis table, what should educators know about your learning experience that could enhance teaching practices or curriculum design to improve instruction to future learners? (If the implicit-explicit passive-active learning analysis table seems inappropriate, please explain.)
Were the instructions clear?
Were there any confusing words, phrases, or clauses in the question?
Was the question easy to read?
Was the question vague in any way?
Did you have any uncertainty about the model or use of the model to answer the question?
Does the question appear valid regarding multilingual education?
Do you have any presentation oriented comments for question five?
Thank you very much for your time and contemplative engagement in participating in the pilot phase of this study. I look forward to reading

all of your comments and constructive criticisms with a view to making alterations to improve the instrument to be used in this study.

Appendix H: Main Study Instrument

Interview Questions

1. With developmental considerations, at what ages should second and third languages be introduced into the curriculum?
2. Given the outcomes of the most recent research in your field, what seems to be having the greatest impact on the way students are being taught today that you know of?
3. From your experience, intuition, or research, what should all teachers know to benefit learners of multiple languages?
4. How should curriculum be enhanced to promote receptive skills of whole groups of languages, such as Slavic, Germanic, or Romance language groups?

Follow-up questions probe further:

1. At what levels of education should second and third languages be used as the medium for delivering courses such as history, science, or math?
2. How could attention to the theories of notional-functionalism and pragmatic aesthetics benefit the learning of multiple languages such as offered by Saussure and further developed by Prague linguists?
3. How has the sociolinguistic literature had an impact on your conception of multilingual education?
4. At what age should language group receptive skills be a part of the curriculum?

Appendix I: Invitation to Participate in Research

May 31, 2010

Dear Dr. [name of recipient],

As you are well aware, a trend exists toward improving multilingual education around the globe. However, some educators still seem unconvinced of the importance of how multilingual skills contribute to cognitive operation skills. Those who are convinced of this importance are not in complete agreement of how to design multilingual education to best benefit learner development in multiple languages.

The purpose of this research project is to construct a multilingual model of education based on the knowledge, perceptions, and intuitions of experts in the field of multilingual research. The definition of expert for the purpose of this project is anyone who has edited or published didactic or research oriented articles in journals or monographs. You are the expert.

Of course, your participation in this quick and easy online one-time questionnaire is voluntary, but of significant importance to the next generation of students whose education may be improved because you have answered a few probing questions based on your knowledge, experience, and intuition. Your confidentiality and anonymity are assured. The short questionnaire will be coded for the follow-up sharing of information, and you will not be individually identified with your responses.

Please understand that the data will be limited to this research project. Some of the results may appear in other formats other than this dissertation in published articles, but your anonymity is assured. If you have any concerns, then please contact me.

I sincerely appreciate your time in considering an investment of a brief amount of time to participate in this research. Answering the questionnaire should only take 10 to 20 minutes depending upon how much information, reflection, or suggestion you may decide to share. Please return the questionnaire today or tomorrow as a reply to this email message at this email address. Please also fill out the brief demographic form for categorization purposes.

Thank you for your valued input. Please feel free to follow-up with any future comments, suggestions, or information. Hearing from you in the future will be most welcome. I look forward to reading your future articles as well, and thank you for the vital information you have already shared.

Sincerely,

Robert Hobbs

Appendix J: Mid-Study Change for Greater Efficiency

Dear [Potential Participant's Name],

You are being invited to participate in research by answering a brief questionnaire on multilingual education. You are part of a stratified reputational sampling that may offer different perspectives on how to improve education to facilitate the learning of three or more languages. Your perspective is extremely important to this study.

A pilot study was conducted yielding uniformity on the interview questions addressing the problem issue of this study. The pilot study included multilingual researchers located in different countries on different continents and representing different disciplines. Your help will determine if a wider sample will produce a variety of outcomes.

The purpose of this study is toward proposing a 2010 educational model based on Internet questionnaire outcomes from multilingual researchers who represent a variety of disciplines. Improved technology has exponentially increased the amount of information in neurolinguistics and psycholinguistics. Greater concentration on multilingual research has generated significant findings in sociolinguistics, pragmatics, and other educational research that call for innovation in curriculum and instruction. The contact information has been obtained from published journals and monographs on multilingual research as well as those who submitted papers and gave presentations at the Third Language Acquisition Conference in 2009 at the University of Bolzano in Italy.

There are no evident risks involved with completing this interview as indentifying information will be coded. Benefits include contributing to research regarding multilingual education.

If you consent to answering the research questions, then the pre-published results of this study will be provided to you. Your answers will be completely confidential. There will be no way for anyone to discern who said what or who participated in the study.

Please put an X next to the word Yes and reply to this email in order to receive the questionnaire.

Do you consent to participate in research? YES

(Please place an X after "yes" above)

Thank you and I look forward to sharing the data outcomes.

Sincerely,

Robert Hobbs

Appendix K: Main Study Data Analysis

Data Analysis of Multilingual Researcher Responses

Q1 Data

Q1. What ages should L1 and L2 be taught?

1. L2 age 7 or 8; L3 age 9.
2. Depends on context – how comfortably middle class they are.
3. Depends on context: Migrants L1 = mother tongue, L2 local language, L3 at age 8, first foreign language should be a syntactically complex language like German or French, then English afterward because it will be easier; Local children L2 at age 8 because the mother tongue is adequately developed. Children in bilingual or multilingual families can start sooner if they are in daily contact with the languages.
4. ASAP provided L1 is adequately taught.
5. L2 at 9 and L3 at 13.
6. L2 at 6 (depending on how it's handled); L3 – not qualified to answer.
7. ASAP. Depends on context. Migrant children at age 2 or 3 for L2. Most specialists say age 5 for L3 for migrant kids. Local kids L2 at 7 or 8 and L3 at 10.
8. Need: appropriately trained and motivated staff available, physical conditions age appropriate, and continuity is ensured. [ie context]
9. ASAP
10. ASAP as long as methodology and expectations are age-appropriate.
11. Depends on language type and quality of input for L2 & L3. If input is 3 or 4 hours per week, then ages 11 to 12 (Garcia Mayo & Garcia Lecumberri, 2003). If high quality input of 8 hours per week is available, then age 8.
12. L2 in KG if feasible, otherwise age 6 in grade 1. L3 should follow some years later.
13. L2 at 11 and L3 at 15.

Follow-up to Q1.
At what levels of education should second and third languages be used as the medium for delivering courses such as history, science, and math?

1. Depends on quality and frequency of input. Teacher training is critical for mainstream course delivery in a foreign language as in CLIL (Content and Language Integrated Learning). The teacher must have

near native fluency and content knowledge. If this criteria is met, then earlier is better. (CONTINGENT)

2. 2.Grade 1 age 6.
3. Middle school (early start). High school (late start). CONTINGENT
4. After 2 years of intensive instruction, all subjects. CONTINGENT
5. Depends on policy. If L2 & L3 taught before 13, then L2 medium in jr high, L3 in high school. If L2 is later, then medium in jr high or high school and L3 medium in college. CONTINGENT
6. From the start if circumstances are right. CONTINGENT
7. Any level works if teachers are appropriately educated. CONTINGENT
8. Depends on medium of instruction. CONTINGENT
9. Any age. Teacher training, materials, methodology indispensable. Native language children with host country children works quite well in international settings. CONTINGENT
10. ASAP
11. Reading & writing in L1 until 3rd or 4th grade (ages 8 or 9); history, science, math in L2 from grades 1 or 2 (ages 6 or 7).
12. After 5 or 6 years of learning a language 2 to 3 hours per week (or after achieving an intermediate level in the target language. CONTINGENT
13. Secondary (senior high school). Alternative: adopt content-based language teaching approach. That is, the language course itself includes topics adapted from the other courses' syllabi. ALTERNATIVE

Q1 Analysis

Definitions

ASAP = As Soon As Possible

KG = kindergarten

Q1: When to teach L2, L3?

Depends on Context: 2, 3, 7, 8, 10

ASAP: 4, 7, 9, 10 (with contextual stipulations for 10)

<u>Specifics offered</u>:

L2 at 6: #6, #12 (if KG is not feasible)

L2 at 7 or 8: #1 , #7 (migrants ASAP)

L2 at 8: #2 (local kids at 8; migrants ASAP), #11 stipulating age 8 if 8 hours per wk

L2 at 9: #5

L2 at 11: #13

L3 at 5 if migrant: #7 (L2 ASAP)
L3 at 8 if migrant: #5 (L2 ASAP)
L3 at 9: #1 (L2 at 7 or 8)
L3 at 13: #5 (L2 at 9)
L3 at 15: #13 (L2 at 11)

Q1 Follow-up: When to use L2 or L3 as medium?

CONTINGENT ANSWERS: 1, 3, 4, 5, 6, 7, 8, 9

Summary of Q1 and Q1 follow-up:

When to start L2 and L3 in schools is context dependent for 5 out of 13 responding multilingual researchers. The context includes adequate qualified teachers, appropriate materials, and research-based methodology. Most participants asserted that L2 should be taught ASAP or in the early primary years. 11 of 13 participants suggested L3 be taught ASAP or before age 10 while only 2 of 13 Participants suggested learning L3 at 13 and 15.

For using L2 or L3 as a medium, most respondents offered contingent answers. Those contingencies included: teacher abilities (#1, 7, 9, 13), POLICY (#3, 5, 6), appropriate learning input (#1, 4, 6, 12), and appropriate materials & methodology (#1, 4, 6, 9, 12). The alternative suggestion by #13 that did not contradict other responses was to teach content in the language course if the teacher of the content course could not teach in the target L2 or L3.

Q2 Data

Q2. Given the outcomes of the most recent research in your field, what seems to be having the greatest impact on the way students are being taught today that you know of?

Theme of dismay that in spite of all the research, not enough change is taking place due to lack of communication of outcomes, teacher training, and under funded programs (1, 3, 4, 6, 7). DISMAY (NEEDED CHANGE) (TEACHER TRAINING)

Constraints of educational contexts [although it should be L2 acquisition outcomes]
(#1, 2). CONSTRAINTS OF CONTEXTS (DISMAY) (NEEDED CHANGE) (LACK OF ADEQUATE TEACHER TRAINING)

Ln promotes metalingual awareness & learning flexibility (#2). ADVANTAGES (NEEDED CHANGE if not conforming to ML education) (TEACHER TRAINING)

Amazed at practice improvement determination of teachers in difficult situations with heavy constraints and under funded reforms (#3). AMAZEMENT (DESPITE CONSTRAINTS) ADVANTAGE (IN SPITE LACK OF TEACHER TRAINING)

Misconception that formal teaching is useful for children under 10, because what needs to occur are activities of learning interaction that compell and motivate children to learn Ln (#4). MISCONCEPTION (NEEDED CHANGE) (TEACHER TRAINING)

Motivation, aptitude, foreign language strategies and awareness (#5). ADVANTAGES (NEEDED CHANGES if not conforming to ML education) (TEACHER TRAINING)

The dichotomy between what teachers think is good for learners and what they can actually do (#6). MISCONCEPTION (NEEDED CHANGE) (TEACHER TRAINING)

In spite of all the research, students are not taught according to principles of L3 acquisition (#7). LACK OF DISSEMINATION OF INFORMATION (DISMAY) (NEEDED CHANGE) (TEACHER TRAINING)

Dismay at the double standard of supporting multilingualism, but discrimination against immigrants speaking their own mother tongues (#8). DISMAY (NEEDED CHANGE)
(TEACHER TRAINING)

Testing companies lack knowledge and make too much money while negatively monopolizing education (#9). DISMAY (NEEDED CHANGE)

Ln needs to be taught in linked ways so students understand similarities and differences while learning is made easier (#10). NEEDED CHANGE (TEACHER TRAINING)

The benefits of immersion [massive exposure] such as teaching other subjects in the language are important while concentrating on Ln comprehension interactively with conversation and dialogue; teachers should ask students to correct their own errors; then explain if students cannot and follow up with opportunities for students to demonstrate correctness. Written follow-up is important with teachers making corrections (but never correcting student opinions or values). Fun is important because learning should never be forced. Sleep is imperative for proper brain functioning (#11). NEEDED CHANGES
(TEACHER TRAINING)

Too many teachers still rely on the grammar approach to teaching when they should be employing focus-on-form techniques (see Mackay, 2007) (#12). NEEDED CHANGE
(TEACHER TRAINING)

Accuracy-based approaches are better than communicative approaches at learning onset; then, later should be supplemented by fluency-oriented activities (#13). NEEDED CHANGE (TEACHER TRAINING)

Q2 Analysis

Theme 1: Needed Changes (13, 12, 11, 10, 9, 8, 7, 6, 4, 3, 2, 1) ALL
Theme 2: Teacher Training (1, 3, 4, 6, 7, 9, 10, 11, 12, 13)
Theme 3: Dismay (1, 3, 4, 6, 7, 8)
Theme 4: Constraints (1, 2, 3)
Theme 5: Advantages of Multilingual Education (2, 3, 5)

Q2 Follow-up Data

Follow-up to Question 2. How could attention to the theories of notional-functionalism and pragmatic aesthetics benefit the learning of multiple languages such as offered by Saussure and further developed by Prague linguists?

1. Complex question.
2. Not familiar.

3. Complex question.
4. Complex question.
5. Saussure and Prague theories will enhance learner metalinguistic skills and promote analytical and systematic language learning.
6. By adding to the mix.
7. Complex question.
8. Complex question.
9. Learning of multiple languages could benefit a lot from the application of Saussure and Prague theories.
10. These linguistic theories don't belong to my applied linguistic universe.
11. This fundamental difference between langue (linguistic system) and parole (language use) should form a basis for teaching methodologies. Students should be taught structures with context in accordance with goals and needs of learning. Students should understand concepts of langue and parole, but pragmatics should be emphasized.
12. Can't answer this question.
13. Contrasting how these notions and functions are realized in the target languages would be facilitative.

Q2 Follow-up Analysis

Theme 1: Too difficult to answer (1, 2, 3, 4, 7, 8, 10, 12).
Theme 2: Advantages (5, 6, 9, 11, 13)

Summary of Q2 and Q2 Follow-up:

Q2: Greatest impact due to research outcomes.

Theme 1: **Needed Changes** (13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1) ALL
The participants were unanimous in the first theme of "needed changes" in multilingual education. The needed changes follow. Better communication and teacher training is needed to reflect the recommendations of research outcomes. Mitigation of educational constraints (theme 4) is necessary. Multilingual education implementation is needed to increase metalinguistic awareness and learning flexibility (advantages: theme 5). Greater funding is needed to support educational reforms (investment in teacher training: theme 2). Teachers of young children need to understand that language learning must be fun and not formal teaching. Teacher training is needed to enhance in learners their motivation, aptitude, foreign language strategies, and

linguistic awareness. Improved teacher education is necessary so that teachers have a better understanding of what learners can actually do. Improved information dissemination to teacher training programs is needed so that L3 principles will be used to teach L3. Attitude changes are necessary so that educators stop discriminating against low status languages in order to improve student motivation for learning their mother tongues and ultimately reinforce L2 and L3 learning. Testing companies should not be monopolizing education while more funds should be spent on teaching than testing. Languages need to be linked by teaching similarities and differences to support improved learning; improved teacher education would support this notion.

The benefits of immersion [massive exposure] such as teaching other subjects in the language are important while concentrating on Ln comprehension interactively with conversation and dialogue; teachers should ask students to correct their own errors; then explain if students cannot and follow up with opportunities for students to demonstrate correctness. Written follow-up is important with teachers making corrections, but never correcting student opinions or values.

Fun is important because learning should never be forced. Teachers should communicate to students the importance of sleep for proper brain functioning. Too many teachers still rely on the grammar approach to teaching when they should be employing focus-on-form techniques. Accuracy-based approaches are better than communicative approaches at learning onset; then, later should be supplemented by fluency-oriented activities.

Theme 2: Teacher Training (1, 3, 4, 6, 7, 9, 10, 11, 12, 13)

At least 10 participants mention in explicit or implicit ways that increased and improved teacher training is necessary to enhance multilingual education. Lack of quality and quantity of teacher training is expressed by participant dismay (theme 3) and as an educational constraint (theme 4). Participant 1 refers to constraints of education in reference to adequate teacher training. Participants 3 & 4 explicitly mention teacher training. Participant 6 suggests teachers need to have realistic expectations in reference to needing to improve teacher training. Participant 7 asserts that L3 is usually not taught according to L3 principles that implies a need for improved teacher training. Participant 9 indicates that a greater investment is necessary in teacher training. Participant 10 recommends training teachers to have learners exploit their knowledge of previous languages by linking the languages. Participant 11 suggests that greater attention to teaching languages interactively while focusing on production that could be

accomplished in improved teacher training. Participant 12 stated that teachers should focus on form; thus, including focus on form literature would improve teacher training. Participant 13 recommends that teachers concentrate on accuracy at the early stages of learning; thus, teacher training should demonstrate that accuracy in early communication would ease fluency at later stages of learning.

Theme 3: **Dismay** (1, 3, 4, 6, 7, 8)

Multilingual researchers expressed dismay that lack of communication of research outcomes to teachers causes teachers to continue using outmoded teaching methodologies, especially concerning needed L3 acquisition strategies. Despite improved knowledge, teacher training lags behind and program initiatives go under-funded. These constraints slow progress in education. Teachers of young children still try to use formal teaching when they should be creating fun language acquisition activities. Continuing prejudice against low status languages causes discrimination against certain mother tongues.

Theme 4: **Constraints** (1, 2, 3)

Constraints include lack of appropriate or up-to-date materials, lack of quality teacher training, and teacher lack of knowledge of target languages. In spite of these constraints, an international teacher training expressed amazement over the determination and resiliency of teachers, especially in politically distressed or repressed environments.

Theme 5: **Advantageous** (2, 3, 5)

The impact of the advantages of multilingual education is an important change. ML students experience increased metalinguistic awareness and learning flexibility that improves their language acquisition. Improved and appropriate multilingual teaching strategies increase student motivation, aptitude, learning strategies, and language awareness.

Q2 Follow-up: Notional functionalism and pragmatic esthetics

Theme 1: **Too difficult to answer** (1, 2, 3, 4, 7, 8, 10, 12). Eight of 13 respondents stated they were not familiar enough with these linguistic theories to respond.

Theme 2: **Advantageous** (5, 6, 9, 11, 13)

Five of 13 participants spoke of the advantages of notional functional and pragmatic esthetic theories. Those advantages follow. Notional functionalism and pragmatic esthetic concepts will improve student metalinguistic skills, greater language analysis, and an understanding of systematic language learning. Combined with other theories, language

learning will improve multiple language learning. Learner understanding of their linguistic systems and use of language will improve their learning. When teachers explain structures within contexts, learning goals and learner needs will be achieved. Contrasting how notions and functions facilitate language acquisition will improve the learning of target languages.

Q3 Data

Q3. What should teachers know?

1. Sociolinguistic context (2, 9, 13)
    Language background of students (3, 4, 6)
    Typological similarities & differences between L1 & Ln (2, 3)
2. Educational linguistics (3, 5)
    Benefits are location dependent (1)
    Language structure (5)
    How to scaffold (6)
    How to respond (3)
3. Ln of students (1)
    Teacher training (1, 2, 5)
    Adapt teaching style to take advantage of student Ln background (1, 2, 4)
4. Individual factors to approach learners individually (learning style) (1, 2, 3)
5. The languages being taught (teacher training) (13)
6. Plurilingual competence = integration (not merely additional Ln)
    Teaching should be coordinated (2)
    Differentiated teaching for students studying Ln as L1, 2, 3, 4 etc
    Learners draw on previous Ln (1, 3)
    Teachers should bridge languages
7. Research outcomes (teacher training)
    Specific knowledge about teaching L2 & L3 (teacher training)
8. Teachers should know how kids learn, feel, behave, live
    Teacher proficiency in languages (13)
    Know what students can realistically do.
9. Teachers should know that humans are "potentially multilingual by nature" (7)
    How languages develop (1) and interact (6)
    Teachers should shift from monolingual perspective
    Should know sociocultural context – status of languages (1, 2)

Teacher Training (2, 3, 7, 8)
10. Multilingual students have complex language systems (not predictable)
Teachers should NOT assume anything
Should consider placement of multilingual students (6, 11)
(multilingual students may get bored in a "regular" classroom)
11. Ln is good for brain health
Ln development & old people – delays brain aging
Ln knowledge promotes various form-meaning connections
(facilitates learning)
Multilinguals are more language aware (6, 10)
12. Code-switching is necessary to deal with Ln in a flexible manner
Teachers should reinforce that Ln is an advantage.
13. Contrastive comparison of Ln's; sociolinguistics (1, 2, 5, 8)

Q3 Analysis

Theme 1: Teacher Training (All participants)
Theme 2: Multilingual Concepts (3, 6, 7, 9, 10, 11, 12, 13)
Theme 3: Teacher knowledge of target language (1, 2, 3, 5, 8, 13)
Theme 4: Pedagogical concepts (2, 3, 4, 6, 8)
Theme 5: Sociocultural or Sociolinguistic Context (13, 9, 2, 1)
Theme 6: Ln background of each student (3, 4, 6)

Q3 Follow-up Data

Q3. How has the sociolinguistic literature had an impact on your conception of multilingual education?

1. Personal experience and empirical research in neuroscience has played a greater role.
2. Pure linguistic side – self-disqualified from answering.
3. Language learning and language education cannot be separated from other **social processes;** sociolinguistic literature makes this concept very clear.
4. German as L2 English as L3 for **immigrants**.
5. Designers of educational materials should consider **attitudes of society** toward target Ln as context.
6. Concern relates more to **micro** & **macro** dilemma in research to be translated into creating educational materials. [individual & societal]
7. Ln does not function in isolation; Ln is a **social phenomenon**.

8. Complex **political** situation has more to do with what transplanted teachers take back to their home countries than what they actually learn [as an impact of sociolinguistic factors].
9. Yes. Sociolinguistic influence has been **significant.**
10. There are at least **4 dimensions of sociolinguistic influence**: a) theory & research on languages in contact (and conflict) in multilingual areas where the most convincing models ask (i) for the acquisition of both **minority** and majority of the languages by both parts of the population, and (ii) acquisition of border languages; b) migration linguistics claiming that **migrant** children should get a bilingual education (cognitive advantage for migrants) (strategic advantage for host country); c) advantages of plurilingualism (multilingual corporations enjoy **plurilingual advantages**) (see ELAN study); d) studies on **plurilingual interactions** (creativity of plurilingual speakers/pluricompetence in practice).
11. Sociolinguistics: influence of **society** on languages and languages on **society**, as well as the individuality and uniqueness of each learner and the impact of factors such as "class", gender, age on language use of multilinguals.
12. One must know elements of sociolinguistic data: linguistic background, language **policy** and planning, language **attitudes**, etc.
13. "The impact is limited to the **critical** and **pragmatic** and **communicative** aspects of the languages."

Q3 Follow-up Analysis

Theme 1: Language impact on society (12, 11, 10, 9, 8, 7, 6, 5, 4)
Theme 2: Significance of sociolinguistic impact (12, 11, 10, 9, 8, 6, 5, 4, 3)
Theme 3: Sociolinguistic impact on the individual (13, 12, 11, 10, 6, 4, 3, 1)
Theme 4: Sociolinguistic impact on education (12, 11, 10, 8, 6, 5, 4, 3)
Theme 5: Reciprocal immigrant impact (12, 11, 10, 8, 5, 4)
Theme 6: Social phenomenal aspect (13, 12, 10, 7, 3)
Theme 7: Attitudes toward particular languages (12, 11, 10, 8, 5)
Theme 8: Policy and political aspect (12, 10, 9, 5)
Theme 9: Societal impact on language or languages (11, 10, 5)
Theme 10: No impact of literature (1, 2) [stated; implication otherwise for #1]

Summary of Q3 and Q3 Follow-up

Q3 Analysis

Theme 1: Teacher Training (All participants)
Theme 2: Multilingual Concepts (3, 6, 7, 9, 10, 11, 12, 13)
Theme 3: Teacher knowledge of target language (1, 2, 3, 5, 8, 13)

Theme 4: Pedagogical concepts (2, 3, 4, 6, 8)
Theme 5: Sociocultural or Sociolinguistic Context (13, 9, 2, 1)
Theme 6: Ln background of each student (3, 4, 6)
All respondents mentioned either explicitly or implicitly that adequate teacher training is extremely important. The specific components of teacher training included pedagogical skills and concepts, thorough knowledge of target languages, and multilingual methodologies as well as understanding sociocultural and sociolinguistic contexts. Necessary pedagogical knowledge and skills include how to scaffold [arrange learning from easier to more difficult] and coordinate learning as well as respond appropriately to learners. Teachers should understand child and language development. Language knowledge should include structural and typological similarities and differences as well as fluency. Multilingual concepts needed by teachers include knowing how to bridge between languages, integrate languages in a plurilinguistic manner, and help learners draw on previous language learning to enhance skills. An aspect of multilingual competence includes understanding linguistic contexts, educational linguistics, adapting teaching to language background, learning styles, and differentiating between L1, L2, L3, and L4 teaching.

Q3 Follow-up Analysis

Theme 1: Language impact on society (12, 11, 10, 9, 8, 7, 6, 5, 4)
Theme 2: Significance of sociolinguistic impact (12, 11, 10, 9, 8, 6, 5, 4, 3)
Theme 3: Sociolinguistic impact on the individual (13, 12, 11, 10, 6, 4, 3, 1)
Theme 4: Sociolinguistic impact on education (12, 11, 10, 8, 6, 5, 4, 3)
Theme 5: Reciprocal sociolinguistic immigrant impact (12, 11, 10, 8, 5, 4)
Theme 6: Social phenomenon aspect (13, 12, 10, 7, 3)
Theme 7: Attitudes toward particular languages (12, 11, 10, 8, 5)
Theme 8: Policy and political aspect (12, 10, 9, 5)
Theme 9: Societal impact on language or languages (11, 10, 5)
Theme 10: No impact of literature (1, 2) [stated; implication otherwise for #1]

Summary and Extrapolation of Q3 and Q3 Follow-up

Nine of 13 participants discussed concepts related to the impact that language has on society. Nine of 13 participants referred to the significance of the sociolinguistic impact. Eight of 13 participants alluded to the importance of the sociolinguistic impact on the individual. Eight of 13 participants acknowledged the sociolinguistic impact on education. Six of 13 participants referred to the sociolinguistic impact on the immigrant or the impact of the immigrant on the sociolinguistic environment. Five of 13

participants alluded to the social phenomenon aspect of sociolinguistics. Five of 13 participants referred to attitudes toward particular languages as an important aspect of sociolinguistics. Four of 13 participants mentioned policy or political aspect of sociolinguistics. Three of 13 referred to the impact of society on language. Two of 13 participants stated they were not familiar with the sociolinguistic literature, but one revealed experience as a simultaneous bilingual that epitomizes a circumstance prevalent in sociolinguistic literature.

Q4 Data

How should curriculum be enhanced to promote receptive skills of whole groups of languages, such as Slavic, Germanic, or Romance language groups?

1. The problem is productive skills, which can be helped with dictogloss and text reconstruction.
2. Not familiar with these specific educational methods.
3. Schools should offer specialized courses in reading and **listening** [**vocabulary** comprehension]. A single language course cannot cover all skills: Ln Reading; Ln Listening, etc.
4. Languages from same groups could facilitate positive transfer [**receptivity**] to develop strategies to use **similarities**.
5. Common curriculum. [use of a common curriculum to teach group language **receptivity** and **similarities**]
6. No suggestions.
7. Awareness raising. [importance of raising awareness of the **similarities** of languages]
8. Interesting question.
9. Principles of EuroCom.
10. Intercomprehension as per EuroCom 4, Galatea, EuroComRom/ Slav/ etc.
11. **Vocabulary** should be in context. TPR approach improves receptive skills. More reading activities will place a greater emphasis on **receptive skills**.
12. Teachers should have receptive skills in group languages. Group Ln should not be taught separately, but through compare and contrast to bring awareness of **similar** cognates and faux ami [same **vocabulary** word in different languages that has a different meaning, such as "sensible" in French that means sensitive; "gift" in German means poison; "simpatico" (Spanish and Italian), "simpatisch" (German), "simpatetsky" (Russian and Czech), "sympatique" (French) mean

"nice" or "pleasant" and have nothing to do with the meaning of "sympathy" in English.]

13. Focus more on **vocabulary** and **listening** activities.

Q4 Analysis

Theme 1: Teaching Receptivity [Listening, Reading, Vocabulary, Intercomprehension] (13, 12, 10, 5, 4, 3 and EuroCom 9)

Theme 2: Teaching Similarities of Languages (12, 7, 5, 4, and EuroCom 9, 10)

Theme 3: Common Cognates of Vocabulary (13, 12, 11, 3, and EuroCom 9, 10)

Theme 4: EuroCom (10, 9)

Q4 Follow-up Data

At what age should language group receptive skills be part of the curriculum?

1. Reading age 5 to 6; Listening earlier for L2 & L3
2. KG
3. As soon as L2 and L3 are being taught
4. Beginning of primary school, age 6
5. ASAP
6. No view
7. Language group?
8. Depends on context.
9. ASAP
10. Receptive skills first. KG.
11. From the beginning.
12. ASAP
13. ASAP

Q4 Follow-up Analysis

Theme 1: Early Teaching of Language Group Receptivity (13, 12, 11, 10, 9, 5, 4, 2, 1)

Theme 2: ASAP (13, 12, 11, 9, 5)

Q4 Summary and Extrapolation

The predominant theme prevalent in the answers to question 4 was that teaching language group receptivity was important to seven participants. Receptivity included the concepts of teaching listening, reading, vocabulary, and intercomprehension. The second theme was the importance of teaching similarities of languages in language groups as expressed by six participants. Nearly the same but more specific, six participants alluded to the third theme of the importance of teaching the common cognates of vocabulary of

language groups. Two participants comprise the fourth theme of EuroCom in support of teaching receptivity, similarities of languages, and common cognates of vocabulary in language groups.

The follow-up question to the fourth study question asked what age would be most appropriate for teaching language group receptivity. Nine of the participants offered answers that suggest they believe that teaching language group receptivity needs to commence at an early age. More specifically, five respondents recommended that language group receptivity skills be taught as soon as possible.

Appendix L: Notional-Functional Aesthetic-Pragmatic History

Functional Notional Theory

Ferdinand Saussure originated functional-notional theory at the turn of the 20th century in Switzerland, but died unexpectedly in 1913 before publishing anything on the subject; Sechehay and Bally (1964) were students of Saussure's who gathered his notes posthumously to publish them, which were translated by Wade Baskin from French to English in the 1964 version published by Peter Owen in London. Leska, Nekvapil, and Soltys (1993) lauded the significance of Saussure's influence on the Prague Linguistic Circle that continued throughout the 20th century. The Prague Circle included Methesius, Trnka, Hvaranek, Vachek, Duskova, and many others who embraced and published extensively on many aspects of functional notionalism, which included analysis of morphology, phonetics and phonology, lexicology, lexicography, and syntax (Harris, 1993; Mathesius, 1983; Vachek & Duskova, 1983; Zgusta, 1971). Furthermore, Prague linguists are specifically noted for discussing functional load, synchronic and diachronic phonology, topic versus dominance-chaining, ethnoenquiries, and paradigmatic structuralism (Tobin, 1988). Duskova is noted as having more citations in the ubiquitous *A Comprehensive Grammar of the English Language* than any other grammarian (Quirk, Greenbaum, Leech, & Svartvik, 1995).

Publications at the end of the 20th century from Prague linguists turned to mathematical analysis of linguistics by correlating valencies to language (Hajicova, Sgall, & Pit'ha, 1990; Panevova, 1994); however, the Prague circle was also interested in the cultural and sociolinguist influences of language (Leska, Nekvapil, & Soltys, 1993) as well as analyzing the difference between standard language and aesthetic poetic language (Mukarovsky, 1983). The Prague Linguistic Circle, a.k.a. the Prague school, was one of the six major linguistic categories of thought in the 20th century (Sampson, 1989; Harris, 1993). Functionalism also influenced western European thought on linguistics (Nuyts, 1992; Givon, 1995) and lexicography (Adamska-Salaciak, 2006). This influence of notional functionalism stems from continued interest in Saussure throughout the 20th century, which can be observed in the retranslations of Saussure's work (Harris, 1987; Thibault, 1997). Saussure's influence continues in the 21st century (Byrnes, 2008). The inspiration for the notional functional and pragmatic aesthetic interface continua derives from a synthesis of the writings of these European linguists. Functional notionalism has great

significance to multilingual education because the Swiss, Czechoslovak, Czech, and Slovak educational systems have always included multiple languages, and the Czech literature mentions that the importance of learning languages early was embraced by Czech linguists as early as the 19th century (Pit'ha, 1998). The famous Comenius (Komensky) was Czech.

The implication for education is that school leaders should seriously take into consideration the aesthetics, pragmatics, and functionality of their notions for curriculum and instruction, thereby incorporating polarizations of aesthetics and functionality as well as the improvements of pragmatics for implementing lessons, the practicality of student outcomes, and striving for enhancement and creativity of notions that manifest into developed ideas. Schlechty (2005) emphasized six qualities for educational framework: authenticity, choice, variety and novelty, performance affirmation, affiliation, and product focus. Authenticity relates to achieving pragmatic and functional goals that resemble or emulate real world application; these goals must be clear to students substantively and operationally, which include what is done and how it is done via affiliations. Offering students choice, variety, and novelty stimulates their creativity and correlates with the notional and aesthetic aspects of the diagrammatic interface. Affiliation is the methodology employed to synergize students so they may reach as far as they can to achieve the extremes of the continua so their student products are aesthetic in design, functional in clarity, practical in implementation, and novel in the notion. One may deduce from Schlechty (2005) that authenticity and novelty contribute to performance affirmation as well as intrinsic motivation. Students may be compelled to emulate educators by pursuing continuous improvement throughout life.

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Index of Authors

About the Author

Dr. Robert Dean Hobbs graduated from Marshall University with a BA degree in psychology and marketing, but earned the marketing credits in London, England, in a program that incorporated visiting Lloyds of London, Ford of Europe, Westland Aircraft, London Brick Company, Wiggins Shipbuilding, Wedgewood Ceramics, Guiness Brewery, and the sister company of Huntingon Alloy in Wales. Hobbs had studied Latin in high school, French in primary school and university, and Spanish at two universities. The international business semester in Europe gave him the opportunity to use Latin when reading cornerstones of cathedrals throughout Europe, and speak and read French and Spanish in Paris and Barcelona. In Genoa, he could understand Italian because of the French, Spanish, and Latin, but later realized how illiterate he felt in St. Petersburg (at that time Leningrad) and Moscow because of not being familiar with Russian orthography - Cyrilic.

After completing his time at Marshall, Hobbs attended Atlanta Area Tech for computer certification that led to employment at Georgia State University as assistant coordinator of computer information in the Registrar's Office, and the only gymnastics coach in the summer program at GSU, as well as the local boys and girls clubs. As members of the USGF – United States Gymnastic Federation – they competed with other gymnastics teams in Georgia. As a post-graduate student while at GSU, Hobbs studied Business Law, Real Estate Law, Appraising (Real Property Valuation), Entrepreneurial Business, and Tax Law. Shortly, he became the assistant district manager for a tax preparation company supervising 16 offices and 300+ employees and teaching Tax Law Update; then later became a Loan Officer for Great Western Bank. Within several years, Asia beckoned?

From 1992 to 1994, Hobbs taught Business English in Japan in mornings and evenings for companies in metro Tokyo such as Hitachi in Kokubunji, Nuclear Engineering in Hamamatsucho, Daiwa Seiko in Shinjuku, Dai Hyaku in Kokuryo, Mitsubishi Ginko (Bank), and a computer software company in Ikebukuro while also studying Japanese in late mornings. Japanese quickly became L2 (second language) in dominance over French, Spanish, and Latin. Friendships in Tokyo with expatriots from South America meant Spanish became (L3) more dominant than French (original L2), and friendships with a Japanese priest meant use of Latin (L4) more than French (L5) in Tokyo because his Japanese priest friend could not utter a sentence in English without half of the words being in Latin. Constant

translation among Japanese, Latin, and English seemed to be the basis of the friendship.

Of interest to a psycholinguist is that Hobbs was L1 English and L2 French, then, added L3 Latin in high school, but without supporting French. Subsequently the order changed to L1 English, L2 Latin, L3 French, but reversed in university after studying French, but not Latin to L1 English, L2 French, L3 Latin. Next, Hobbs studied L4 Spanish. Within weeks, the language order was L1 English, L2 French, L3 Spanish, and L4 Latin. Within months the order changed again to L1 English, L2 Spanish, L3 French, and L4 Latin. After a few days in Japan, Japanese went from L5 to L4 overtaking Latin. After a few weeks, Japanese went from L4 to L3 overtaking French. After a few months, Japanese went from L3 to L2 overtaking Spanish, and after meeting a Japanese priest who used 50% Latin when speaking English, L5 Latin overcame L4 French. Reading *A Dynamic Model of Multilingualism* by Philip Herdina and Ulrike Jessner was extremely meaningful due to the constantly changing language dynamics caused by moving from USA to Europe to USA to Asia to USA to Europe to Hawaii to Middle East to USA to Uruguay to Dominican Republic during four decades.

Between 1994 and 1996, Hobbs worked for the Small Business Administration (SBA) as an underwriter in the Complex Loan Department of the Disaster Division, working with hurricane and earthquake victims in Florida and California. Meanwhile, RDH checked out 38 cassettes of different languages over a 2-year period from the public library in a constant vigile to prepare for multiple language recognition and essential words for multiple language production for living and traveling in Europe for the next several years. Not known at that time, Hobbs would study Comparative Linguistics under the best English and comparative linguistics philologist in Berlin. Hobbs' brother, Joe, obtained an international post in Prague as the Health & Safty Manager for the Czech Refining Company and invited RDH to help the family with three children get acquainted with living abroad.

From 1996 to 1998, Hobbs taught English at Czech Technical University in Prague, and Business English for businesses and banks, such as Agrobanka, Swiss Bank, Ringier Publishing, Droxy Pharmaceuticals, Pepsi, Tesco, and Czech Telephone Company. This era in Prague was only seven years after the Velvet Revolution and a few years after the Velvet Divorce. Every week, Hobbs and his family could notice more products from Western Europe and the USA in the supermarkets. A bagel restaurant opened on the castle side of the Vltava River. At Czech Technical University for graduate students of engineering and architecture, Hobbs created a real

estate appraising seminar based on Market, Cost, Rental, and Reconciliation Approaches to calculating value so that the graduate students would be familiar with what would be coming soon as the Czech Republic continued to change from a controlled centralized economy to a market economy. Looking up the value of property in a "book" was going to be an outdated practice.

While in Prague, Hobbs attended classes in English Linguistics at Charles University (Karlova Univerzita) taught by Dr. Libuse Duskova, Dr. Alex Klegr, Dr. Jarmila Mothejzikova, Dr. Eva Hajicova, and Dr. Jan Klegr in Syntax, English Stylistics, Lexicology, Lexicography, Didactics & English Pedagogy, General Linguistics, and History of English (Middle and Olde English), submitted a 200-page thesis based on a 150 page specialized book he wrote on purchasing and financing real estate, and studied Czech in courses at two universities. Dr. Duskova was one of the most prominent English professors on the planet with more citations in the Quirk et al (1995) *Comprehensive Grammar of the English Language* than any other researcher in the world. On Saturdays, Hobbs used the Scholars Library within the University library because the books could not be checked out and could always be located, unlike the main library. In the library, he met a Vietnamese university student who invited him to meet his family in the border town of Cheb where his five year-old Nephew spoke Vietnamese, German, and Czech, and was learning English from Sesame Street on television. Since the little Vietnamese boy knew German, Czech, and Vietnamese and had never heard of French, Spanish, and Latin, his facial expression revealed that he thought that Hobbs was an idiot for not speaking German and Czech.

In 1997, Hobbs spent the summer using the English Linguistics Library and the General Linguistics Library of Hamburg University by permission of Dr. Gunter Radden. Sometimes, during the summer vacation, the General Linguistics Library was unlocked for him to use. All of the books on recommended reading lists that were missing in Prague could be found in Hamburg. The summer demographics were interesting at the University of Hamburg because Hobbs met students from Cameroon, Kabul Afghanistan, Senegal, Greece, and Turkey. Berlitz also provided a German course for the summer and Berlitz training in Hannover – one hour away, all day, for five days. In Germany, young men from Syria, Iraq, and Afghanistan said that they would be shot if they returned to their countries because they had openly disagreed with directives from the regimes.

Hobbs studied Indonesian at the Indonesian Embassy in Prague on Saturdays with university teenagers who had Czech mothers and Indonesian

fathers in spring 1998. Hobbs had spent one month in Indonesia when he lived in Tokyo and acknowledged the Indonesian teenagers by greeting them in Indonesian; they said that Czechs thought they were Chinese and subsequently invited him to play volleyball at the Indonesian Embassy on Sundays where he was invited to attend the Indonesian language course on Saturdays. Immersion in Czech made it easy to have small talk in Czech, but one day per week for one semester was not enough time and frequency to achieve a threshold of fluency in Indonesian. Hobbs was also an invited guest of Jan Moravec with box tickets to ice hockey games. Later in Berlin, Hobbs spoke Czech to two young men speaking Polish to him to learn they were visiting family and friends in Berlin for the weekend, but returning to their towns, jobs, and universities in a few days.

From 1998 to 2000 in Berlin, Hobbs taught automotive engineers for Daimler-Chrysler (after the merger of Chrysler with Mercedes Benz and before the demerger), executives at Deutsche Bank, and electronic engineers at a research and development subsidiary of Deutsche Telekom where he designed curriculum that combined General English with Business English, Financial English, and Technical English. Dr. Dirk Hetzer provided Hobbs with MacIntosh computer, printer, and high-speed copiers at T-Nova Berkom. While in Berlin, Hobbs studied French at Maison de France, Italian at Dante Alighieri, Spanish at Neue Schule, and German at the Goethe Institute and the Hardnachschule; Hobbs also attended Comparative Linguistics lectures by Dr. Ekkehard Koenig at Freie University and Lexicology lectures taught in German by Dr. Peter Lothar at Humboldt University. Hobbs submitted 300-page rough draft lexicography dissertation to Dr. Koenig for advisement. Dr. Koenig recommended moving to Leipzig and changing the focus from lexicography to language register because he had colleagues who would be very interested in the subject matter. However, becoming fluent in French was the more important goal at that time. Before moving from Berlin to Luxembourg, Hobbs attended a Behavioral Genetics Symposium in Amsterdam hosted by the Belgian College of Interdisciplinary Neuropsychopharmacology and Biological Psychology at Vrye University. Also while in Berlin, Hobbs did language exchanges with Martine Gardeaux, Pablo Ibanes, and Dr. Werner Mullen, and visited the Vietnamese Culture Center where he spent time with Quy Vu Dan, his friends, and family, often on all day cycling and swimming excursions to Wannsee or Pottsdam.

From 2000 to 2002, Hobbs taught Business and Banking English at banks and companies throughout Luxembourg as well as Investment Banking for the German Chamber of Commerce in Trier, Germany and the

Luxembourgish Chamber of Commerce in central Luxembourg. In his spare time, Hobbs studied Spanish, French, Italian and German in courses provided by ProLingua, and travelled to Brussels, Oostende, Antwerp, Cologne, Frankfurt, Paris, Metz, Rotterdam, Basil, and Zurich on alternating weekends (every weekend) to speak and hear other languages, see the architecture, and observe the demographics. While living in Luxembourg, Hobbs did a language exchange (Spanish, French, and English) in Brussels with Georges [Djo] Drouet, whose mother was Mexican and father was French.

From 2003 to 2005, Hobbs taught biology to Asian nursing students; social studies to Samoan, Micronesian, Korean, Japanese, Chinese, and Filipino American high school students; and English to college students from Japan, Korea, China, and Switzerland, while managing an income tax preparation office during tax seasons and obtaining an MA degree (4.0 GPA) in Education in Hawaii, USA, with certification in TESOL and Social Studies, with Certificate Recognition of Excellence for Assessing Language Production, Behavioral Sciences (anthropology, psychology, sociology), Communications, Economics, Geography, Government, History, Linguistics Theory, Political Science, Reading Comprehension, and World Cultures. Hobbs lived in Makiki, taught nurses in downtown Honolulu, high school students in Wahiawa and Kalihi, college students in Waikiki, and attended graduate courses in Mililani. The tax office at Ala Moana was the highest producing tax return office in the USA with over 8,000 tax returns prepared every year. Before leaving Hawaii, Hobbs started his doctorate degree and travelled back and forth between the Middle East, North America, Europe, and Asia for doctoral residencies, professional development, research at libraries, meetings with professors or teachers or students, visitations at [private bilingual or public] schools and universities, and attended or presented at conferences or symposiums in: USA, London (UK), Bolzano (Italy), Geneva (Switzerland), Amman (Jordan), Katmandu (Nepal), New Delhi (India), Colombo (Sri Lanka), Grand Canary (Spain), Bahrain, Bali (Indonesia), and Dubai (UAE).

From 2005 to 2011 in Kuwait, Hobbs was the supervisor of a master of science degree program, supervisor of an Embassy affiliated after-school program, principal of a K-12 bilingual school, and taught Academic Writing, Oral Presentations, Business English, and Education Psychology at the American University of Kuwait, where he attended Arabic classes provided by AUK. Hobbs wrote a 200 page dissertation proposal in 2008, but decided he didn't like the topic well enough, so he changed mentors and committee members and started over on the topic of multilingualism, which led to

attending the Third Language Acquisition Conference in 2009 at the University of Bolzano in Bolzano, Italy, where he met most of his pilot and main study participants for his research in 2010. Hobbs gave TESOL professional development at the Canadian University of Dubai, met with language researchers at Higher Colleges of Technology (HCT) and University of Sharjah, and delivered a paper on achieving educational excellence through creative alternative assessments at the International Conference of Liberal Arts and Business Affairs. Hobbs also hosted the international teacher certification training at AMIDEAST in Kuwait.

From 2011 to 2014, Dr. Hobbs worked as a curriculum consultant and doctoral student advisor for schools and doctoral candidates in the United Arab Emirates, New York City, Iran, and Costa Rica, but speaking abilities in other languages were disappearing. In 2015, Dr. Hobbs taught English via closed circuit television at a studio in Montevideo to secondary students throughout Uruguay and attended neurology lectures (in Spanish) at the state university where the librarians at three campuses were extremely helpful in conducting research that investigated the Uruguayan transition from monolingual education to bilingual education and the beneficial impact a decade later. In 2016, Dr. Hobbs was working as the head of the English Department at a private school with a Canadian curriculum in Santo Domingo, Dominican Republic, and teaching Business English in the evenings and weekends for private clients. Future concerns will involve multilingual teaching certification, multilingual school accreditation, and other publications.

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