

**An American Paradox:  
A Monolingual Nation in a Plurilingual World Volume 1**

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## Table of Contents

Editors' Note.....	4
Rationale for the Book .....	5
Understanding the American Paradox.....	6
Monolingualism, Multilingualism and Plurilingualism.....	8
Neurolinguistics and the Benefits of Plurilingualism .....	11
Historic Demographics of Language in North America .....	13
Globalization and Language Policies in Education .....	15
Language, Pedagogy, and the Brain.....	17
The Primacy of the Affective Domain .....	18
Disposition Drives Cognition.....	21
Language Learning Approaches and Contemporary Neuroscientific Research .....	25
The Clash of Monolingualism versus Plurilingualism .....	26
Rationale for Teachers Learning the Language of Their Students .....	30
Need for a Plurilingual Paradigm Shift .....	31
The Relationship between Plurilingualism and Neurolinguistics.....	34
The Intersection of Plurilingualism and Neurolinguistics .....	35
Neural Connections and Conduits .....	36
The Role of Emotion, Decision Making and Gamification .....	37
Affecting Language Acquisition One Learner at a Time .....	39
Translanguaging, Raciolinguistics and Linguicism, Gentrification and Heteroglossia ....	40
In Search of Plurilingual Teachers .....	43
Recruiting Plurilingual Teachers in California – Paid Student Teaching .....	45
Benefits of American Sign Language (ASL) .....	47
Students as Teachers .....	48
Teacher Assistive Technologies .....	50
Consistent and Meaningful Professional Development .....	52
Ethical Teaching by Acquiring the Language of One's Students .....	55
California as a Futuristic Model of the United States .....	58

The Teacher as Learner of a Students' Language .....	57
California as a Futuristic Model of the United States .....	60
The Teacher as Learner of a Students' Language .....	62
Glossary.....	64
A .....	64
B .....	64
C.....	65
D.....	65
E .....	65
F .....	65
G.....	65
H.....	65
I .....	66
L .....	66
M .....	66
O.....	66
P .....	66
S .....	67
T .....	67
U.....	67
W.....	67
Language Policy and Legislation .....	67
Appendix 1 .....	69
Draft Legislation .....	69
PURPLE: STATE EDUCATION CODE .....	70
Endnotes .....	73

## **Editors' Note**

American Paradox combines professional expertise with advanced writing tools to streamline creativity and enhance engagement. The editors skillfully integrated traditional methods and modern technologies—such as spell check, thesauruses, AI prompts, n-gram analysis, and Smart Art—to achieve clarity, precision, and structure while crafting a unified and compelling narrative.

The book delivers accessible insights into the latest neurolinguistic research, particularly its application to lesson planning, alongside strategies to nurture inclusive and supportive learning environments. It highlights how improved communication through teachers learning their students' language can enhance educational outcomes. By embracing plurilingualism, educators can pave the way for equal opportunity and equity in meeting diverse student needs.

Designed for K-12 teachers and teacher candidates, the book serves as a roadmap to address the shortcomings of American language education while advocating for progressive policies to bridge those gaps. It calls for a new generation of multilingual educators to foster hope, inclusion, and positive connections with millions of public school students by sharing the experience of plurilingualism. As the book suggests, teachers who understand their students' languages can build rapport and foster enriched interactions, emphasizing the undeniable benefits of multilingual comprehension.

## **Rationale for the Book**

The reasoning of the American Paradox is a simple one: To create an inclusive and effective learning environment, teachers must learn the language of their students.<sup>1</sup> The reasons for this are as vital as they are apparent. The rationale includes establishing rapport and trust, augmenting communication, enhancing inclusivity, promoting cultural competence, improving academic outcomes, enhancing parental involvement, refining staff development, and providing an authentic language acquisition role model via the teacher. A bond of rapport and eventual trust is built when teachers learn the languages of their students.<sup>2</sup> Respecting and valuing the students' cultural heritage inherently constructs a more trusting relationship, which is the first step in the learning process. It is no secret that students are more likely to engage in learning in an atmosphere where their funds of knowledge are respected and understood.<sup>3</sup> One of the first indications of augmented communication is using the students' language to minimize misunderstanding and keep instructions clear and concise. Under these conditions, students feel more at ease seeking help and asking questions. Enlightened teachers know that education is in the conversation.<sup>4</sup> Enhanced inclusivity is evidenced by the fact that all students can access the curriculum regardless of language. Teachers can act to create a more equitable classroom learning environment geared toward student success. Such an atmosphere also enhances cultural competence because when teachers learn a language, they also understand the culture in which that language exists. This is important when making the curriculum "look like" the students. Learning is made more engaging and meaningful when

it is culturally relevant.<sup>5</sup> Inclusive classrooms stand on a language-based foundation of cultural nuance and respect.

In this book, we will also see the consistent body of research from neuro-linguistics, noting that student performance is improved when teachers can reach out and communicate in the student's language. Perhaps no communication is more important than within the learning troika of student - parent – and teacher.<sup>6</sup> This learning triangle is fostered when the teacher can speak directly to the parents in a language that all parties understand. Parents, as the first and most important teachers, are more likely to cooperate and collaborate with teachers and attend classroom events in a school that demonstrates such a welcoming gesture as communicating in the parents' native language. Aiming professional development at the goal of teachers learning their students' language enhances the teachers' skill set and, as we have noted, enhances brain function.<sup>7</sup> Teachers become more adaptable as their repertoire of approaches to a more and more diverse student body. When teachers learn their students' language, they become an authentic role model for their students.<sup>8</sup> These teachers can now demonstrate a growing awareness of a new language and its challenges and rewards.

### **Understanding the American Paradox**

The *American Paradox* refers to a reality that appears to be contradictory or logically impossible but, upon closer inspection, reveals an underlying truth. The paradox is promoting and maintaining a monolingual policy in the United States, a nation of immigrants that has always been shaped by linguistic and cultural diversity. It would appear to many educators and, as we will find out, neuroscientists that embracing

plurilingualism aligns more closely with the nation's identity and offers numerous societal and brain-based benefits.<sup>9</sup> The nation's traditional language policy continued in the first decades of the 21<sup>st</sup> century to be a prioritized monolingual approach, emphasizing English as the primary language of instruction.<sup>10</sup> With the rise of public schools and a wave of new immigrants in the early 20<sup>th</sup> century, this policy was aimed to assimilate non-English-speaking students into the dominant culture. This more than 100-year-old policy leads to cultural and linguistic isolation and is stuck in a mythical monolingual past that never existed.<sup>11</sup> Indeed, plurilingual peoples have continuously populated the North American continent. In the United States, English is the most common language. About 80 percent of the population is monolingual.<sup>12</sup> The story of plurilingualism on the North American continent is the saga of diverse immigrants who transported thousands of evolving languages spawned and nurtured by distinct cultures. Archaeologists estimate the earliest arrival of humans from Asia to the Americas was between 20,000-14,000 BP.<sup>13</sup> From 1000 to 1492 CE, before European contact, more than 500 identifiable groups with distinct languages and cultures arose in North America.

American K-12 schools, tasked with educating every child, have traditionally failed to realize the inherent assets of plurilingual children whose academic success is less than the monolingual school population. Ironically, neuroscience has demonstrated that given the plasticity of the brain, the benefits of plurilingualism are such that people who speak more than one language are significantly advantaged.<sup>14</sup> The positive effects of plurilingualism are multifaceted, ranging from augmented cognitive abilities to increased cultural awareness to delayed cognitive decline. Neuroscience continues to uncover how

speaking multiple languages enriches the human brain, highlighting the importance of encouraging plurilingualism in educational and social contexts.<sup>15</sup> The brain's plasticity underpins the benefits of plurilingualism. Due to the brain's neuroplasticity, the human brain can remarkably restructure itself by forming new neural connections throughout a lifetime. This malleability is particularly noteworthy when learning and using multiple languages. Specifically, brain-based benefits include a reinforced ability to empathize with others, superior reasoning, upgraded multitasking, enhanced decision-making skills, augmented networking skills, and enriched memory.<sup>16</sup> The prioritization of monolingual policies in American schools appears to have shortchanged most of its monolingual students in America on a planet that is each day more plurilingual.<sup>17</sup>

### **Monolingualism, Multilingualism and Plurilingualism**

To understand the roots of the American paradox, we must explore three key linguistic concepts. They are: monolingualism, multilingualism, and plurilingualism. As we navigate through time and place in North America, we must understand the distinctions among these terms on an increasingly multicultural planet. Monolingualism refers to the ability to speak a single language. Cultural and cognitive experiences are shaped exclusively by one language. Through law or tradition, either a *de jure* or *de facto* (by law or in fact) reality means there is little exposure to any other language. About eight in ten people in the United States speak English and only English.<sup>18</sup> Commonly, the system of education (e.g., the language of instruction), the dominant media, and daily interactions usually occur in one language. Diverse linguistic and cultural perspectives are mitigated. Monolingual people can be at a loss to communicate in plurilingual environments isolating

them from opportunities to express themselves with speakers and writers of other languages.<sup>19</sup> Multilingualism, contrastingly, refers to the ability to speak more than one language. Multilingual individuals can speak in two (bilingual) or more languages. This is a result of a cultural environment that is diverse, formal education, or migration.

The advantages of multilingualism can be tracked from an early age. Switching among languages as necessary allows multilingual individuals to share their thoughts with diverse linguistic communities. It is a highly prized skill in international commerce, academia, and diplomacy.<sup>20</sup> Multilingualism can broaden an individual's horizons to a degree in an ever more interconnected world. Plurilingualism refers to one's ability to use multiple languages in various contexts. It is a more dynamic concept than multilingualism and is used for different purposes, reflecting a more fluid and flexible approach to language use. Depending on the audience and the sociocultural context, plurilingual individuals draw on their entire linguistic and cultural knowledge base to communicate effectively.

The Council of Europe's Common European Framework of Reference for Languages (CEFR) defines plurilingualism as a dynamic and adaptive linguistic competence.<sup>21</sup> While multilingualism implies high proficiency in several languages, plurilingualism accepts distinct proficiency levels for different languages. Plurilingualism thus values partial competencies, emphasizing the interaction among languages and the capacity to use them interchangeably, enhancing communication across linguistic borders. While monolingualism, multilingualism, and plurilingualism all involve language use, they differ in dynamics.<sup>22</sup> Monolingualism exists based on an accepted single language, potentially limiting cultural exposure but offering deep linguistic immersion. As we have noted,

multilingualism involves proficiency in multiple languages. It can enhance cognitive abilities and cultural awareness to a degree. A more dynamic and fluid use of multiple languages, as represented by plurilingualism, emphasizes adaptability and integrating cultural and linguistic resources to reach new and expanded understandings in human communications. As briefly noted, neuroscience has demonstrated that being plurilingual offers enhanced cognitive benefits and encourages cultural awareness. Buttressed by the neuroscience brain-based data on plurilingualism, transformational solution sets can be imagined and implemented.<sup>23</sup>

The authors point to innovative programs in the mid-2020s that present a new vanguard of plurilingual educators, explicitly prepared to work with a wide variety of students from various language experiences, who can better teach today's and tomorrow's K-12 learners by ensuring social-emotional thriving, meaningful academic achievement, and equitable and inclusive learning communities which promote more than a single language.<sup>24</sup> Within the text, *American Paradox* shifts from using the terms "bilingual" and "multilingual" to "plurilingual" to reflect a deeper and more nuanced understanding of language use and acquisition in a 21<sup>st</sup>-century globalized world. Using plurilingual, we seek to indicate the dynamic nature of cross-cultural insights into others' languages and cultures. By providing a more comprehensive perspective on linguistic diversity, we recognize that language competence occurs on an experiential spectrum that is not static but evolutionary. Unlike the well-known terms "bilingual" and "multilingual," using the term plurilingual not only acknowledges that individuals may have distinct levels of proficiency in different languages but highlights the interconnected and adaptable nature of language

use. By using "plurilingual," *American Paradox* can more accurately portray the complexity and richness of linguistic connections in today's ever more culturally and linguistically diverse world.

### **Neurolinguistics and the Benefits of Plurilingualism**

Brennan defines Neurolinguistics as the study of language in the brain.<sup>25</sup> This field shows the anatomical systems and networks of neurons, the physiological processes, and how the networks are activated in the brain.<sup>26</sup> This specific area of study is anchored in neuroscience and linguistics. It primarily draws from theoretical linguistics.

Neurolinguistics emerged as a quest to examine how humans acquire language and how the brain transforms "sound waves" into meaningful words. This research paradigm investigates the meanings represented and which regions of the brain connect to sort out and produce words, phrases, and sentences.<sup>27</sup> Neurolinguistics is an interdisciplinary field combining linguistics, neuroscience, and cognitive science to comprehend how the brain processes language. Neurolinguists use a variety of methodologies, such as neuroimaging techniques (e.g., fMRI and PET scans), to detect brain activity during language tasks.

Language processing includes two significant brain regions. Broca's area controls for speech production along with grammatical processing, and Wernicke's area is critical in terms of language comprehension. Together with other parts of the brain (e.g., the angular gyrus and the primary auditory cortex), they comprise a network that permits the complex functions of language.<sup>28</sup>

Some of the components of neurolinguistics include language processing, language acquisition, literacy, speech, and language disorders.<sup>29</sup> Thus, educators must draw from neurolinguistics to inform pedagogical philosophy, methodology, and practice. It has specific applications in the field of special education. Neurolinguistics should be part of the theoretical foundations of the science and art of teaching in the same way psychology and social sciences inform teacher preparation. For example, in education, the key concepts of metacognition are explicitly embedded in teaching practices drawing from social science and accepted as evidence-based.<sup>30</sup> In simple terms, the concept of metalinguistics is explained as the awareness that one is learning and aware of the cognitive process.

On the other hand, drawing from neuro-linguistic programming (NLP), the concept of metalinguistics has been expanded to a deeper level because these concepts are evidence-based. In this case, metacognition is explained by Drigas and Mitsea in neuro-linguistic programming (a subset of neurolinguistics) as awareness of aptitudes and procedures in which a person can monitor their inner cognitive forms and recognize the difference between typical or atypical functions.<sup>31</sup> Research is ongoing to investigate the relationship between neurolinguistics and metacognition and their role in building human excellence.<sup>32</sup> Neurolinguistic programming is an “assistive technology” to help teachers and students develop critical thinking, academic achievement, emotional intelligence, self-efficacy, and empathy skills.<sup>33</sup> These skills are essential for all learners. Including neurolinguistics into the repertoire of evidence-based theories, concepts, and applications in education, especially teacher practices in the K-12 settings, appears significant as it

provides a new rationale for a multilinguistic approach. The research found the impact of bilingualism on children's cognitive development and plurilingual advantages specific to the executive function in the brain.<sup>34</sup> Similar studies continue to reveal beneficial developmental differences in bilingual children beginning in their infancy. This information is indicative that the plurilingual brain functions at a distinct and more efficient level on a range of activities than the monolingual brain.

### **Historic Demographics of Language in North America**

As was previously noted, the earliest arrival of various peoples from Asia to the Americas was between 20,000-14,000 BP.<sup>35</sup> Before European 1000-1492 CE, more than 500 identifiable groups had different and evolving languages and cultures in North America. Spanish was the first European language spoken on the continent with the arrival of Columbus in 1492. Spanish holds an essential place in the annals of the history of the United States. Explorers from Spain and Spanish-speaking settlers created colonies in what is now Florida, Texas, California, and the Southwest; their language, religion, and cultural norms traveled with them. The Spanish influenced the names of cities, geologic boundaries, territories, local traditions, customs, laws, and more: Latino art, music, food, and literature influenced American culture. With 41 million native speakers and millions more who speak it as a second language, Hispanic language and culture are significant threads that weave a multicultural and plurilingual American tapestry.<sup>36</sup>

Today, plurilingualism continues to grow paradoxically. The statistics reveal two opposing language population trends. The US Census Bureau reports that those in the US

who spoke a language other than English at home nearly tripled from 23.1 million (about 10 percent) in 1980 to 67.8 million (nearly 20 percent) in 2019.<sup>37</sup> Correspondingly, the number of monolingual English speakers also rose from 187 million in 1980 to 241 million in 2019.<sup>38</sup> In all, 78 percent of people in the United States are monolingual English speakers.<sup>39</sup> Thus, in absolute numbers, both multilingualism and monolingualism are on the rise in the United States.

Regarding language acquisition around the globe, the percentage of bilingual speakers is 43%. Add to that number another 13% who speak more than two languages. Only an estimated 40% of the world's population is monolingual.<sup>40</sup> While there continues to be a significant increase of plurilingual people in the nation due to globalization and immigration and the downstream effects of communities and workplaces becoming more plurilingual, we have noted those above the distinct American paradox. Despite the increase in the population of plurilingual individuals, many educational and social systems have selected monolingual norms. The result is not only the marginalization of people who do not speak English but also the loss of the cognitive and cultural benefits of plurilingualism. What has been and continues to take place is a sociopolitical struggle between two dueling philosophies. One promotes a celebration of linguistic diversity, while the other clings to the prioritization of English with the ultimate generational goal of monolingual assimilation. It is a "one nation, one language" ideology that entails the belief that monolingualism is society's natural and preferred state.

The history of the United States, a nation of immigrants, is replete with instances of discrimination due to a variety of factors. These can be categorized as race, class,

language, and culture that range from common prejudice to, in the case of immigrants, outright xenophobia.<sup>41</sup> In the mid-2020s, United States public schools were increasingly segregated socially by race and marginalized academically by language.<sup>42</sup> Racial isolation of children of color, including non-English speaking students in public schools, typically presents these young learners with a monolingual faculty and administration that has traditionally ignored students' funds of linguistic knowledge.<sup>43</sup> Although the sociopolitical demographics of the nation indicate a pluralistic society that declares equality of opportunity, the last great meeting place of democracy, the public schools are each day more resegregated by race, class, and language. A national contradiction is revealed: a country that proclaims inclusion but practices exclusion.<sup>44</sup>

Such a national contradiction requires a pedagogical change in basic assumptions to counter traditional beliefs in the superiority of monolingualism with the notion encapsulated in the inarguable statement that the knowledge of two languages is superior to but one.<sup>45</sup> It has been and is still today a raging conflict between this nation's values based on inclusion for all versus an opposing ideology that historically and systematically excludes many by race and language. These incongruous practices work against the nation's founding principles of freedom, equality, and justice.

### **Globalization and Language Policies in Education**

Globalization has significantly shaped language policies worldwide, leading to diverse approaches to bilingual and multilingual education in different regions. European countries, for instance, have embraced varied strategies to promote multilingualism, including Content and Language Integrated Learning (CLIL). A notable example is the

European Union (EU), which actively influences member states' language policies.<sup>46</sup>

Through its initiatives, the EU advocates for bilingual education to preserve cultural and linguistic diversity, reflecting its overarching goal of integrating multiple languages into educational systems.

The roots of bilingual education in Europe trace back to the nineteenth century<sup>47</sup>. Nations such as Luxembourg, Malta, Bulgaria, Estonia, and Germany have a rich tradition of embedding multilingualism into their curricula<sup>48</sup>. Research by Cenoz and Gorter<sup>49</sup> reveals that in most European countries, students start learning a foreign language in primary school, with a second language introduced during secondary education. English has emerged as the predominant foreign language, followed by German and French, underscoring the influence of globalization on language learning preferences.

European multilingual education stands out for its commitment to linguistic diversity and the expanding dominance of English. It incorporates indigenous minority languages, official state languages, immigrant languages, and English.<sup>50</sup> However, the growing prominence of English raises concerns about the declining study of other languages. Scholars caution that if this trend persists, some languages may become less commonly learned<sup>51</sup>. The structure of bilingual education varies across countries, influenced by factors such as language distance, sociolinguistic context, and educational policies, which determine the extent of multilingualism achieved.

Minority languages also hold a pivotal role in European multilingual education. Some languages, like Luxembourgish and Irish, are officially recognized in one nation but

exist as minority languages in others<sup>52</sup>. The integration of minority languages into education depends on social factors, language policies, and students' linguistic networks. As globalization continues to shape language use and education worldwide, Europe's multilingual policies provide valuable lessons for promoting linguistic diversity while addressing challenges related to English's growing dominance.

### **Language, Pedagogy, and the Brain**

In pedagogical terms, a monolingual nation on a plurilingual planet becomes problematic, considering the most recent developments in neurobiology related to the apotheosis of all learning – the brain. Given the plasticity of the brain, the field of neuroscience has consistently demonstrated that the benefits of plurilingualism range from the affective (via the limbic system) to the cognitive (the cerebral cortex, particularly the prefrontal cortex) and even the psychomotor domains (motor cortex, basal ganglia, and cerebellum).<sup>53</sup> Brain-based benefits for people who speak more than one language appear to strengthen the ability to empathize with others, augment networking skills, cause superior reasoning, promote enhanced decision-making skills, enrich memory, better develop executive control systems, improve performance tasks that require high-level thought, speed multitasking, and increase sustained attention.<sup>54</sup> How does brain-based learning affect how teachers teach? To begin, let us consider the notion of enhanced learning. Improved knowledge retention, as demonstrated via academic performance, can be aligned with learning strategies with how information is naturally processed. Of course, student engagement is critical because participation is key and brain-based approaches should be used so students choose to become motivated. Next, understanding that each

brain is unique, brain-based research supports that the teacher considers individual learning needs. Also, we must consider effective teaching techniques based on the insights from neuroscience to use students' funds of knowledge via analogies, metaphors, and mnemonics and break down complex tasks into smaller chunks of information.<sup>55</sup>

### **The Primacy of the Affective Domain**

In the mid-twentieth century, Benjamin Bloom and four other collaborators published a framework consisting of three domains, which is commonly known as Bloom's Taxonomy. The traditional presentational order of the domains, which can be thought of as a hierarchy, includes the cognitive, affective, and psychomotor. Bloom, an educational psychologist, focused primarily on the cognitive domain, which has guided educators to deliver curricular content based on six levels of cognition. Teachers have been following that model for the last seven decades. In the mid-2020s, given new insights from neuroscience on how the brain functions, a different ordering of the domains appears necessary. Recall that the natural order of language acquisition (listening, speaking, reading, and writing) affects how we approach language learning.

In the same way, our modern revelations on how the brain functions point clearly to the primacy of the affective domain, as can be summed up in the notion that disposition drives cognition.<sup>56</sup> It also must be stated that the relationship between these two intertwined domains is complex and reciprocal. Yet understanding that the relationship between the affective and triggering the cognitive appears imperative for neuroscience informs us that only the affective domain engages the regions within the limbic system.

The limbic system plays a pivotal part in the learning process, regulating behavior and emotions. Emotions processed by the limbic system have a role to play in the formation and retrieval of memories. These encodings influence emotional and social processing, motivation, and spatial memory. As part of the limbic system, the hippocampus is also linked to helping humans navigate their environment with short-term, spatial, and long-term memory – all of which affect learning.<sup>57</sup> Another part of the limbic system is the amygdala, which translates experiences as it creates memories while processing emotions such as sadness, joy, anger, fear, and happiness. The amygdala can also trigger a fight-or-flight reaction. Finally, the limbic system plays a critical part in intrinsic motivation governing the choice to engage or disengage from the learning enterprise. Recall that disposition (how we feel) drives cognition (what we think).

Let us review: There are three essential domains in teaching and learning: affective, cognitive, and psychomotor.<sup>58</sup> It is the affective domain that deals with values and emotions. In short, the affective that is primal. Authentic learning is a multidimensional pursuit. Lifelong learning environments that promote student-centered, self-directed study foster a way of engaging students in a voyage of personal discovery. Such an educational journey can lead to a transformative learning encounter where learners can better understand themselves and the changing world in which they live. We are speaking of a learning environment, a non-threatening mutualistic atmosphere where learners can choose to be inspired, motivated, and ultimately empowered.<sup>59</sup> It is an ambiance based on mutual respect, appreciation for previous experience, collegial rapport, equity, shared authority, and participation. It presents a safe and stimulating climate where a positive

disposition becomes a catalyst for translating mere information into meaning. This type of participatory environment represents the pathway to genuine engagement. For the goal-oriented learner with a rich reservoir of experience, new formulas for learning are beginning to emerge over two decades into the 21<sup>st</sup> Century.

With all that has traditionally gone into the practice of best serving the learner, a new area of research is being conducted with powerful, innovative technology on the apotheosis of human learning – the brain. No doubt, the latest research will revolutionize cognitive theory. Notions of what is going on in the brain will now be based on our understanding of “how” the human brain functions.<sup>60</sup> Discoveries in the field of neuroscience provide a heretofore undisclosed view of human mental phenomena and mechanisms. Scanning the brain can now examine billions of neurons and trillions of connections between cells. The brain represents an incredible universe of complex circuitry that grows and contracts with life experience. Some learning environments are optimal for education. To enter such an atmosphere, one must first realize the power and significance of the affective domain. Brain research indicates that learners think through their feelings.<sup>61</sup>

Simply put, how one feels about what is to be taught can virtually open or close the door to cognitive learning. Accordingly, the affective domain is primal to learning.<sup>62</sup> Inspiration, motivation, and empowerment express our deepest feelings of self-worth and commitment. One’s affective disposition overlays one’s cognitive ability. The preceding assumption of the primacy of the affective domain underlies both the style and substance

of quality education. Enlightened education is premised on a practice built from a foundation of participatory engagement within problem-solving orientations. Offering a message of hope and inclusion (and, at times, fun!) is using the affective domain to spur the learning process for all. To understand the importance of disposition, let us again consider the three learning domains teachers deal with daily in the classroom: the affective, the cognitive, and the psychomotor. One straightforward way to explain each domain is to assign them to the “heart, head, and hands.” The affective deals with emotions and values (heart), the cognitive with thought (head), and the psychomotor with physical activity (hands). You can now realize why learning is such a multidimensional pursuit. Central to all teaching should be the merging of “heart, head, and hands.”

### **Disposition Drives Cognition**

Although all three of the traditional realms constantly interact with one another, the affective domain is seen to initiate learning. In other words, the affective (one’s disposition to learn) leads the way to the cognitive and the psychomotor. The affective domain functions first (has primacy), for it is in the affective domain wherein you, as the teacher, initially set a positive learning environment so that the cognitive and psychomotor domains can flourish. Scanning the brain with new high-powered technological tools allows us to examine billions of neurons and trillions of connections between cells.<sup>63</sup> The brain represents an incredible universe of complex circuitry that grows and contracts with the learning experience. No chaotic universe this, amazingly every cell has a “pre-programmed” position, and correspondingly, every link between neurons is part of a

meticulous order. Even though parts of the brain have specialized functions, these actions are shaped by learning. Hence, both nature and nurture sculpt the brain.

Our new understanding of genetics and environment has evident and profound ramifications for teaching and learning. We now understand how different learning environments continually grow and prune neural connections in a brain of amazing plasticity.<sup>64</sup> By continuing to comprehend how the human brain learns best, teachers have a wonderful opportunity to adapt their teaching to meet the learner's needs better. Let's be clear: the very foundation of learning, which originates in personal discovery and idiosyncratic invention (as we “sculpt” our brain), is, to a large degree, premised on how we feel about what we are about to do. Furthermore, the synergistic interaction among the three domains produces learning. The human brain presents multidirectional pathways where meaning is valued over mere information and where nurture (given the brain's plasticity) can overcome nature (the brain's past capacity). As noted, the affective domain deals with attitudes and values that shape academic development and social growth.

Common notions such as the love of learning, the spirit of discovery, the dedication to science, or the honoring of civic duties are all examples of the emotions and values that make up the affective domain. They are clear examples of value-laden education in which a student feels initiative-taking. How one feels about what is to be taught (or who is teaching!) can virtually open or close the door to cognition. Inspiration, motivation, and empowerment express our deepest feelings of self-worth and commitment. In short - disposition drives cognition. Emotion is a powerful driver in the human thought process

and decision-making. It provides the initial spark that guides our actions and judgments. Emotions are pivotal in shaping our cognitive landscape, from the excitement that fuels creativity to the fear that heightens caution<sup>65</sup>. Understanding this relationship is essential, highlighting how feelings can influence choices and behaviors, often subconsciously. Learning is an active process of strengthening or pruning neural connections. As the brain adapts (synaptic plasticity), efficiency is enhanced based on the frequency and relevancy of authentic experiences. Humans can engage in creative works of literature, solve mathematical equations, or climb the Himalayas due to the neural complexity of the brain. These complex interactions involving the amygdala, the hippocampus, and the prefrontal cortex form a network to expedite emotion (amygdala), memory (hippocampus), and cognition (prefrontal cortex).<sup>66</sup> This inherently multidimensional brain orchestration is part of an immense web of connections, which, due to its plasticity, creates the environment – at times despite genetic dispositions – of the potential for change and development.<sup>67</sup> It is critical to understand the triggering nature of the affective domain.

Notwithstanding traditional approaches to learning emphasize cognitive aspects (e.g., generic lesson plans are usually based on cognitive strategies that stress a student's ability to think, learn, and apply), little, if any, sustained learning will occur without the student's intrinsic motivation (i.e., student choice), which is premised on interest being aroused, a response is generated, and a judgment being passed on the worth of the knowledge and or skills being expressed or demonstrated. If the initial emotion about what is to be learned is positive, there is a good chance for success in each developmental task – in short, we learn more and learn better. Success sets the groundwork for self-efficacy.<sup>68</sup>

As this attitude of self-efficacy grows, a learner becomes increasingly apt to find success even in new and unique environments. With what we know about the affective domain as a trigger mechanism for learning, it is fair to describe humans not as thinking beings but, more precisely, as feeling beings that think.<sup>69</sup>

Although all three traditional realms constantly interact with one another, the affective domain is deemed primal.<sup>70</sup> In other words, the affective (one's disposition to learn) leads the way to the cognitive and the psychomotor. Far from being merely an outcome of instruction, it is in the affective domain wherein the educator initially sets a learning environment so that the cognitive and psychomotor domains can flourish.<sup>71</sup> As noted, the affective domain is primal to the initial will to solve the problem.<sup>72</sup> Moreover, the mindset to reach solutions must be valued by the learner and encouraged by teachers for it to be implemented and effectively sustained. Let us be clear: the foundation of learning, which originates in personal discovery and idiosyncratic invention (recall that we are sculpting our brain), is primarily premised on the innovative act of problem-solving via critical reflection.<sup>73</sup> Such a reflection should be a personal and meaningful everyday occurrence that meets various tangible goals in the real world surrounding the learner.<sup>74</sup>

When the learner's purposeful aspirations are valued (an affective occurrence), then the other domains (i.e., cognitive and psychomotor) can provide the kind of step-by-step strategies to think, plan and act that are crucial in the lifelong process of learning.<sup>75</sup> Although all three domains are multidimensional (from simple to complex and complex to simple), the synergistic interaction among the three domains produces practical learning.<sup>76</sup>

The human brain presents multidirectional pathways where meaning is valued over mere information and where nurture (given the brain's plasticity) can enhance nature (the brain's past capacity).<sup>77</sup>

### **Language Learning Approaches and Contemporary Neuroscientific Research**

The relationship between acquiring a second language and neuroscientific research reveals empirical evidence of brain enhancements in creativity and language skills.<sup>78</sup> Such findings are demonstrated by integrating theoretical models and empirical findings from different fields of study.<sup>79</sup> Those would include linguistics as well as cognitive/developmental psychology. The dual language approach and neuroscientific research intersect in several ways.<sup>80</sup> The neural networks for the first and a second language may process differently due to the constant need to manage both languages.<sup>81</sup>

Regarding cognitive function, the dual language approach may impact the ability to recognize abstract and symbolic concepts and various executive functions.<sup>82</sup> Moreover, metalinguistics and metacognitive awareness can all be influenced by the knowledge and use of multiple languages.<sup>83</sup> Research has also indicated that learning and using various languages may increase volume and structural connectivity in specific brain areas.<sup>84</sup> From a pedagogical aspect, recent findings from neuroscience can guide the development of teaching methods that leverage the cognitive benefits of plurilingualism.<sup>85</sup> It has been known for some time that creativity is increased when children learn another language.<sup>86</sup> Findings reveal that learning another language “significantly enhances all four divergent thinking abilities, i.e., fluency, elaboration, originality, and flexibility.”<sup>87</sup> Other more recent

studies have noted that learners of another language demonstrated a “statistically significant increase in the creative thinking skills of fluency, flexibility, and originality.”<sup>88</sup> In Volume Two of this series, we will present a first-grade lesson plan in a language immersion program to boost children's creativity. Before this first lesson plan, we must pose a critical question given what neuroscience has revealed in the 21<sup>st</sup> century. Why are some students engaged and others not? Again, let us remember that emotional (feelings) and social (value-laden) development are the core components of the affective domain. Your feelings and values about a teacher, a class, and the learning environment can virtually open or close the door to learning.<sup>89</sup> When we speak of initial participation, we speak of engaging the affective domain. Let us recall that learning occurs in three domains.

Collaborative endeavors (e.g., peer tutoring) that blend the affective (helping others in a caring manner), cognitive (improving the learning skills of the provider and recipient), and psychomotor aspects (carrying out the plan of action to assist others) of learning are critical in the maturation process. This melding of heart, head, and hands provides a powerful paradigm for learning. Disposition (affective-heart) leads to learning (cognition-head). John Dewey noted at the beginning of the 20<sup>th</sup> Century that we learn by doing (psychomotor - hands). As Confucius (551 BC - 479 BC) reminds us, “I hear, and I forget. I see, and I remember. I do, and I understand.”

### **The Clash of Monolingualism versus Plurilingualism**

Wiley has noted that language policies, whether explicit or implicit, facilitate the control of social behavior. The perceived conflict between English monolingualism in the

United States postulates a zero-sum game where only one language can be victorious.<sup>90</sup> American history is replete with sociopolitical policy prescriptions characterized by language exclusion rather than inclusion. At the same time, millions of immigrants bearing both the talents and resources of plurilingualism are too often ignored or even admonished (1999).<sup>91</sup> From the English language only mandates of slave owners in the 17<sup>th</sup> century for the black immigrants, who arrived in chains, through the British colonial period to the 19<sup>th</sup>-century banning of Spanish in Puerto Rico (1898), there were explicit political decisions that affected public policy regarding language.<sup>92</sup> Starting with the 20<sup>th</sup>-century restrictions during the First World War forbidding the teaching of the German language and other European vernaculars in American public schools to the 21<sup>st</sup>-century reality of resourced unequal education for English learners, the tradition of immigrant children demonstrably underserved, unappreciated, and lacking advocates renews an unfortunate historical legacy.<sup>93</sup>

Today, English learners make up one out of every ten students and are the fastest-growing group in American public school classrooms.<sup>94</sup> This book speaks specifically of English learners in California, the 1.2 million K-12 youngsters who go home each night to talk about a language other than English in their homes. At the same time, the authors note that bilingualism should never be a one-way street. That is to say that a genuinely bilingual or plurilingual program includes all learners. We reject the notion that closes off bilingualism for non-English speakers. The rationale behind so many innovative ideas for teachers to learn their students' language begins with the daily interaction with their students. This is the precise starting point bolstered by our proposed legislation (see the

appendix), where languages and cultures present in a school are shared as plurilingual connections are forged.

The new immigrant children are among the most plurilingual individuals in the community and are the subjects of linguistic irony.<sup>95</sup> Neuroscience has demonstrated that as they learn more than one language, they produce new and expanded “hard-wired” brain connections as they are exposed to different languages and cultures.<sup>96</sup> This makes them perform better on creative and divergent social and thinking tasks.<sup>97</sup> In 2022, research again revealed that plurilingual rather than monolingual methods of instruction, specifically two-way immersion models to support the home language and culture and integrate languages of both majority and minority learners, were allied with acquiring English sooner and yielded superior performance in academic achievement.<sup>98</sup> Significantly, two-way immersion models that support the home language and culture and integrate language majority and minority learners were associated with faster English acquisition, which revealed the link between Two-Way Immersion (TWI) programs and higher GPAs.<sup>99</sup> Neuroscientific evidence appears clear in terms of brain-based synergy. Plurilingual individuals have demonstrable advantages that affect their academic and social growth. Yet school board members, principals, and teachers, who are the reflection of the U.S. population where eight out of ten people are monolingual, traditionally and predictably assign these plurilingual children into classrooms with lower expectations, fewer resources, and the most transient teachers who do not understand the benefits of having more than one language.<sup>100</sup>

Perceived ability grouping is often based partly on test scores that hinge on the student's ability to read and understand the nuances of English.<sup>101</sup> EL students with disabilities were more likely to be classified as having a specific learning disability than their non-EL counterparts.<sup>102</sup> Moreover, the segregation of ELs from English-speaking students should be considered. Seventy percent of the nation's EL students attend just ten percent of the nation's schools.<sup>103</sup> These schools tend to be in urban areas with high concentrations of students, the children of families stuck in the cycle of multigenerational generational poverty. As a result, ELs have limited opportunities and resources to interact with peers who are native speakers.<sup>104</sup> It has been noted that everything from systemic racism in school districts to pedagogical ignorance is the root cause of dysfunction.<sup>105</sup> The results from numerous data points are predictable. In 2015–16, 84 percent of students nationwide graduated from high school for ELs, and the rate was 67 percent.<sup>106</sup> The linguistic barrier imposed by the policies and practices ignoring the most recent brain-based research in neurolinguistics by the American public school system demonstrates an ignorance that adversely affects these children. Plurilingual learners have, for more than a century, faced unique challenges. These plurilingual students present a tremendous asset to the nation if their full potential can be realized, unlocked, and harnessed via an enlightened school leadership team that produces a relevant plurilingual curriculum.<sup>107</sup>

Recall that research has demonstrated that brain-based benefits reinforce empathy with others, augment networking skills, produce superior reasoning, enhance decision-making skills, enrich memory, better develop executive control systems, better perform tasks that require high-level thought, superior multitasking, and enhance sustained

attention.<sup>108</sup> Plurilingual learners have, for more than a century, faced unique challenges. These plurilingual students present a tremendous asset to the nation if their full potential can be realized, unlocked, and harnessed<sup>109</sup> via an enlightened school leadership team that produces a relevant plurilingual curriculum. In terms of cognition, a new language can improve cognitive abilities like intelligence and memory.

### **Rationale for Teachers Learning the Language of Their Students**

There are five significant reasons teachers should learn their students' language. First, when students view the teacher attempting to use a smartphone app day by day, they view the teacher as modeling interest in their language and culture. Even more importantly, when a teacher speaks of the importance of knowing more than one language as improving one's academic development and social growth, those students may see their home language as an asset that benefits the entire academic community.<sup>110</sup> It has been said that "education is in the conversation" – such conversation can lead to increased student engagement, knowing that their language and culture have inherent worth.<sup>111</sup> Second, it follows that when teachers comprehend the language of their students, those teachers can communicate meaning to their students in a way that leads to enhanced learning outcomes.<sup>112</sup> A plethora of research demonstrates that students learn better when taught in the language they speak and understand well. We also know that the stronger the student's knowledge of a first language, the easier the acquisition of another language (L1 > L2).<sup>113</sup> Third, we understand that language is an expression of and emanates from a culture. When teachers have prior knowledge of their students' cultural backgrounds, those teachers can create culturally responsive curricula, which in turn leads to greater

inclusiveness that can produce a classroom environment that is both socially respectful and academically challenging.<sup>114</sup> Fourth, let us look at the notion of supporting plurilingualism. When a teacher learns the native language of the students, that teacher can point out to students the connections between different languages and cultures, promoting a transition to a new language while at the same time maintaining and developing their first language skills.<sup>115</sup> In learning their students' language, teachers can deliver a world-class education that is both more accessible and meaningful to the students. It would be hard to imagine a more powerful tool for a teacher in the daily interaction with students than knowing the language and culture of those learners. Fifth, engaging with students in their native language sets a foundation for connecting with students' feelings and values to create an enriched learning environment. Teachers should make the importance of immersing oneself in a new language clear. When a person surrounds the environment with the language to be acquired, there are a range of activities to be considered: listening to music, watching movies, reading books, and talking with native speakers. Practicing speaking a new language can undoubtedly enhance a person's verbal capabilities. At the same time, it is essential to heed body language, gestures, and facial expressions – nonverbal clues are critical to the teaching and learning enterprise when acquiring a new language.

### **Need for a Plurilingual Paradigm Shift**

In 2025, the authors believe the question is *not* should English learner education merely be reformed, but based on the recent findings in the field of neurolinguistics - a fundamental change in basic assumptions to encourage all students to become

plurilingual is warranted. As noted, a large body of evidence from neurolinguistics has demonstrated that the brain improves as we learn new languages and that the skill of concentration is enhanced. As a cognitive skill, those who know more than one language focus on the task as they ignore distractions. This inherently means that plurilingual education would benefit every student. Correspondingly, the pedagogical dynamics need a tectonic shift from the traditional bedrock practices that have viewed non-English speaking students as a deficit-based problem.<sup>116</sup> Suppose a student population knowing another language is considered a school resource. In that case, the American classroom-growing immigrant population possesses a motherload of language assets that have been virtually untapped for over a century. This very student population can act as an incredibly special resource to the traditional monolingual faculty, so they, too, can, over time, realize the links between the cultures and languages of the students they teach.<sup>117</sup>

Understanding the terrain of socio-economic segregation experienced in the mid-2020s, a new educational model in which all students, including English-speaking students, become mutual resources to each other is one way to terminate the centuries of deficit education model. This paradigm shift model envisioned comes not wholly from imagination but from an instance in this nation's historical record of plurilingual education innovation. An example of effective plurilingual education occurred in Florida in the early 1960s. James Crawford described the program.<sup>118</sup> During this period, many well-educated Cubans fled the Cuban Revolution of 1959. The initial waves of Cuban refugees were, in part, doctors, lawyers, and professors in search of political asylum.<sup>119</sup>

In alignment with the Cold War politics of the late 1950s and early 1960s, the federally funded Cuban Refugee Program provided substantial monetary aid.

In addition, the state of Florida permitted Cuban teachers to become credentialed and taught Florida's public schools. Two years later, the Dade County Public School District put into practice a plurilingual approach to education at Coral Way Elementary School. Neither a remedial nor compensatory curriculum to erase a perceived cultural deficit, this approach aimed at fluent plurilingualism for Spanish and English speakers. Again, the science of neurolinguistics points to some essential elements of an effective plurilingual program. Plurilingual students experience enhanced academic achievement when they develop both their native language and a language.<sup>120</sup> The tradeoff is not whether plurilingual education should focus on transitioning to the target language while "forgetting" the native language. Instead, a plurilingual program focuses on the interconnectedness of languages students bring with them and are experiencing in the classroom. When plurilingual teachers understand the influence of the student's first language, they can develop more effective strategies for second language acquisition.

According to neurolinguistics, the ability to communicate in more than one language enriches cognitive and social growth in the classroom as it augments understanding of diverse peoples and cultures outside the school.<sup>121</sup> It is known that the stronger a student's grasp of the first language, the easier it is to transfer those skills to a second language. This lack of sufficient skills in the mother tongue is problematic, for one cannot transfer skills not possessed. However, suppose schools perceive another

language as a valuable resource. In that case, faculty can view the student as an asset to be assigned to a plurilingual path to academic development and social growth.

Schools that implement a quality plurilingual program, where all students aim to realize the interconnection of language and culture while learning another language, are on the right road – a road paved more than six decades ago by Cuban refugees.<sup>122</sup> In addition, recall enhances plurilingual people's cognitive skills, allowing them to concentrate better than monolinguals. Those who know more than one language demonstrate the ability to constantly process information, pay attention, and recall, aiding one's thought processes and power to retain information.<sup>123</sup>

### **The Relationship between Plurilingualism and Neurolinguistics**

Let us review. Plurilingualism, or the capacity to use multiple languages, has significantly impacted children's cognitive development, particularly in areas related to executive functions.<sup>124</sup> These effects take place in the areas of attention control, operational memory, and mental flexibility.<sup>125</sup> Indeed, children introduced to a second or third language during early childhood (before birth through age 8) have a significantly higher overall learning comprehension. Furthermore, there is evidence of a greater sense of values and problem-solving abilities than their monolingual counterparts.<sup>126</sup> Plurilingual people can understand the beliefs of others, pick out the critical variables to solve a problem, and entertain two possible interpretations of the same stimulus at once.<sup>127</sup> The persistent need to manage multiple known languages, which are always active in the brain, to use the one appropriate for a specific context develops cognitive and mainly executive functions.<sup>128</sup> One cognitive function that appears to benefit from the knowledge of multiple

languages is metalinguistics, one type of metacognition that may be defined as an individual's ability to focus attention on language as an object in and of itself.

In addition, there is the ability to reflect upon and evaluate language.<sup>129</sup> Plurilingual people also have augmented metacognitive awareness (thinking about thinking) - this refers to the “self-regulation” that effective learners exhibit, meaning they are aware of their learning process and can measure how efficiently they are learning as they study with the ability to represent abstract and symbolic concepts.<sup>130</sup> Since different studies use a wide variety of different factors: the age when a child begins to learn another language, the amount of language acquired, the socioeconomic background of the child, and the level of language proficiency – some studies provide mixed results and do not show a significant link between bilingualism and augmented cognition. Nevertheless, a large body of brain-based studies indicates the benefits of a plurilingual approach, which have clear implications in terms of pedagogical practice.<sup>131</sup>

### **The Intersection of Plurilingualism and Neurolinguistics**

Plurilingualism and neurolinguistics study how the capacity to use more than one language impacts the brain's structure, function, and connectivity.<sup>132</sup> To begin, consider the differences in brain networks.<sup>133</sup> The perpetual need to manage both known languages, which are always active in different brains, can lead to modifications in these networks.<sup>134</sup> Plurilingualism can influence several cognitive functions.<sup>135</sup> The knowledge of more than one language can impact executive functioning and the capacity to denote abstract and symbolic concepts, so critical in problem-solving skills, as well as modify metalinguistic and metacognitive awareness. Structural changes to the brain itself occur in terms of

increased volume and physical connectivity in specific areas of the brain based on the acquisition of multiple languages.<sup>136</sup> No doubt, educational practices are informed by the effects plurilingual has on the structure and resulting function of the brain. Teaching approaches based on the most recent brain-based findings can lead to the best research-based methodologies.<sup>137</sup> The special connection between plurilingualism and neurolinguistics provides an essential lens through which to observe the cognitive (e.g., higher-order critical thinking skills) and social benefits of knowing and using more than one language.<sup>138</sup>

### **Neural Connections and Conduits**

How does this process occur in the brain? The brain constructs new neural connections and conduits as we encounter and use novel words to understand the language and common grammar usage.<sup>139</sup> As noted, diverse learning situations constantly grow and prune neural connections in a brain of fantastic plasticity. Indeed, neuroplasticity is the process that physically adapts and adjusts responses to unique experiences expressed in language.<sup>140</sup> As humans extract meaning from other humans – ideas emerge, strategies are conceived, and changes - that may have started in prehistory in an isolated small cave - eventually alter the entire planet and beyond.<sup>141</sup>

Both nature and nurture sculpt the brain.<sup>142</sup> Genetics and environment both have evident and profound effects on language learning and acquisition.<sup>143</sup> A common metaphor to describe the brain-language relations is that the human brain is “wired for language.”<sup>144</sup> Acquiring a language is a dynamic process shaped by our daily experiences. Those

experiences provide a context for using one language or another. The use of a language is a choice.<sup>145</sup> Understanding how and why humans activate that choice, to engage or not to engage, has profound ramifications.<sup>146</sup> Volition on whether to participate virtually opens or closes the door to learning in general and language acquisition in particular.<sup>147</sup> Learning a new language opens people's eyes to a way of doing things in a way that's different from their own; over time, they gain a degree of cultural competence.<sup>148</sup>

### **The Role of Emotion, Decision Making and Gamification**

Emotion has a role in helping a learner decide when and how to apply what they have learned.<sup>149</sup> Decision-making seems to rely on emotion as expressed in one's value-laden feelings, indicating the links between neurobiology, language, and culture.<sup>150</sup> These value-laden emotions influence and shape learning, engagement, thought, and behavior.<sup>151</sup> As feeling beings that think, we tend to do things we enjoy when enjoyment is matched with comprehension, a unique synergy arises. Perhaps playing a game can lead to "painless" learning<sup>152</sup> because winning the game is at the top of one's mind rather than learning a skill, understanding a rule, or even acquiring a language. How does this happen?

There are many reasons why game playing as part of an academic activity encourages engagement in acquiring another language.<sup>153</sup> To begin, let's consider the notion of immersion. Playing a game in another language is a way to engross yourself in that language. Even when a player does not understand every word, the brain looks for context and patterns to make intelligent guesses.<sup>154</sup> Good guessing is a way to acquire a language actively,<sup>155</sup> and here, we note the advantage of learning in context. The vocabulary of a game is relatively finite; thus, concepts are more readily grasped. The

acquisition does not become the typical drudgery of language learning because playing and winning the game is of greater importance than learning a language. Another reason playing games can lead to acquiring another language is that games may improve the favorable disposition to converse.<sup>156</sup> It is known that there is a direct relationship between acquiring another language and the inclination to communicate, thus improving language skills.<sup>157</sup>

Furthermore, it is typical for many (multiplayer) games to oblige communication among players, emphasizing social interaction via language. Moreover, engaging in a game involves problem-solving using higher-order critical thought (analysis, synthesis, and evaluation).<sup>158</sup> Playing and thinking involves language – in this case a new language, which provides a way to communicate, a pathway to complete a quest. Correspondingly, a well-known barrier to learning another language, a simple lack of self-confidence that may express itself in shyness or even pronounced anxiety, can be overcome by playing a game.<sup>159</sup> When a game becomes the central focus, fears are relegated to a secondary concern that can be mitigated or “forgotten” in the midst of an engaging task.<sup>160</sup>

Finally, consider the notions of intrinsic motivation and extrinsic motivation. We do something because we find it interesting or enjoyable – for the “love of the game” (intrinsic).<sup>161</sup> Or we engage in a game to win a title, a trophy, or another reward (extrinsic).<sup>162</sup> The same authentic elements (engagement via motivation) a person experiences provide the environment where language is a resource to complete a goal. Playing games facilitates language acquisition even though language acquisition is not the goal of conscience.<sup>163</sup> As a gamer experiences amusement, he or she engages in an environment

that encourages problem-solving and practically applying a new language for successful game-centered outcomes.<sup>164</sup> Games are a potent pathway to, even if unwittingly, acquire another language.<sup>165</sup>

### **Affecting Language Acquisition One Learner at a Time**

The authors conceptualize a back-and-forth relationship between students learning another language as teachers understand their students' language. Peer tutoring among students of different languages augments cognitive skills and enhances students' social skills.<sup>166</sup> This approach that links students together in a pair or group is practical in multilanguage environments.<sup>167</sup> Wheeling different students continually promotes academic development and social growth.<sup>168</sup> Peer tutoring can even take advantage of mixed-aged grouping designs, in which both the provider and the recipient are beneficiaries (improving sight word acquisition, maintenance, reading fluency, and comprehension).<sup>169</sup> That is why we can term peer tutoring a “win-win” situation. When we consider language acquisition, peer tutoring is efficacious.<sup>170</sup>

Research-based on sociocultural, social, and transactional theory regarding peer tutoring indicates that students receiving the scaffolded reciprocal peer tutoring will likewise experience increased social interaction.<sup>171</sup> Such social interaction is believed to enhance language and literacy development.<sup>172</sup> Accordingly, the specific grouping format (including the skill sets of members in the group) and the frequency and duration of such partners almost certainly would affect the learner's language knowledge and skill-building development.<sup>173</sup> Moreover, when students are asked to take greater responsibility for assisting a peer, each student can develop a sense of community and empathy for

others.<sup>174</sup> From a school operation point of view, peer tutoring is educationally effective (individualized and personalized) and presents obvious economic advantages in school instructional budgets.<sup>175</sup>

### **Translanguaging, Raciolinguistics and Linguicism, Gentrification and Heteroglossia**

Part of the ever more complex study of linguistics due to technological advancements, AI and ChatGPT, interdisciplinary approaches, and the emergence of new research deals with understanding how linguistic terminology interacts with modern pedagogy.<sup>176</sup> Translanguaging falls into one category that describes certain observable phenomena. At the same time, raciolinguistics, linguicism, and gentrification note, in a pedagogic sense, a disharmony in the study of language that runs counter to enlightened pedagogic practice.<sup>177</sup>

Translanguaging is the strategic use of multiple languages by multilingual speakers. It is an intellectual exercise in language production, meaningful communication, and the thought process based on using more than one language.<sup>178</sup> In short, it is an opportunity for multilingual speakers to demonstrate a knowledge base constructed in their first language to illuminate ideas and concepts in another language. It is about reviewing vocabulary in different languages to connect an expanding linguistic repertoire to comprehend better and communicate.<sup>179</sup> Translanguaging is a theoretical perspective in which two or more languages are deployed as a unitary linguistic resource to attain greater specificity and nuance.<sup>180</sup>

Raciolinguistics is the study of examining the connections among race, social identities, and language.<sup>181</sup> There is an exploration of how the theoretical notion of race

influences how language is used to construct race and how notions of race affect the use of language.<sup>182</sup> Within this paradigm the notion of linguistic and cultural status is constructed and deconstructed via the standardized language associated with the idea of whiteness. Thus, some linguistic practices are viewed as normative while others are seen as deficient. In short, white speech becomes high status that is expected to be mimicked by minoritized students.<sup>183</sup> Behind the façade of language variation is the notion or a form of cultural imperialism that promotes the fallacy of “good” and “bad” language, which ignores the lived experiences premised on gender, ethnicity, nationality, and race from which variations of authentic experiences produce an enriched language.<sup>184</sup>

Linguicism is the notion of linguistic discrimination (i.e., glottophobia). It can lead to unjust perception, judging, and treatment of a person or an entire community based on the language use.<sup>185</sup> These unfair judgments range from the identification not only of a person’s first language but also of one’s dialect, modality, syntax, vocabulary (size), and accent. Akin to raciolinguistics, discrimination legitimizes and reproduces an unequal foundation of power to define a lower language status.<sup>186</sup> Linguicism can explicitly or implicitly prohibit using a given language for instruction. The impact can be enormous on people’s prosperity, education, social status, and fundamental sense of self-efficacy.<sup>187</sup> Children do not choose to be plurilingual. They speak a language at home and then come to the school door and realize another language is being used. When a school ignores the mother tongue of these children with our neurolinguistic insights in the 21<sup>st</sup> century, it is a form of pedagogic malpractice.<sup>188</sup>

One challenge to fostering multilingualism in schools is the concept of heteroglossia. According to Bakhtin (1934), heteroglossia refers to linguistic variation and a lack of unified speech. Merriam-Webster Dictionary expands on this by defining it as the coexistence of diverse linguistic and discourse forms within a single text. In contrast, polyglossia denotes the presence of multiple integrated languages within a system—an approach adopted by several multilingual European nations. These theories, alongside others predating advancements in neurolinguistic research, heavily influenced language policy and bolstered the preference for monolingualism.

Gentrification of language defines an inequity in multilingual programs<sup>189</sup>. It can best be understood by the common practice of gentrifying a neighborhood. Commonly, this occurs when an urban community is renovated to follow the aesthetic tastes of the upper or middle classes, forcing the present inhabitants to seek lower-cost dwellings. In linguistics, this occurs when features of a language that note authentic lived experiences that were once shunned in schools are transformed by newcomers outside the original into a type of social cachet.<sup>190</sup> The result can be a shift in the original meaning. In the classroom, gentrification denotes privileged populations in a bilingual program that deprived minoritized students and communities of the same or similar enriched educational experiences.<sup>191</sup> Here, it is essential to note that raciolinguistics, linguisticism, and gentrification are seen as anathema to the message of hope, inclusion, and connection which reside in plurilingualism.<sup>192</sup>

### **In Search of Plurilingual Teachers**

Of course, the primary barrier to plurilingual education in America has always been the paucity of those who can teach in more than one language. Undoubtedly, the lack of plurilingual teachers presents a perceived roadblock to every student's goal of plurilingual education. For decades, stronger teacher education curricula have been viewed widely as an answer to problems related to the teaching and learning of plurilingual learners.

However, given the comparatively low graduation rates, these traditionally underfunded and low-status programs have proved insufficient to overcome their challenges. As noted, English Learners are the fastest-growing group of students in the United States. They comprise ten percent of all students and about twenty percent of nonwhite students.<sup>193</sup> The overrepresentation of these students in high-poverty schools pushes traditional racial achievement gaps to widen.<sup>194</sup>

California presents a 21<sup>st</sup>-century model for plurilingual education in that more than 2.3 million California TK-12 public school students bring another language to the classroom door each day.<sup>195</sup> There is a two-fold challenge. First, these students do not have the opportunity to share their home language with English-speaking students. Second, these students' home language skills are neglected due to a lack of plurilingual teachers, which can stunt their development of the new language skills they are trying to attain. This is because knowledge of one's first language accelerates the acquisition of a second language (L1>L2).<sup>196</sup> So, instead of brain enhancement resulting in cognitive benefits and augmented social skills for all, such neglect has led to an all but invisible lost opportunity.<sup>197</sup>

The California Department of Education postulates a goal by 2030: "... half of all kindergarten through grade twelve students will participate in programs leading to proficiency in two or more languages, either through a class, a program, or an experience.<sup>198</sup> By 2040, three out of four students will be proficient in one or more languages, earning them a State Seal of Biliteracy. This was accomplished by recruiting and training more teachers to teach plurilingual classes. The state has initiated various programs, including partnerships with Mexico and Spain. There also are several "grow your own" initiatives. For example, Loyola Marymount University's Center for Equity of English Learners has nearly 150 people from 10 districts training to become certified plurilingual teachers. National University offers a Preliminary Multiple or Single Subject Teaching Credential and Internship Option with Multilingual Authorization.<sup>199</sup> That credential is designed for candidates dedicated to teaching all K-12 learners. These programs take advantage of the language in Proposition 58, passed in 2016, which presents parents or guardians with an interesting curricular option. Suppose more than 20 parents or guardians from a single grade level or 30 parents or guardians from a school request a dual language or plurilingual program. In that case, the school site is required to explore at least the possibility of creating one.<sup>200</sup>

Once again, we encounter a familiar obstacle – where to find many plurilingual teachers to instruct the plurilingual mass of over six million California K-12 students? All the initiatives California has seen over the last decade have seen teachers authorized to teach plurilingual classes, growing from 716 in the 2012-13 school year to 1,188 in 2020-21. The problem is that the numbers dwindled to 1,116 the following year, 2021-2022. California

had a 16% decline in student teachers seeking credentials.<sup>201</sup> California's 2040 global initiative has a goal of hiring 2,000 that year. There are many reasons why finding, training, and credentialing new plurilingual teachers has proven an all but feckless attempt to meet the challenge. Recent research data indicates a lack of incentives to become a plurilingual teacher seems impactful. From the traditional problem of low salaries to a scarcity of training programs and the dollars to support them – the state is falling far behind in certifying plurilingual faculty.<sup>202</sup> This plurilingual teacher shortage at first glance appears overwhelming – a total of 2.3 million TK-12 EL students. However, a comprehensive plurilingual program would serve all the nearly 6 million students<sup>203</sup> each one of whom would, considering recent brain enhancement research, benefit from plurilingual education. This is not simply possible without a paradigm shift.<sup>204</sup>

### **Recruiting Plurilingual Teachers in California – Paid Student Teaching**

According to the California Department of Education (CDE), English learners constitute a substantial slice of California public school students: Over one million one-hundred thousand English learners constitute 19.01 percent of the total enrollment in California public schools.<sup>205</sup> Moreover, 2,310,311 students (English Learners and Fluent English Proficient) speak a home language other than English. This number embodies nearly 40 percent of the public school enrollment in California.<sup>206</sup> Aware of the enormity of teacher shortages in general and the paucity of plurilingual teachers given the immense plurilingual student population, California, just since 2016, has dedicated 1.2 billion dollars to programs attempting to address these issues. A paradigm shift may be in place of

the plunging number of student teachers seeking credentials and the meager results of plurilingual authorization programs.

Current legislation in California would pay student teachers at the same daily rate as substitute teachers to complete their 600 hours of student teaching.<sup>207</sup> For example, in the Los Angeles Unified School District in 2023, that would cost \$127.49 daily. Calculated over 600 hours (about 6 hours a day) over those 100 school days, a student teacher would earn \$12,749. Easing the financial burden of these unpaid internships would do much to relieve the teacher shortage by establishing this California Student Teacher Support Grant Program so that these student teachers can complete their required student teaching hours. The authors have seen first-hand over the last two decades that student teaching, essentially an unpaid internship, has been a set of multipronged barriers for teacher candidates – especially traditionally underrepresented students who must take time off their regular jobs, foregoing those wages, still pay tuition, and pay living expenses for their families, all while completing their degree and qualify for a teaching credential.<sup>208</sup>

For those that may question the nearly \$13,000 outlay of funds, schools are paying under-qualified individuals the same amount, allowing them to teach by giving emergency credentials. Assuaging the financial strain just as student teachers complete the teacher preparation process could produce, given California's wealth of plurilingual students, more qualified plurilingual teachers. The idea of "growing your own" teachers from the growing numbers of California's plurilingual adult population might produce a self-sustaining model that will supply the California classroom with a new vanguard of qualified, fully credentialed plurilingual teachers.

### **Benefits of American Sign Language (ASL)**

More than half of the people throughout the United States use ASL to communicate as their native language.<sup>209</sup> ASL is the third most used language in the United States, after English and Spanish. According to the Modern Language Association's statistics (2016), ASL has become the third most studied modern/foreign language at colleges and universities in the U.S., after Spanish and French.<sup>210</sup> It is important to note that American Sign Language (ASL) functions as another language and can benefit the brain.<sup>211</sup> Learning ASL boosts cognitive development.<sup>212</sup> Improvement has been demonstrated in visual-spatial skills, multitasking capabilities, and memory. Moreover, ASL also stimulates augmented cognitive flexibility, higher abstract and creative thinking, better critical thinking skills, and better listening skills.

Regarding bilingualism, research indicates that plurilingual children, including those fluent in ASL and English, outperform monolingual children in problem-solving and creative thinking tasks.<sup>213</sup> In addition, both visual and spatial skills are demonstrated by children exposed to ASL from an early age. It is important to understand that a child learning ASL is doing more than just committing signs to memory. That child is engaging in distinct parts of the brain.<sup>214</sup> The left hemisphere of the brain (associated with linguistic skills) works together with the right hemisphere (spatial understanding), leading to enhanced cognitive development. There are real benefits to teaching ASL to a child - even before that child can speak. An early communication channel is formed that can significantly augment a child's development via parent-child interaction. ASL can also affect the emotional well-being of a child with developmental delays.<sup>215</sup> Using sign language has been shown to reduce the

frustration and associated tantrums of children with speech delays. In summary, learning ASL presents various cognitive and emotional benefits such as learning a spoken or written language.<sup>216</sup>

### **Students as Teachers**

The idea that learning the language of one's students, in part, from one's students might sound pedagogically a bit upside down. It is the best practice for several reasons. Consider the social impact of nurturing a culture of cooperation, innovation, and higher-order critical thinking skills.<sup>217</sup> These mutualistic activities are present when youngsters reach out to help an adult communicate in a different language. Moreover, learning from students activates a form of authentic assessment.<sup>218</sup> In this case, students could detect the teacher's strengths and weaknesses via pronunciation and grammar. Because language acquisition is best done continually, students can help the teacher set informal goals and give friendly feedback on their teacher's evolving proficiency.<sup>219</sup>

Furthermore, formal student evaluations, usually in the form of end-of-term questionnaires, are known for providing scores that indicate teacher effectiveness along with open-ended advice. If formal student evaluations are efficacious, informal assessments seem reasonable for daily appraisal of formative learning outcomes. Perhaps this relationship of students instructing teachers who have endeavored to know their students is best explained lyrically:

It's a very ancient saying,  
But a true and honest thought  
That if you become a teacher

By your pupils you'll be taught  
As a teacher I've been learning  
And forgive me if I boast  
That I've now become an expert  
On the subject I like most  
Getting to know you<sup>220</sup>

When a teacher uses student resources to learn the student's home language, that teacher experiences authentic language and cultures with a helpful context<sup>221</sup>. Likewise, that teacher gains practical professional development, growing knowledge, and skill advancement in another language. For the student, an environment is set to discover and nurture their passion for teaching and learning, as well as reinforce skills in their first language, which will accelerate their acquisition of a second language.<sup>222</sup> You can't transfer a skill you do not have.<sup>223</sup> As the student continues not just to maintain but also develop their home language, there are ways in which a teacher can set up an environment where students can help the teacher learn the student's home language.<sup>224</sup> For example, besides regular teaching duties in elementary school, it is pretty usual for a teacher to greet students coming in on the bus, eat lunch with her students, and even supervise recess. These become a "testing ground" of genuine life events where the teacher uses the student's home language in a real-life context.<sup>225</sup> These instances can range from selecting what to eat for lunch, reviewing a homework assignment, or even singing a song. The teacher here models critical thinking skills (analysis, synthesis, evaluation) and the "can" do attitude needed to express oneself in a new language.<sup>226</sup>

Recall how language games can also be a student-led activity that helps a teacher acquire the language of the students being taught.<sup>227</sup> In short, playing a game using a student's home language can include guided storytelling activities that may include role-playing. Certainly, common word play games like password can be used to boost vocabulary.<sup>228</sup> Also, consider a mix of formal and informal interactions between students and teachers that lead to conversations in the student's home language via a language exchange club. Perhaps this exchange club could access and make available shared language learning materials such as a plethora of online target language resources and apps.<sup>229</sup> No doubt, cultural presentations provide an enriching avenue for student-prepared invitations about their mores, culture, and traditions so that teachers can understand better not just the dictionary definitions of words but also how words and expressions take on a cultural context and usage. Once again, teacher tutoring, where students take turns helping their teacher acquire their home language, can include not just grammar and vocabulary pointers – but the specialized skill of the standard pronunciation of the target language.<sup>230</sup> Finally, students will see direct evidence from their teacher of the patience and diligence required to learn a new language.<sup>231</sup> It doesn't happen overnight – but steady progress and a concomitant sense of self-efficacy in a new language become a reality.

### **Teacher Assistive Technologies**

There are many new and powerful assistive technologies to aid teachers strategically in learning their students' language.<sup>232</sup> Text-to-speech (TTS) readers can, in the student's language, read portions of a given text aloud to aid teachers in comprehending and absorbing it. TTS allows teachers to advance their listening and speaking skills by allowing

for an immersive language learning experience.<sup>233</sup> Furthermore, TTS is an excellent tool for refining pronunciation, as teachers can listen to their students' standard pronunciation of words and phrases. Consider the creative use of digital whiteboard apps that can facilitate cooperative language learning opportunities for students and their teachers.<sup>234</sup> These platforms permit the practice of language skills via interactive displays from a computer or projector.

Student control of the computer display can streamline a development task to enhance communication and transparency as with learning an idiosyncratic phrase (e.g., to learn something “by the book” in English is the same as saying “*por el libro*”) in Spanish. A digital whiteboard can be programmed to make this point via language, image, and video. Sometimes, graphic organizers are considered low-tech. Perhaps they offer teachers a way to learn with their students that can meaningfully augment language learning. Graphic organizers can assist teachers because they provide a visual aid to help them process, order, and record information.<sup>235</sup> They can help the teacher focus by providing an arranged structure to easily conceptualize what is to be learned more easily. They are known for their versatility and clear visuals (e.g., Venn diagrams and graphic organizers help one focus more and reduce cognitive load.<sup>236</sup> For instance, depending on the developmental task, new vocabulary, sentence structure, social concepts, and graphic organizers can be customized – even personalized. By using graphic organizers, which are inherently interactive, teachers engage in critical thought as a pathway to analysis, synthesis, and evaluation.<sup>237</sup> Finally, the goal is for teachers, with the help of students who speak another language to create an environment where teachers choose to be inspired, motivated, and

ultimately powered to learn and new language to serve better and culturally interact with those students.<sup>238</sup>

### **Consistent and Meaningful Professional Development**

One thing is sure: continued improvement of a classroom teacher's plurilingual skills needed to instruct all students in the 21<sup>st</sup> century is imperative. Without a doubt, explicit academic expectations for students and teachers are growing at the school, district, state, and national levels.<sup>239</sup> Correspondingly, our nation's schools are more ethnically and linguistically diverse each day than at any time in the last two centuries of our country's history.<sup>240</sup> As classrooms evolve into learning centers for the 21<sup>st</sup> century, a plurilingual faculty that is both competent and caring will measure the effectiveness of any school.<sup>241</sup> But today, there exists a barrier. Unfortunately, the old 20<sup>th</sup>-century model of professional development traditionally followed by school districts has not proven effective.<sup>242</sup> Historically, school districts have lacked the faculty of experts, the warehouse of courses, and the essential continuity in training to produce verifiable improvement in what students are taught and how they are taught (i.e., curriculum and methodology).

The traditional staff development experience - and this is known internationally - (e.g., one-shot workshops and one-time conferences) has an inherent flaw –a lack of continuity.<sup>243</sup> However, a model based on proven language transition delivered via innovative technology provides an action research paradigm (teachers using new approaches, reporting on their efficacy, and being compensated for their efforts), which is needed to successfully address the diverse challenges of the school of today and tomorrow.<sup>244</sup> What is called for is legislation to increase collaboration among colleges of

education, state departments, and school districts. Colleges of education seem to be the logical institutions that provide the core of experts, a wealth of courses, and the continuity exhibited by graduate programs. Of course, colleges of education have always been able to supply fundamentally what is needed for teacher professional development programs.<sup>245</sup> However, since the digital revolution of the first two decades of the 21<sup>st</sup> century, why haven't schools availed themselves of this resource?

School districts have wanted to control staff development for a variety of reasons.<sup>246</sup> Thus, school districts have not traditionally offered the option of prepaid courses to teachers to allow them to grow in the field of education the way private industry pays for employees to increase their expertise. The private industry views professional development courses (a growing number online) as an investment; school districts have historically seemingly treated them as a required cost.<sup>247</sup> Historically, school districts have lagged in staff development efforts.<sup>248</sup>

What is called for in the intervention of teachers' unions supporting legislation to guarantee salary increases and professional credit? Such apps as Duolingo, Beelinguapp, Memrise, Busuu, 50Languages, Mondly, Innovative Language, Drops, or LingQ provide innovative online learning resources on a smartphone that could profoundly change the conceptual core of effective professional development. While language learning apps can be an economical, portable, and entertaining resource for language acquisition, they are often most effective when combined with other study forms.<sup>249</sup>

To be clear, these free apps are not meant to stand alone. Language acquisition demands social interaction. What is called for is the authentic model of daily interaction

with students to test one's knowledge of a new language and to share the teaching and learning experience where everyone is seen as having assets. The learning process is active and honored.<sup>250</sup> Whatever the eventual form of staff development evolves, it must be thought of in terms of lifelong learning that extends from the first day in the profession to the last day on the job -and redound to the ultimate benefit of the students. In a multilingual, ever-changing, technological, and diverse society, the continuous training of faculty to learn their students' language is essential if systemic educational reforms of the 21st century are to succeed.<sup>251</sup>

Regarding the notion of teacher volition, the following points should be made. The very act of making a conscious choice is a basic element needed to act. Acting is based on a sense of agency. When a teacher decides to learn the language that the students bring into the classroom, that teacher must feel like the initiator of that action. Recall that disposition drives cognition.<sup>252</sup> This sense of agency is critical in our interactions with others as we define ourselves by our actions.<sup>253</sup> Volition also permits us to engage in a well-known adult trait – goal-oriented behavior. Setting, striving, and reaching goals is critical for overall personal development.<sup>254</sup> It is also important to mention that the most potent decisions humans make are driven by intrinsic motivation (internal feelings) rather than extrinsic motivation or incentive, which is triggered by external stimuli (prize, money, ranking).<sup>255</sup> Correspondingly, we act according to our values and feelings rather than merely reacting to our outer environment.

Learning a second language for a teacher is an inherently positive choice for at least two reasons: dealing with the affective domain based on feelings and values.<sup>256</sup> First,

teachers are responsible for knowing as much as possible and student funds of knowledge, no matter the discipline.<sup>257</sup> Here, knowing and practicing the student's first language gives the teacher a tremendous advantage over a monolingual instructor. Second, neuroscience has demonstrated that learning another language improves the brain function of the teacher.<sup>258</sup> In common parlance, learning another language makes a teacher smarter. Consider the aforementioned advantages of improved memory, enhanced multitasking, and bolstered critical thinking skills.

Neurobiology informs us that learning a new language changes the brain at a physical level – as more neurons and dendrites are found in plurilingual peoples' brains as compared to monolinguals.<sup>259</sup> Moreover, plurilingual people have comparatively denser gray matter and more white matter (a system of nerve fibers) connecting the brain's four lobes.<sup>260</sup> To sum up, volition, which stems from the affective domain (our values and feelings) plays a pivotal role in our ability to take intentional, goal-oriented action with a sense of agency and responsibility for our actions and to respond to the need to learn that language that students bring to the school's door each day, while at the same time improving one's mental capacity.<sup>261</sup>

### **Ethical Teaching by Acquiring the Language of One's Students**

An ethical teacher personifies a set of personal and professional norms, values, and principles that guide that educator's conduct.<sup>262</sup> A teacher desires to know each individual's funds of knowledge to serve the people best to be taught, along with the subject matter and methodological approaches needed for student success.<sup>263</sup> Moreover, a

teacher must demonstrate a commitment to treat others fairly, with respect, empathy, and compassion.<sup>264</sup>

In short, there is an appreciation of moral concerns to the extent that ethical teachers, on a daily basis, identify and analyze how best to serve a diverse group of students. An ethical teacher analyzes a situation where a substantial number of students speak a different language – then a reality-based decision on how best to serve those students, their caregivers, and the entire community must be made.<sup>265</sup> An adaptation or modification in the language of instruction to fit the circumstance would appear to be imperative for a truly ethical teacher. A teacher's primary ethical obligation is to provide excellent instruction by employing, in a language understood by the students, the most enriched curriculum. "Watered-down" assignments are unacceptable and are a product of low expectations. Furthermore, as has been noted, a teacher should use the widest variety of methodological approaches so that students with different learning styles and languages have the opportunity to learn.<sup>266</sup> Once these fundamental requisites are met, we can make a short list of good practices that can become part of a six-part code of ethics:

- Test what you teach.
- Have a current knowledge of the subject matter to be taught.
- Plan instruction to reach defined outcomes that meet accepted standards.
- Examine and update teaching practices and classroom technology.
- Keep parents (or caregivers) in the information loop (text messages, phone calls, class visits).

- Let parents know they are the first and most important teachers.

Note that to fulfill the spirit of the six-part code, an ethical teacher needs to communicate meaningfully with all students and parents in a language they understand. To do less even unwittingly, would appear to be unfair.<sup>267</sup>

There is a certain vulnerability in learning another language that must be overcome by the courage to make mistakes.<sup>268</sup> An ethical teacher must model courage in many situations daily. A particular valor is required to produce ethical outcomes for all, whether it is about fair grading, continual communication with parents, or learning another language. The ethical teacher understands that all learners are vulnerable. Learning is a try-fail, try-fail, try-succeeding proposition.<sup>269</sup> Here it must be noted that when a teacher takes on the daily task to learn their students' language – that educator provides a model of sincere enthusiasm, high expectations, and critical thought that provides an excellent model for every student. Being such a model demands strong interpersonal abilities to permit positive and proactive relationships with all the academic community (colleagues, administrators, parents, and most importantly, students).<sup>270</sup> Finally, an ethical teacher embodies a range of virtues that include but are not limited to honesty, empathy, integrity, courage, and responsibility. The truly ethical teacher realizes that learning the language of one's students to lead them to continual and sustainable student success is more than an enlightened thing to do; the authors believe it is a professional responsibility.<sup>271</sup>

### **The Teacher as Learner of a Students' Language**

Understanding the plurilingual history of the North American continent, the United States in general, and California in particular, one can view the absolute population growth of both monolingual and plurilingual people too often isolated in the same nation.<sup>272</sup> At the same time, recall that neurolinguistic findings point to an opportunity to bridge a gap where all can grow new neural connections by learning another language and benefit from superior reasoning, enhanced decision-making abilities, augmented networking skills, and enriched memory. Compensating student teachers at the critical stage of in-school internship is a wise investment for California.<sup>273</sup> As never before, resident plurilingual adults may have the opportunity to become credentialed pluricultural educators teaching all K-12 learners. In turn, this could provide every California student with a world-class plurilingual education while concurrently improving the apotheosis of all learning, the human brain.

The *American Paradox* is centered on the importance of monolingual teachers acquiring, over time, the language and culture of their students. Recall once again the three learning domains as we ask the question, from what aspects of human consciousness does volition emanate?<sup>274</sup> To find the answer, we must review the three fundamental learning domains. The traditional order of presentation of the three domains is to list them as the cognitive domain (knowledge and development of intellectual skills), the affective domain (values and emotions), and the psychomotor domain (physical movement). This order can be misleading because while the complex functioning of the three domains overlap as they interact, one functions as a catalyst to drive the other two. In short, the choices learners make are embedded in emotion.<sup>275</sup> The physiology of emotions processed

as feelings have a massive impact on the way we learn as well as how we organize and access knowledge – and yes, learn another language.<sup>276</sup>

Indeed, neuroscience indicates not only how but where the brain processes our value laden emotions.<sup>277</sup> Each year via advanced technologies (functional magnetic resonance imaging (fMRI) computerized tomography (CT) positron emission tomography (PET) electroencephalography (EEG) and magnetoencephalography (MEG)) we unveil more about where and how the brain, the apotheosis of learning, functions.<sup>278</sup> Today, neurobiologists routinely examine billions of neurons and trillions of connections between cells 86 billion neurons in the brain, with a total of ~100 trillion synapses searching for patterns to uncover the genesis of our feelings, thoughts, and activities.<sup>279</sup> The brain represents an incredible universe of complex circuitry that grows and prunes, creating a brain structure that enables quick access to the most frequented information.<sup>280</sup> Every link among neurons is part of a meticulous order.

Parts of the brain have specialized functions that are adaptable.<sup>281</sup> These actions are shaped by learning. Ries indicates that the ability to produce language by speaking or signing avails brain mechanisms that are not specific to language to some degree.<sup>282</sup> It is further thought that some brain mechanisms were part of human biology before humans could construct language. Language appears to be the most momentous human evolutionary invention since Homo sapiens first evolved in Africa. Every person alive today has a common ancestry that began with a single African population.<sup>283</sup> Samuels notes that language is a human endeavor. For only humans can transmit actual and imagined narratives replete with symbolic meanings from experiences both lived and illusory.<sup>284</sup> It is

important to note that as teachers acquire the language of their students they are literally (in terms of dendrites, greater gray mass, and other physical changes to cerebral matter) literally growing their brains. The authors hope is that the following draft legislation leads to a plurilingual future whereas in other countries around the globe, teacher have learned their students' language.<sup>285</sup>

### **California as a Futuristic Model of the United States**

When we think about the cultural and linguistic future of the United States, the authors believe that California is a valuable representation of the nation's future for many reasons. To begin, California's multicultural population portends the future demography of the country, which in turn impacts the rest of the nation's sociopolitical, economic, cultural, and linguistic dynamics.<sup>286</sup> Socio-politically, the Golden State's 21<sup>st</sup>-century progressive policies (e.g., education, healthcare, and civil rights) have set precedents for national movements and legislative initiatives. Innovation and Technology from Silicon Valley set trends across the country and worldwide, changing how we learn, which affects what we learn. Economically, if California were a country, it would boast one of the world's largest economies as it sets fiscal strategies and trends that encompass agriculture, entertainment, technology and popular culture. Finally, in terms of the most existential issue of the 21<sup>st</sup> century - climate change, California has a track record of sustainability initiatives and environmental legislation focused on renewable energy that sets long range goals for the rest of the United States. The authors believe the future trajectory of language education for the nation in large part is being set by California. The state's language policy

for K-12 schools is evolving to support a more plurilingual reality by eliminating the outdated English-only mandates in favor of a multicultural and multilingual future.<sup>287</sup> The World Languages Framework for the K-12 public schools of California is geared to provide high quality language instruction in the future. The state is exploring a plethora of ways to recruit, train and employ bilingual educators to meet the needs of its growing linguistically diverse population. This commitment to recognize and nurture a plurilingual reality may well - as in many other facets of life -set a model for the rest of the nation.

Having enough qualified plurilingual teachers to set an environment to effectuate these benefits has been an historic problem that appears to be getting worse. In the 2022 school year, California had a 16% decline in the number of student teachers seeking credentials.<sup>288</sup> Paid student teaching proposals in California may produce a new vanguard of plurilingual multicultural educators teaching all K-12 learners via two-way immersion by ensuring social-emotional thriving, meaningful academic achievement, and equitable and inclusive learning communities. The authors have chosen to look for remedies specific to the state of California. The Golden State is stressed because in California whose population is nearly 12 percent of the country each day serves 6 million public school students, of whom 1.2 million speak a language other than English at home.<sup>289</sup> Many rural schools in California and across the nation lack existing infrastructure for educating English learners. Size and remoteness are mitigating factors for rural schools to upgrade and develop support systems are hire faculty.<sup>290</sup> Nationally about 10 percent of English learners reside in rural districts. Limited resources may dictate against these structural challenges due to the relatively remote geographic location, and limited access to many

educational resources and services. That is why to effectuate change in that state we have presented in the appendix innovative legislation to fund teachers in a contractual and methodological path to becomes more plurilingual.

### **The Teacher as Learner of a Students' Language**

Understanding the plurilingual history of the North American continent, the United States in general and California in particular, one can view the absolute population growth of both monolingual and plurilingual people too often isolated in the same nation.<sup>291</sup> At the same time, recall that neurolinguistic findings point to an opportunity to bridge a gap where all can grow new neural connections though the learning of another language and simultaneously benefit from superior reasoning, enhanced decision-making abilities, augmented networking skills, and enriched memory. Compensating student teachers at the critical stage of in-school internship appeared to be a wise investment for California.<sup>292</sup> Resident plurilingual adults, as never before, may have the opportunity to become credentialed pluricultural educators teaching all K-12 learners. In turn this could provide every California student a world class plurilingual education while concurrently improving the apotheosis of all learning, the human brain.

The *American Paradox* is centered on the notion of the importance of monolingual teachers acquiring, over time, the language and culture of their students. Recall once again the three domains of learning as we ask the question, from what aspects of human consciousness does volition emanate?<sup>293</sup> To find the answer we must review the three fundamental domains of learning. The traditional order of presentation of the three domains is to list them as the cognitive domain (knowledge and development of

intellectual skills), the affective domain (values and emotions) and the psychomotor domain (physical movement). This order can be misleading because while the complex functioning of the three domains overlap as they interact, one of these three domains' functions as a catalyst to drive the other two. In short, the choices learners make are embedded in emotion.<sup>294</sup> The physiology of emotions processed as feelings have a massive impact on the way we learn as well as how we organize and access knowledge – and yes, learn another language.<sup>295</sup>

Indeed, neuroscience indicates not only how but where the brain processes our value laden emotions.<sup>296</sup> Each year via advanced technologies (functional magnetic resonance imaging (fMRI) computerized tomography (CT) positron emission tomography (PET) electroencephalography (EEG) and magnetoencephalography (MEG)) we unveil more about where and how the brain, the apotheosis of learning, functions.<sup>297</sup> Today, neurobiologists routinely examine billions of neurons and trillions of connections between cells 86 billion neurons in the brain, with a total of ~100 trillion synapses searching for patterns to uncover the genesis of our feelings, thoughts, and activities.<sup>298</sup> The brain represents an incredible universe of complex circuitry that grows and prunes, creating a brain structure that enables quick access to most frequented information.<sup>299</sup> Every link among neurons is part of a meticulous order. Parts of the brain have specialized functions that are adaptable.<sup>300</sup> These actions are shaped by learning. Ries indicates that the ability to produce language by speaking or signing avails brain mechanisms that are not specific to language to some degree.<sup>301</sup> It is further thought that some brain mechanisms were part

of human biology before humans could construct language. Language appears to be the most momentous human evolutionary invention since *Homo sapiens* first evolved in Africa.

Every person alive today has a common ancestry that began with a single African population.<sup>302</sup> Samuels notes that language is a human endeavor. Only humans can transmit actual and imagined narratives replete with symbolic meanings from lived and illusory experiences.<sup>303</sup> It is important to note that as teachers learn their students' language, they are growing their brains—both in terms of dendrites, increased gray matter, and other physical changes to cerebral structure. The authors hope that the following draft legislation will contribute to a plurilingual future, similar to other countries where teachers have learned their students' language.

## Glossary

### A

- **Additive Bilingualism:** A situation where a second language is learned without replacing the first language, promoting bilingual proficiency.
- **Affective Filter Hypothesis:** A theory by Stephen Krashen stating that emotional factors like anxiety and motivation influence language acquisition.
- **Andragogy:** is the art and science of adult learning, thus andragogy refers to any form of **adult learning**<sup>304</sup>.
- **Asset-Based Pedagogy:** An educational approach that recognizes and builds on multilingual learners' linguistic and cultural strengths.

### B

- **Balanced Bilingualism:** When an individual has equal proficiency in two languages.
- **Bilingual Education:** Instructional programs that use two languages for teaching content to develop proficiency in both.
- **BICS (Basic Interpersonal Communication Skills):** Conversational language skills that develop within 1-2 years in a new language, as described by Jim Cummins.

## C

- **CALP (Cognitive Academic Language Proficiency):** Academic language skills that take 5-7 years to develop, according to Jim Cummins.
- **Code-Switching:** The practice of alternating between two or more languages in conversation.
- **Comprehensible Input:** Language that is slightly beyond a learner's current level but understandable with support, as theorized by Krashen.
- **Cognates:** Words that have similar forms and meanings across languages (e.g., *education* in English and *educación* in Spanish).
- **Cultural Capital:** The knowledge, skills, and experiences that students bring from their cultural backgrounds, influencing educational success.

## D

- **Dual Language Program:** An educational model that promotes bilingualism and biliteracy by providing instruction in two languages.
- **Dynamic Bilingualism:** The perspective that bilingual language use is flexible and context-dependent rather than fixed and separate.

## E

- **ELL (English Language Learner):** A student whose primary language is not English and who is in the process of acquiring English proficiency.
- **ESL (English as a Second Language):** Instructional programs that focus on developing English skills in students whose primary language is not English.
- **Explicit Language Instruction:** Direct teaching of language structures, vocabulary, and grammar to English learners.

## F

- **Funds of Knowledge:** The skills, knowledge, and experiences that students and families possess, which can be integrated into the curriculum.

## G

- **Gentrification of Language:** Using the analogy of **gentrification** to refer to the change in linguistic (symbolic) value that comes from individual linguistic appropriation<sup>305</sup>.

## H

- **Heritage Language:** A language spoken at home or in the community that is different from the dominant language of society.
- **Home Language Survey:** A questionnaire used by schools to determine if a student speaks a language other than English at home.

## I

- **Input Hypothesis:** Krashen's theory that language acquisition occurs when learners receive language input that is slightly beyond their current level<sup>306</sup>.
- **Immersion Program:** An instructional model where students are fully immersed in a second language to promote proficiency.
- **Interlanguage:** The evolving linguistic system that language learners create as they progress toward proficiency.

## L

- **Language Transfer:** The influence of a learner's first language on their second language development.
- **LEP (Limited English Proficient):** A term formerly used to describe students who have not yet attained English proficiency.
- **Linguistic Interdependence Hypothesis:** Cummins' theory that proficiency in one language supports the development of another<sup>307</sup>.

## M

- **Maintenance Bilingual Education:** A program designed to sustain and develop a student's first language while adding a second.
- **Multilingual Education:** Educational approaches that incorporate three or more languages into instruction.
- **Morphological Awareness:** Understanding how word parts (prefixes, suffixes, roots) contribute to meaning.

## O

- **Output Hypothesis:** Swain's theory that language learning is enhanced when learners are required to produce language<sup>308</sup>.

## P

- **Pedagogy:** the study of teaching methods, including the aims of education and the ways in which such goals may be achieved<sup>309</sup>.

## S

- **Scaffolding:** Support strategies that help students progress in language learning, such as visuals, sentence frames, and guided practice.
- **Sheltered Instruction:** Teaching strategies designed to make academic content comprehensible for English learners.
- **Silent Period:** A stage in language acquisition where learners may understand but not produce language.
- **Sociocultural Theory:** Vygotsky's theory emphasizes the role of social interaction in language development<sup>310</sup>.

## T

- **TPR (Total Physical Response):** A teaching method that pairs physical movement with language learning to enhance comprehension.
- **Translanguaging:** The practice of using multiple linguistic resources to communicate and learn, rather than treating languages as separate systems.
- **Two-Way Immersion:** A dual-language program where native English speakers and English learners learn both languages together.

## U

- **Universal Design for Learning (UDL):** A framework that promotes flexible instructional strategies to support diverse learners, including multilingual students.

## W

- **WIDA Standards:** English language development standards are used to assess and support multilingual learners<sup>311</sup>.

## Language Policy and Legislation

- **Bilingual Education Act (1968):** The first U.S. law recognizing the needs of English learners and promoting bilingual programs<sup>312</sup>.
- **Lau v. Nichols (1974):** A landmark Supreme Court case ruled schools must provide appropriate language support for non-English-speaking students.
- **Every Student Succeeds Act (ESSA, 2015):** Federal legislation that replaced No Child Left Behind, emphasizing support for English learners.

- **English-Only Policies:** Laws or regulations that restrict the use of languages other than English in educational settings, often debated in bilingual education discourse.

## Appendix 1

### Draft Legislation

Note: This book takes into consideration neuroscientific research that demonstrates gaining another language further develops the brain-based skills of cognition and social awareness. The text forwards the notion that a new vanguard of teachers to best serve California's diverse student population must continue to learn about the culture and over time acquire the language of their students. Accordingly, the most valuable resource in the process of language acquisition for teachers are the students who bring another language to the school. To extend the idea from the classroom to the home, via teacher contact and communication, is to experience the dynamic of plurilingualism. As such the book is fundamentally aspirational. The authors feel it important to not only state what could be, but also point to the pathway of what would be via legislation in the largest and wealthiest state in the nation. Today California schools serve over a million two hundred thousand students who speak a language other than English at home. These students are taught by credential teachers of whom the vast majority are monolingual. The proposed legislation is geared to build a linguistic bridge via the newest research in the field of neurolinguistics to create an environment to spur a world class educational outcome. The proposed California legislation provides funding for schools to convert to plurilingual schools. The aid would allow school districts to pay the costs related to securing plurilingual educators, training programs, curriculum, materials, and other necessary start-up costs. Existing law launches the Pathways to Success Grant Program. Moreover, existing law already makes the

implementation of the program contingent upon an appropriation by the Legislature for its purposes in the annual Budget Act or another statute. This bill would revise and recast the Pathways to Success Grant Program to expand the program to every public school in the state.

#### Color Code

BLACK: UNCHANGED FROM SB 952  
 GREEN: M. RYAN ADDITIONS  
 BLUE: CALIFORNIA DEPARTMENT OF EDUCATION  
 PURPLE: STATE EDUCATION CODE

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

#### SECTION 1.

(a) The Legislature finds and declares all the following:

(1) The California Education for a Global Economy Initiative, approved by the voters as Proposition 58 at the November 8, 2016, statewide general election, which was passed by an overwhelming 73.5 percent of California voters, calls for: (A) multilingual opportunities for all pupils, including English learners; (B) eliminating restrictions on instructing English learners imposed by Proposition 227 of 1998; and (C) placing the decision of how to educate English learners back in the hands of school districts, schools, and communities.

(2) The approval of the English Learner Roadmap by the State Board of Education on July 12, 2017, helps to inform the implementation of Proposition 58. The English Learner Roadmap is the first new language policy adopted in nearly 20 years to serve the 1.062 million English learners identified in California in the 2020–21 school year. The English Learner Roadmap provides guidance to school districts on the implementation of high-quality services and programs for English learners by addressing the systemic considerations necessary to support effectiveness as well as the alignment and articulation within and across grades and schools. The English Learner Roadmap assists school districts in their efforts to provide English learners with intellectually rich and developmentally appropriate learning experiences, as well as meaningful access.

(3) Extensive **brain-based** research has demonstrated the **affective**, cognitive, economic, and long-term academic benefits of multilingualism and biliteracy.

4) Specifically, **neurolinguistic research has demonstrated improved overall cognitive abilities, memory and learning abilities, mental health, social skills, and delayed onset of**

dementia, faster stroke recovery, improved capacity for empathy, and more efficient brain structure.

(5) Researchers assert the benefits of **multilingualism** and **multiliteracy** to promote the multilingual and multicultural competencies necessary for a global business job market, while ameliorating the significant achievement gap between language majority and language minority pupils.

(6) Parents now can participate in building innovative emerging programs offering pupils greater opportunities to acquire 21st century skills, such as multilingualism and **multiliteracy**.

(7) Parents now have a choice and a voice to seek the best education for their children, including access to language programs that improve their children's preparation for college and careers and allow them to be more competitive in a global economy **while improving brain function**.

(8) [Principle one of California's English Learner Roadmap](#) expresses the needs for culturally and linguistically relevant education stating, "The languages and cultures English learners bring to their education are assets for their own learning and are important contributions to learning communities."

(9) **Teachers now can collaborate as role-model language learners acquiring the languages that their students bring to the classroom. This permits elementary and secondary students to correctly perceive that their language and culture have inherent value. They experience through their teachers' example an authentic powerful model of the perseverance and methods needed to acquire another language.**

(a) It is the intent of the Legislature that all children in California have access to high-quality dual language immersion, establishing schoolwide dual immersion programs for preschool, transitional kindergarten, kindergarten, and grades 1 to 12, inclusive, as models for accelerating achievement, reversing declining enrollment, and implementing an asset-based program as defined in state policy and the English Learner Roadmap **as well as the Global California 2030**.

(b) It is further the intent of the Legislature that all children in California are prepared to succeed in a global economy by increasing the number of dual language programs and growing the numbers of pupils graduating with the State Seal of Biliteracy.

(10) The department shall, on or before June 30, 2026, submit a report to the appropriate committees of the Legislature detailing the successes, best practices, barriers or constraints, and outcomes of school district and consortium funded by the districts.

### California Code, Education Code - EDC § 44277

a. The Legislature recognizes that effective professional growth must continue to occur throughout the careers of all teachers, in order that teachers remain informed of changes in pedagogy, subject matter, and pupil needs.

b. An individual program of professional growth may consist of activities that are aligned with the California Standards for the Teaching Profession that contribute to competence, performance, or effectiveness in the profession of education and the classroom assignments of the teacher. Acceptable activities may include, among other acceptable activities, the completion of courses offered by regionally accredited institutions of higher education, including instructor-led interactive courses delivered through online technologies....

c. Through preexisting local school district funded professional development programs, through accredited colleges and universities, teachers gain graduate credit in sequenced multilingual courses, which affects salary scale calculated pay via additional course credits and degree attainment.

(12) Local schools' districts may apply for existing funding per Cal. Ed. Code § 41480. Current through the 2023 Legislative Session.

Section 41480 - Educator Effectiveness Block Grant(a)(1) The sum of one billion five hundred million dollars (\$1,500,000,000) is hereby appropriated from the General Fund to the Superintendent for the Educator Effectiveness Block Grant. The Superintendent shall apportion these funds to school districts, county offices of education, charter schools, and the state special schools in an equal amount per full-time equivalent certificated staff, which shall not exceed the total certificated staff count, and full-time equivalent classified staff count, for each eligible local educational agency, in the 2024-25 fiscal year.

a. (3) It is the intent of the Legislature that the Educator Effectiveness Block Grant support increased educator access to standards-aligned professional support for high-need areas of instruction, including, but not limited to, English language instruction....

b. (5) Practices to create a positive school climate, including, but not limited to, restorative justice, training around implicit bias, providing positive behavioral supports, multitiered systems of support, transforming a school site's culture to one that values diverse cultural and ethnic backgrounds....

c. (7) Instruction and education to support implementing effective language acquisition programs for English learners, which may include integrated language

development within and across content areas and building and strengthening capacity to increase bilingual and biliterate proficiency.

## Endnotes

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