

It's Not Brain Science... Or Is It?  
How Early Second Language Learning Can Impact Future Achievement

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May 4, 2015

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### Abstract

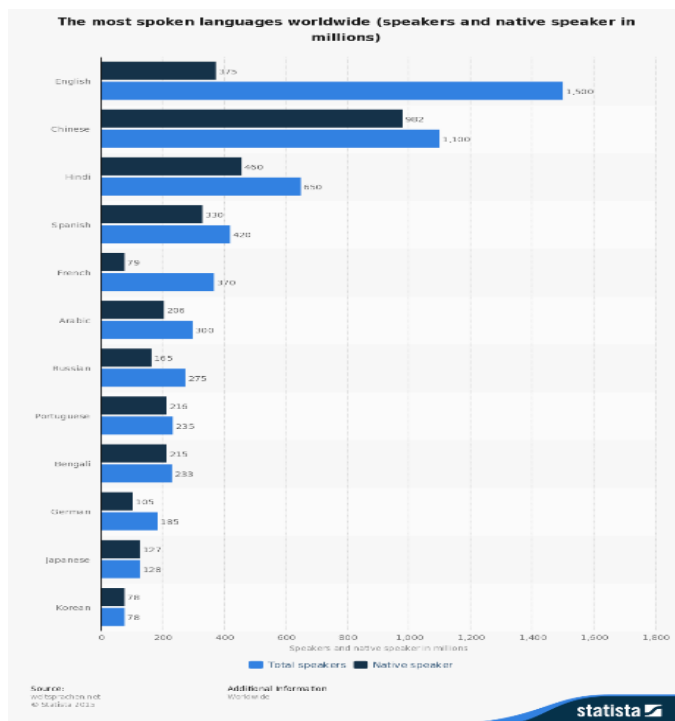
We live in a global economy, yet U.S. citizens lag far behind in the knowledge of other countries' languages, cultures, customs, geographies and peoples. Equipping the next generation with foreign language skills as well as knowledge of other cultures and customs will not only provide increased career opportunities for individuals but also aid in the future success of the U.S. economy. The U.S. educational system does not stress the learning of language beyond English: K-12 curriculum is rigidly mandated, budgets are tight, class time and teacher training is limited, and language programs are often among the first to be cut during budget crises. There is a time period when a child's brain is developing and most receptive to learning, and that is early childhood. If the seed were planted in a child before he/she enters kindergarten to learn the basics of a foreign language and culture, perhaps that knowledge could be nourished throughout the rest of their lives, preparing those children to embrace cultural differences, live and compete more successfully in an evolving and diverse world, and be better equipped for later education. Besides examining the current state of foreign language education in the U.S. and how learning occurs, the benefits of foreign language learning in relation to business and human relations are examined in this paper. Multiple solutions to solving the foreign language deficit are mentioned including a proposal for an early-learning language program.

## It's Not Brain Science... Or Is It?

### How Early Second Language Learning Can Impact Future Achievement

*"Those who speak three languages are trilingual; those who speak two languages are bilingual; those who speak one language are... American." ~ Author Unknown*

English is the most common language in the United States and broadly spoken



("The most spoken languages worldwide | Statista", 2015)

worldwide. Determining the actual global language frequency ranking appears difficult to accurately assess, as sources tend to vary. When ordered by the number of native speakers, English is most often shown ranking third behind Mandarin Chinese, and Hindi ("The most spoken languages worldwide | Statista", 2015), or Spanish ("The 10 Most Common Languages", 2014).

When ranking includes second language speakers, English typically ranks number one ("The most spoken languages worldwide | Statista", 2015; Funders and Founders Notes, 2013).

Yet we live in an increasingly globalized economy, and U.S. students lag far behind other nations in the knowledge of other countries' languages, cultures, customs, geographies, and peoples. Despite the opportunities globalization brings, "we are becoming a nation of second-language illiterates" (Berman, 2011). A brief comparison of U.S. language learning to that of other countries finds that most Asian countries begin second language instruction, usually the

study of English, in primary school (Jackson, 2013) and that in other industrialized nations, several languages may coexist in the same territory, or the educational system may guarantee students the opportunity to learn other languages. It is only in America (or nearly exclusively so) that language-learning opportunities are so constrained...

Canada... pursues language learning in English and in French as part of its national self-understanding. In Europe, some 50 percent of the population over the age of fifteen report being able to carry on a conversation in a second language, and the European Union has set a goal of equipping all citizens with proficiency in two non-native languages. This level of language ability will obviously represent an enormous human resource in the global economy, which is to say that the American model of education for monolingualism deprives our students of the skills they will need in tomorrow's economy. The endemic hostility to language learning is a war against our next generation (Berman, 2011).

Equipping the next generation with foreign language skills, as well as knowledge of other cultures and customs, has been described as critical to the security of the United States and to the future success of the U.S. economy (National Research Council, 2007; United States Congress, 1994), yet foreign language study in American schools remains largely optional: "In 2008–09, only eleven states required any language study at all as part of K–12 education" (Berman, 2011).

There is no effective national policy in place either. While several language councils and organizations, such as the American Council on The Teaching of Foreign Languages, the Modern Language Association, JNCL-NCLIS, Committee for Economic Development, Center for Applied Linguistics, and the National Research Council, have issued and maintained foreign language learning policy or position statements and urge greater emphasis on second language

learning in the curriculum as a priority subject, there is no comprehensive K-12 foreign language education policy in the United States. In fact, funding for the Foreign Language Assistance Program (FLAP), which funded K – 12 programs, was eliminated from the Department of Education budget in 2012 (U.S. Department of Education, 2014).

In addition to the language learning deficit, student achievement scores also lag behind those of other countries. Since the year 2000, tests have been administered every three years in 65 countries and education systems by the Program for International Student Assessment in order to measure the performance of 15-year-old students in the areas of math, science, and reading literacy. According to the National Center for Education Statistics, 2012 results show that U.S. students ranked 30<sup>th</sup> in mathematic literacy, 23<sup>rd</sup> in science literacy, and 20<sup>th</sup> in reading literacy. With the exceptions of Australia and Ireland, the education systems that outperformed the U.S. in these areas include second language study in school curriculum as a matter of course, generally beginning in the primary years (2015). By contrast, the U.S. does not stress the learning of language beyond English: K-12 curriculum is rigidly mandated, school budgets are stressed, class time is limited, and foreign language programs are often among the first to be cut as school's redirect funds to focus on math and English language arts in response to No Child Left Behind era policies (Common Core, 2012). Is this coincidental, or might there be a correlation at some level? Could foreign language study, as a component in other countries' core curriculum, be a contributing factor in to the superior performance of their students?

How can U.S. children become better equipped to compete in this increasingly global environment? There is a time period when a child's brain is developing and most receptive to learning, and that is early childhood. Is the introduction of foreign language study to pre-school children a feasible plan?

### **Status of Foreign Language Learning in the United States**

Foreign language learning programs and opportunities vary among countries. In the European Union, all but two countries (Ireland and Scotland) require the study of at least one foreign language as a compulsory subject, with the majority setting fixed minimum attainment levels of proficiency. Students generally begin learning a second language – in most countries that language is English -- between the ages of 6 and 9 years old, with some beginning as early as the age of 3; in 2010 only 22% of EU primary education students were not studying a foreign language. That same year, 60% of lower secondary education students in the majority of the European Union were learning two or more foreign languages (Eurydice, 2011).

In the United States, school funding indicates that little importance is placed on the study of foreign languages and the result is a largely monolingual population. According to a 2012 Forbes article, “only 18% of Americans report speaking a language other than English, while 53% of Europeans (and increasing numbers in other parts of the world) can converse in a second language” (Skorton & Altschuler, 2012). In a 2010 speech at the University of Maryland, the Secretary of Education, Arne Duncan, notes that “the United States may be the only nation in the world where it is possible to complete high school and college without any foreign language study – let alone the mastery of another language” (US Department of Education, 2010).

Historically, foreign language programs have been offered to students in the United States during high school with many, but not all colleges and universities requiring at least two years of study for enrollment. With shrinking budgets in public schools, foreign language programs in the United States are becoming more inconsistent and quality instruction is spotty; furthermore, many colleges and universities have discontinued previously required foreign language study prerequisites. According to the US Department of Education (2010), “Just 10

states require foreign language study for high school graduation – and low-income and minority students in particular lag behind their peers in other countries in their knowledge of languages, as well as geography and other cultures”. Part of the gap is due to the professional development of teachers. Rhodes and Pufahl note that the majority of schools reported engagement of their teachers in professional development over the previous year, however inequality is still a problem. “There was a significant disparity between rural schools and urban and suburban schools. Teachers in rural schools had a much lower rate of participation in professional development” (Rhodes & Pufahl, 2009, p. 6). Professional development disparities are not confined to geographic location. Rhodes and Pufahl’s study through the Center of Applied Linguistics showed that foreign language instruction occurred in private schools three times as often as in public schools (2009, p. 2).

Teacher training is not the only weakness in the United States related to staffing. Secretary Duncan noted in a 2010 speech that during the 2007-08 school year, “three-fourths of the states reported shortages in second language teachers” (US Department of Education). This problem is rooted in postsecondary institutions not meeting the demand for new teacher certification. In fact, colleges and universities are scaling back or eliminating language programs altogether. To try to solve this problem, Rhodes and Pufahl’s note in their Executive Summary of a 2009 Center for Applied Linguistics study, some schools have resorted to “seeking alternative sources of teachers, such as agencies that provide teachers from other countries, commercial language schools, and foreign governments that send teachers to the United States” (p. 7) in order to cope with the severe shortage of foreign language teachers. Another concern with current college and university language programs is that, “ninety-five percent of college students enrolled in a language course to study a European language, but fewer than one percent of



graduate students are studying a language that the Department of Defense considers critical for national security” (US Department of Education, 2010).

According to the *Chicago Tribune*, however, progress is beginning to occur. “Limited proficiency in a foreign language is no longer acceptable in a global, multicultural society, experts say, and Illinois is launching a statewide initiative” (Rado, 2014). The Illinois State Board of Education “will allow school districts to add a special credential called the State Seal of Biliteracy on high school diplomas and transcripts if students show a high level of proficiency in one or more languages in addition to English” (Rado, 2014). This initiative emerged in California and continues to grow throughout the country. The Illinois legislation, approved in August 2013, encourages foreign language instruction to begin as early as elementary school to better enable language mastery. Earning the statewide seal could give students an advantage in college admissions as well as increase scholarship, internship, and career opportunities. “The law also states that ‘proficiency in multiple languages is critical in enabling this state to participate effectively in a global, political, social, and economic context and in expanding trade with other countries’” (Rado, 2014). Districts are not required to participate but many, such as Lincoln-Way Community High School and Chicago Public Schools, have made commitments to participate. Earning the seal requires having the ability to converse and be understood. They must be able to ask simple questions; handle survival situations; deal with routine tasks and social situations; as well as exchange basic information. Students will be tested in English and the foreign language(s) to determine mastery (Rado, 2014).

One area of recent language instruction growth has been in Chinese courses. Hundreds of schools are getting assistance from the Chinese government that is sending teachers from China to schools all over the world. The Chinese government pays for part of their salaries making the

program possible for American schools. According to an article from the *New York Times*, “rough calculations based on the government’s survey suggest that perhaps 1,600 American public and private schools are teaching Chinese, up from 300 or so a decade ago” (Dillon, 2010). Dillon also references a study from the Center of Applied Linguistics whose survey showed that in the approximately 27,500 middle and high schools in the U.S. that offer at least one foreign language, the proportion offering Chinese rose from 1 to 4 percent from 1977 to 2008. Generally, Chinese programs started on the east and west coasts, but programs in the heartland region are increasing, as well. Arabic programs are also growing in accessibility (Rhodes & Pufahl, 2009, p. 7).

Part of this awakening may be due to the events following the 9/11 attacks where the shortage of translators was made grossly apparent.

The United States' inability to communicate with or comprehend other parts of the world became a prominent subject for journalists, as language failures of all kinds plagued the United States' military interventions in Afghanistan and Iraq and its efforts to suppress terrorism. Initiatives in critical languages began multiplying in educational institutions all over the United States. (Modern Language Association, 2007)

Federal funding for critical language programs became available while college and university language program enrollments increased dramatically. According to the Modern Language Association (2007), “College and University enrollments in Arabic nearly doubled between 1998 and 2002, from 5,505 to 10,584”. Skorton and Altschuler agree that

[d]emand for and enrollment in foreign language courses is at its highest level since 1968. At public K-12 schools, course enrollment in 2007-2008 reached

8.9 million individuals, about 18.5 percent of all students; between 1995 and 2009, it increased 47.8 percent at colleges and universities. (2012)

Skorton and Altschuler report that the number of foreign language offerings at high schools have remained roughly the same, but those offerings at middle schools have decreased from 75 to 58 percent. In a survey by the Center of Applied Linguistics (CAL), “a third of schools reported that the federal No Child Left Behind (NCLB) Act, which since 2001 has required public schools to test students in math and English, had drawn resources from foreign languages” (Dillon, 2010). According to Lenker and Rhodes, NCLB is also affecting immersion programs with schools sharing “that they felt a need to discontinue their immersion programs in order to meet federal standards. Some schools reported that they could not find ‘highly qualified teachers’, as defined by NCLB, for the immersion classes” (2007, p. 3). Overall, the CAL survey of 3,200 schools showed that Spanish was taught almost universally and overall language instruction decline has occurred in public elementary and middle schools (Dillon, 2010).

Language immersion programs are in 14% of the public elementary schools that have foreign language programs (Rhodes & Pufahl, 2009). Immersion is the most successful in providing opportunities for students to become highly proficient in the goal language because instructors expose students to the language throughout the school day in conjunction with instruction in various academic subjects. This method creates students that are not only proficient in the language, but who also have a high level of cultural awareness (Lenker & Rhodes, 2007, p. 1). As of 2007, the United States had 310 foreign language immersion programs with about 15% of those housed in private or independent schools (Lenker & Rhodes, 2007, p. 1). Immersion programs are present in all levels of education and some programs overlap into more than one level. “The 2006 directory includes 53 immersion programs at the preschool level, 181 at the

elementary school level, 89 at the middle school level, and 37 at the high school level” (Lenker & Rhodes, 2007, p. 1). According to Lenker and Rhodes, the number of immersion programs has been increasing since 1971. They attribute this growth to factors including parental pressure and their expectations for higher proficiency; increased multicultural thinking; and the growing realization that Americans need to be proficient in other languages (2007, p. 3). Growth could continue because the National Security Language Initiative deems long-term language learning programs, specifically in critical languages such as Arabic, Azerbaijani, Bengali, Chinese, Hindi, Indonesian, Japanese, Korean, Persian, Punjabi, Russian, Turkish, and Urdu necessary to increase “global awareness, national security, and economic competitiveness” (Lenker & Rhodes, 2007, p.4). Federal grants are increasing for these programs in order to make this goal possible.

National trends seem to be reflected locally. In public schools, little foreign language study is offered at the elementary and middle school levels and European languages are the focus of high school foreign language learning. A private school in the Quad City area, Rivermont Collegiate, also follows national trends by beginning foreign language learning in Early School (PreSchool and Junior Kindergarten). Their website shares that Spanish learning begins in Early School and French is added in Lower School. In 6<sup>th</sup> grade, students must choose to study French or Spanish through graduation. Latin is taken for a semester during 6<sup>th</sup> and 7<sup>th</sup> grades. Chinese is offered at the 9th grade level, and the learning of additional languages is available through independent study or through a partnership with local colleges and universities. Culture and history are included in the language curriculum along with the traditional elements of foreign language classes (Rivermont Collegiate Curriculum Guide 2014 - Middle & Upper School, 2014, p. 7).

According to a March 2015 *Quad City Times* article, Lincoln-Irving Elementary will soon become the first local schools to offer a dual language two-way immersion program (Moline-Coal Valley School District to Offer Dual Language Academy). One of the variations of the immersion model is called two-way immersion: “Two-way programs use English and another language for instruction. One third to two thirds of the students in each are native speakers of English; the remainder are native speakers of the other language” (Lenker & Rhodes, 2007, p. 1). The language being taught in Lincoln-Irving’s program is Spanish. Following the purpose of immersion programs, students at Lincoln-Irving will be bilingual in reading, writing, speaking, and listening by the end of their fifth grade year.

According to Rhodes and Pufahl, “there continues to be reason for serious concern about the limited number of long-sequence K-12 language programs designed to provide students with linguistic and cultural skills needed to communicate effectively in the United States and abroad” (2009, p. 7). They argue that program inequities have increased with rural and low-income schools having fewer opportunities for foreign language learning.

While improvements are being made to foreign language learning in the United States, there is still much progress to be made. World-wide, the United States ranked fourteenth on the overall index rank and score of the 2014 Pearson index of cognitive skills and educational attainment.

A to Z	Overall Index rank and score	Cognitive Skills rank and score	Educational Attainment rank and score
 SOUTH KOREA	[Rank 1] 1.30	[Rank 2] 1.35	[Rank 1] 1.19
 JAPAN	[Rank 2] 1.03	[Rank 4] 1.20	[Rank 6] 0.70
 SINGAPORE	[Rank 3] 0.99	[Rank 1] 1.65	[Rank 33] -0.33*
 HONG KONG-CHINA	[Rank 4] 0.96	[Rank 3] 1.34	[Rank 18] 0.20*
 FINLAND	[Rank 5] 0.92	[Rank 5] 0.99	[Rank 4] 0.79
 UNITED KINGDOM	[Rank 6] 0.67	[Rank 8] 0.52	[Rank 2] 0.96
 CANADA	[Rank 7] 0.60	[Rank 6] 0.77	[Rank 15] 0.25
 NETHERLANDS	[Rank 8] 0.58	[Rank 7] 0.57	[Rank 7] 0.58
 IRELAND	[Rank 9] 0.51	[Rank 10] 0.49	[Rank 10] 0.55
 POLAND	[Rank 10] 0.50	[Rank 16] 0.33	[Rank 3] 0.85
 DENMARK	[Rank 11] 0.46	[Rank 17] 0.32	[Rank 5] 0.75
 GERMANY	[Rank 12] 0.41	[Rank 12] 0.48	[Rank 14] 0.28
 RUSSIA	[Rank 13] 0.40	[Rank 9] 0.50	[Rank 21] 0.19*
 UNITED STATES	[Rank 14] 0.39	[Rank 11] 0.49	[Rank 20] 0.19
 AUSTRALIA	[Rank 15] 0.38	[Rank 13] 0.43	[Rank 13] 0.29

(Pearson, <http://thelearningcurve.pearson.com/index/index-ranking/overall-score-highest>)

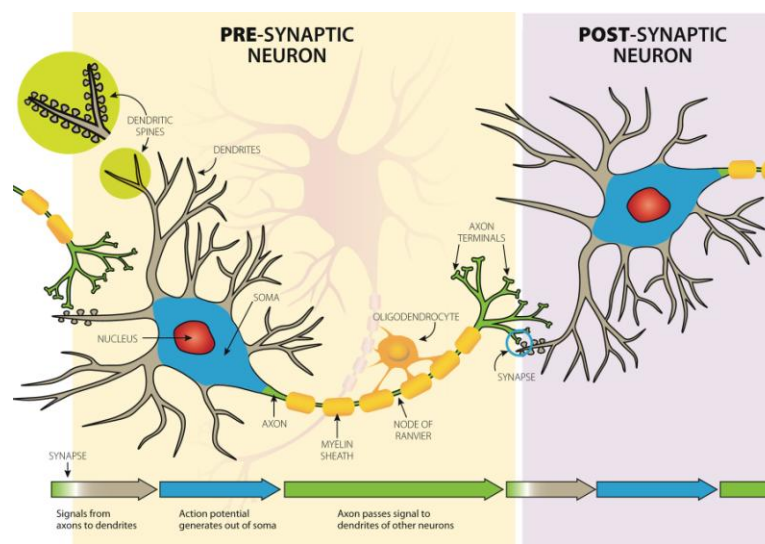
Of the thirteen countries that ranked higher, all – with the exception of Ireland – include foreign language studies early a student's academic career as a part of the core curriculum and most set language proficiency requirements. As the United States searches for strategies to improve student learning, evidence indicates clear benefits to the inclusion of early foreign language learning in the core curriculum.

### **Early Second Language Learning: Helps to Build a Better Brain?**

How early is too early to introduce foreign language learning? According to recent research led by Christine Moon of Pacific Lutheran University, Washington, language learning – specifically phoneme recognition -- begins in the womb. Phonemes are the basic units of speech, represented by letters that are used to form words, and each different language has its own distinct set of phonemes. A 2012 two-country study led by Moon demonstrated that neonates, mere hours out of the womb, were able to perceive variations in the vowel phonemes of the native language of the mother from the vowel phonemes of a different language (Moon, Langercrantz & Kuhl, 2013). In an article discussing her findings, Moon comments: “We have known for over 30 years that we begin learning prenatally by listening to the sound of our mother talking... This is the first study that shows we learn about the particular speech sounds of our mother’s language before we are born” (Clements, 2012, p. 1). Furthermore, the study shows that the ability to discern the distinction was gained in utero. The research presents findings suggesting that “the foetal brain at the time close to birth can actually perceive and learn most of the key aspects of language” (Huotilainen, 2013, p. 102). The ramifications of this development are that some of the language abilities “that are evident in the behavior of a child at 1 -2 years have been shown to develop their neural bases already very early during the foetal period or early infancy... In future, we are expecting to learn new, exciting results from infant language capabilities...” (Huotilainen, 2013, p. 103).

What is the neurologic process that accounts for the rapid pace at which early learning takes place? Through the study of neuroscience, including the relatively recent developments in the understanding of brain plasticity, researchers can detail the explosion of growth that takes place during the first few years of life as a child’s brain develops. In very simplified terms, the

process may be described in the following manner: An infant brain comes into the world with approximately 100 billion neurons, or brain cells, which must form an immense communication network; in order for these neurons to communicate, connections called *synapses* are formed (Perlmutter, 2006, p. 14). Neurons are comprised of three parts: *dendrites*, which are branch-like structures that provide surface area capacity for synaptic formation; the *cell body*, which contains the cell DNA; and the *axon*, a wire-like structure along which electrical impulses travel (Doidge, 2007, pp. 53-54). Neurons send messages to each other through the release of chemicals called *neurotransmitters* that flow through these structures and travel across synaptic bridges from neuron to neuron creating synaptic connections.



(Reyst, 2013)

Every activity in which the brain is engaged requires the communication of millions of neurons with millions of other neurons by means of these synaptic connections (Perlmutter, 2006, p. 14). The process of learning may be understood as the process of making repetitive synaptic connections. The more frequently a connection is made over time, the more established it becomes --analogous to a well-traveled path through the forest – and the person comes to “know” something; when connections are repeatedly made -- such as *fire + hot* or *ice cream +*



*happy* -- chemical changes take place that bond the neurons more strongly together, or as neuroscientist Carla Shatz put it: *Neurons that fire together wire together* (Doidge, 2007, p. 63).



(Reyst, 2013)

Over the course of the first three years of life, a child's brain could form a connection network consisting of more than 100 trillion synapses, connections vital for the effective neural communication necessary for cognitive development and future learning. Because many of these early connections are not needed, however, the young brain goes through a streamlining process called synaptic pruning. This process is ongoing in varying degrees from before birth through the teen years, as "synapses that are regularly used are nurtured and thrive, while the synapses that are underutilized wither away" (Perlmutter, 2006, p. 15). By the time the child reaches adulthood, his or her brain will have approximately 100 billion neurons (Doige, 2007, p. 50). During the early years, when the brain is feverishly absorbing information and creating billions and trillions of connections, there appears to be a critical period of cognitive growth, particularly in the realm of language development. Norman Doige expands on the implications of this in the following account of findings put forth by renowned neuroscientist, Michael Merzenich:

What is remarkable about the cortex in the critical period is that it is so plastic that its structure can be changed just by exposing it to new stimuli. That sensitivity allows babies and very young children in the critical period of language development to pick up new sounds and words effortlessly, simply by hearing their parents speak; mere exposure causes their brain maps to wire in the changes. After the critical period older

children and adults can, of course, learn languages, but they really have to *work* to pay attention...[T]he difference between critical-period plasticity and adult plasticity is that in the critical period the brain maps can be changed just by being exposed to the world because ‘the learning machinery is continuously on’. (Doidge, 2007, pp. 78-79)

The notion of a “critical period” for learning is a well-known discovery from the second half of the last century. What are the implications of this hypothesis for language learning? In addition to the demonstrated requirement for environmental stimuli in order for brain development to take place,

[i]t also seemed that each neural system had a different critical period, or window of time, during which it was especially plastic and sensitive to the environment, and during which it had rapid, formative growth. Language development... has a critical period that begins in infancy and ends between eight years and puberty. After this critical period closes, a person’s ability to learn a second language without an accent is limited. (Doidge, 2007, p. 52)

Broca’s area, located in the frontal cortex of the brain, is the crucial location for language development. In addition to the inability to master a second language minus his or her native tongue accent, “[w]hen adults learn a second language, another sub-area of this region is involved. But if children are brought up bilingually from an early age, both languages use the same frontal areas” (Swaab, 2014, 29). When languages are stored in the same area rather than two separate and distinct neuronal networks, an auditory cortex representing both languages is created; the result is that “such children develop a single, large cortical library of sounds and

have an easier time learning languages later in life” (Doige, 2007, p. 400). Furthermore, the positive cognitive impacts produced by the development of bilingualism at an early age “seem to diminish in adolescents and adults undergoing the same bilingual development”, an important factor that should be considered in discussions of second language program initiation (Caccavale, 2007, p. 31).

While there is yet some debate regarding the biological basis for the critical period hypothesis, there is general concurrence with the claim that acquisition of fluency in a second language is most successful when learning begins in childhood, and becomes more difficult into adulthood (Birdsong, 1999, p. 176). An entertaining demonstration of the degree of difference in brain plasticity between the adult and child brain is presented by Destin Sandlin, an Aerospace Engineer and YouTube educator who teaches scientific principles in amusing ways on his YouTube Channel entitled “Smarter Every Day”. In “The Backwards Brain Bicycle” experiment, he shows – and invites others to participate in demonstrating -- the impossibility of riding a bicycle upon which the handlebars are welded backwards, making the front tire turn in the opposite direction from that of a normal bicycle. Volunteer would-be riders soon find that riding even a few feet without falling off the bicycle is impossible. Mr. Sandlin explains that it required eight months of regular practice to change his lifelong fixed brain control algorithms to the point that he could ride without falling off. He goes on to explain that he created a smaller backwards bicycle to test for how long it would take his five-year-old son to be able to ride. Whereas eight months of effort was required for Mr. Sandlin, his five-year-old son was able to master riding the backward bicycle in two weeks. As Mr. Sandlin comments: “It’s clear from this experiment that children have a much more plastic brain than adults; that’s why the best time to learn a language is when you’re young” (Sandlin, 2015). It is interesting that, though this

experiment is demonstrating the impact of brain control algorithms on the performance of a physical activity, the experimenter's conclusion includes a connection to language learning.

Though there are a few exceptions, most scientists are in general agreement in regarding birth through onset of puberty as the window of opportunity for language development and second language learning, but have organic, structural benefits to the brain of such learning been identified? Further, beyond the competitive advantage of bi- or multilingual communication skills, is there evidence to support the notion that foreign language study can strengthen brain functions that may positively impact a student's overall academic performance?

### **Impact on Grey-Matter Density**

In 2004, Andrea Mechelli of the Wellcome Department of Imaging Neuroscience in London led a team that investigated the question of possible structural benefits associated with second language learning. The team partnered with experts from the Fondazione Santa Lucia in Rome to conduct research to ascertain whether or not there was any discernible correlation between grey-matter density and language acquisition.

For the first of two tests, researchers took brain scans of a pool of participants that consisted of 25 monolinguals, 25 early bilinguals who learned a second language prior to age 5, and 33 'late' bilinguals who began second language studies between the ages of 10 and 15 years of age. All were native English speakers of similar age and educational background, and all had practiced their second language regularly for at least five years. The findings revealed that grey-matter density was significantly greater in bilinguals than in monolinguals in the left hemisphere, the area most closely connected with language and communication skills; the trend was also evident in the right hemisphere to a lesser degree. Furthermore, scans of the early bilingual participants showed the greatest effect.

The second test “investigated whether there was a relation between brain structure and proficiency in the second language and age at acquisition” and found that density “increases with second language proficiency but decreases as the age of acquisition increases.” The study concludes that “[o]ur findings suggest that the structure of the human brain is altered by the experience acquiring a second language” (Mechelli, Crinion, Noppeney, O’Doherty, Ashburner, Frackowiak, & Prince, 2004, p. 757).

Brain imaging that provides evidence of early bilingual speakers with significantly greater grey-matter density than monolinguals seems to support the notion that early second language learning boosts a student’s overall cognitive development, since studies have shown that volume and density of grey and white matter within the brain is correlated with intelligence (Narr, Woods, Thompson, Szeszko, Robinson, Dimtcheva, Bilder, 2006).

### **Far-Reaching Benefits**

In addition to evidence of increasing brain density, research provides substantial evidence that the benefits of early second language learning extend beyond that of developing valuable communication skills, and include improved overall school performance and superior problem-solving skills (Bamford & Mizokawa, 1991; Hakuta, 1986). Following are a few of the identified benefits of early second language learning specific to academic performance.

**Enhanced cognitive development and function, and improved academic performance in core subject areas.** Second language studies increase English speaking students’ proficiency in their own native tongue, as such studies strengthen the learner’s skills in reading, writing, vocabulary, and grammar (Cooper, 1987). Research conducted by Masiantonio (as cited in NEA Research, 2007) found students learning foreign languages consistently scoring higher in measures of English vocabulary than their monolingual peers, particularly when the

language of study has Latin roots. Critical thinking skills such as comparing and contrasting -- or analysis -- are engaged by foreign language learners. If deciphering word meanings is a form of problem-solving, “then it stands to reason that becoming a better problem-solver would not solely benefit mathematical skill development, but would assist in overall vocabulary development as well” Caccavale, 2007, p.32).

A compelling case may be made to educators and policy makers that inclusion of a strong foreign language program at the elementary school level (or earlier) would be an effective way to improve student achievement in both reading and math, since

[r]esearch has shown that foreign language study in the early elementary years improves cognitive abilities, positively influences achievement in other disciplines, and results in higher achievement test scores in reading and math, especially when study of a second language begins in the elementary school years. (Stewart, 2005, p. 11)

The positive impact on math learning was the subject of recent research by Andrea Stocco and Chantel Prat of the University of Washington. This study compared “patterns of behavioral performance and brain activation in an fMRI investigation of instructed mathematical rule execution in bilinguals and monolinguals” (Buchweitz, 2013m p. 438) and found (as cited in Collins, 2014) that

[w]hile bilinguals and monolinguals solved the problems with equal accuracy and took about the same amount of time on arithmetic with familiar sets of operations, bilinguals beat out monolinguals, on average, by about half a second on novel problems.

What’s more, fMRI results showed that the basal ganglia, a brain region

previously linked to learning about rewards and motor functions, responded more to novel math problems than old ones, but only in bilinguals.... [R]ecent studies suggest the basal ganglia's real role is to take information and prioritize it before passing it on to the prefrontal cortex, which then processes the information. If that's correct, the new results suggest that learning multiple languages trains the basal ganglia to switch more efficiently between the rules and vocabulary of different languages, and these are skills it can then transfer to other domains such as arithmetic.

**Supports development of higher order, abstract thinking and creativity.** As cited by Morris (no date), early second language learning encourages greater development of cognitive skills in such areas as mental flexibility, abstract thought and creativity, divergent thinking, and higher order thinking skills (Rafferty, 1986; Ginsburg and McCoy, 1981).

Both early bilingualism and some form of early second language education seem to positively influence a child's creativity with respect to nonmathematical and mathematical problem solving among preschoolers (Leikin, 2013).

**Improved chance of successful college education attainment and achievement.** The positive impacts of second language study are notable over the course of the student's academic career. A 2011 College Board Research Report shows a positive correlation between FYGPA [First Year College GPA] and years of foreign language study. Students that had less than two years of foreign language study prior to college carried a mean first year GPA score of 2.72; students with two or more years of study scored a mean of 2.95; three or more years, 3.02; and four years of foreign language study scored a mean FYGPA of 3.13 (Wyatt, Wiley, Camara, &

Proestler, 2012). Furthermore, as related in the 2007 National Education Association Research Report, “[s]tudents who were in ‘rigorous’ programs in high school – that included three years of foreign language study – were likely to earn better grades in college and less likely to drop out” (Horn & Kojaku, 2001).

**Narrowing of achievement gaps.** A valid question of causality arises: perhaps higher student test scores of second language learners may be more attributable to the notion that schools with foreign language programs tend to be schools with greater educational resources and therefore higher quality programs, and that students who enroll for two or more years in such language programs are more motivated, higher-performing students. In other words, perhaps foreign language study is not a factor in the higher achievement noted. Studies have been conducted to test whether or not foreign language study could raise achievement levels of lower performing students in poorer schools.

In a 1986 statewide study in Louisiana, third, fourth, and fifth graders were enrolled in a 30-minute public school foreign language program. These students achieved significantly higher Basic Skills Language Arts test scores than non-participating students. By fifth grade, math scores of language students were also higher than those of students not studying a foreign language. Both groups were matched for race, sex, and grade level, and the academic levels of students in both groups were estimated by their previous Basic Skills Test results and statistically equated... The results of the analysis suggest that foreign language study in the lower grades helps students acquire English language arts skills and, by extension, math skills. (Rafferty, 1986, Abstract)



The greatest proportionate achievement gains from foreign language study are made by minority students and children from economically disadvantaged backgrounds. Since early second language study does not require proficient English language skills upon which to build, some students who may have experienced previous difficulty or failure in other elementary school subjects can approach foreign language studies without such disadvantage, encouraging success (Curtain & Dahlberg, 2004).

Dozens of studies over decades demonstrate the multiple benefits of second language learning for lower performing and disadvantaged students, particularly when initiated early. Such programs can make a significant difference in future learning outcomes, lead students to greater achievement, opportunity, and increased self-esteem, and help to “alter the trajectory for children of average intelligence and narrow the achievement gap” (Garfinkel & Tabor, 1991).

### **The Bilingual Advantage in Business**

*“English remains the international language of business, but the value of being able to communicate in a client’s native language cannot be underestimated.”* - Mr. John Peterson, Aon Risk Solutions (Harrison, 2013). Although English may still be considered the international language of business, the ever-accelerating rate of globalization in the business world has created an environment in which the ability to communicate in two or more languages is an increasingly valued skill. Amongst educated business people, most will have the ability to read, write, speak, and understand the English language fluently enough to conduct discussions, sales, and negotiations. Clients and customers globally, however, are not necessarily fluent in the English language and are likely to avoid doing business with someone with whom they cannot communicate. This is why employers are making an effort to hire employees with the capabilities and skills that match the demographics of their clients, including language skills.

“Only 5.5% of the world’s population speaks English as a first language. In other words, up to 17 of every 18 people on the planet is off limits unless you have someone that can speak their language” (Wyatt, 2014). Consider also that it is not an immutable rule that English will always be the “international language of business”:

According to data collected by the British Council in 2005, Mandarin was the most spoken language in the world, followed by English, Hindi, Spanish, and Russian. However, by the year 2050—when children who are born in 2010 will be at the peak of their productive lives—the most widely spoken language in the world will still be Mandarin, followed by Spanish, while the number of people speaking English will be approximately tied with Arabic as the fourth largest language group, followed closely by Hindi/Urdu. Even considering English as the lingua franca of business, Mark Davis back in 2004 did an interesting breakdown of the percentages of world GDP by language. He calculated that by 2010 English would represent only 28 percent of the global market, followed by Chinese, Japanese, German, and Spanish. (Marmolejo, 2010)

At the local level, organizations that keep their business within their community also have to deal with language barriers when interacting with their clients:

A sizable portion of the U.S. population doesn’t speak English very well or even at all in some cases. In fact, over a quarter (28 percent) of Americans live in a household where no one over 13 speaks English very well. This means that up to 28 percent of the population cannot do

business with your company if it doesn't have multilingual employees.

(Wyatt 2014)

Many immigrant families rely on their young children to interpret conversations for them, or even to conduct simple business. If an immigrant family was given the choice between two markets, one where they had to communicate with the aid of their daughter, and the other where the parents could freely communicate with store owners and staff, which one would they choose?

As Nelson Mandela famously counseled: "If you talk to a man in a language he understands, that goes to his head. If you talk to him in his own language, that goes to his heart." Families and individuals can develop an appreciation for doing business with a company, organization, or individual that speaks their language.

From the employee perspective, bi- or multilingualism is a skill set that expands and enhances career opportunities. In a 2004 survey of randomly selected alumni of The American Graduate school of International Management in Glendale, Arizona, the vast majority of the 581 respondents said they had gained a competitive advantage from their knowledge of foreign languages and other cultures (82% and 89% respectively). In addition to considering their foreign language skills to have been a frequent critical factor in hiring decisions and in enhancing their career paths, they also reported they felt it provided personal fulfillment, mental discipline, and cultural enlightenment (Grosse, 2004).

Proficiency in languages beyond English increases a candidate's marketability in a global marketplace. Businesses know that maintaining the competitive advantage is critical, and therefore "individuals who can work in a culturally diverse environment and who have strong skills in a foreign language" are an asset (Morris, n.d.), and "... a multilingual workforce

enhances America's economic competitiveness abroad, helps maintain our political and security interests, and promotes tolerance and intercultural awareness" (Marcos & Peyton, 2000).

In 1994, the United States Congress declared:

Foreign language is crucial to our nation's economic competitiveness and national security. Multilingualism enhances cognitive and social growth, competitiveness in the global marketplace (four out of five new jobs in the United States are created from foreign trade), national security, and understanding of diverse people and cultures. As we approach a new century where global communication will be essential for survival, we cannot afford the luxury of international ignorance... (The United States Congress, Foreign Language Assistance Act of 1994)

Twenty years later we can attest to the accuracy of this statement, however the level of progress achieved to date is likely not as great as envisioned.

In addition to expanded communication abilities, bi- and multilingualism makes one more culturally aware. The ability to interact in culturally appropriate ways with those from other areas of the world is a valuable competency, and employers are eager to hire those who are able to relate to the cultures and customs of their clients. As staff advance within the organization, those with multi-cultural education are more likely to relate well to clients and employees who may originate from another part of the world. This can serve to increase client regard, reduce conflicts in the workplace, and promote team spirit. Even if unversed in a specific culture, knowledge of multiple cultures increases tolerance of differences when encountering unfamiliar customs and cultures.

Employees who are bi- or multilingual may also possess more greatly developed specific cognitive traits than those who are monolingual. Past studies had suggested that children who learned two or more languages had a cognitive interference that disrupted their development by confusing them. However, more recent research has found that although some interference takes place, second language learning will actually help develop the brain to resolve internal conflict and strengthen itself cognitively. Furthermore, studies conducted on bilingual children indicate that they more readily capable of outside the box -type thinking which can continue developing into adulthood. More efficient multi-tasking skills may also develop, due to the bilingual's ability to monitor his or her surroundings and frequently switch languages (Bhattacharjee, 2012). All of these are valued skills in an employee.

Expanded language skills can open the door to greater career choices. "Translators and interpreters are expected to be one of the 15 fastest growing occupations in the nation, according to the Department of Labor" (Kurtz, 2013). These generally well-paying jobs are growing in many different markets such as schools, hospitals, courts, and multi-national corporations. Some schools in southern California are hiring interpreters to work for as much as \$40.00 per hour.

According to the United States Department of Labor Bureau of Labor and Statistics, the 2012 median income for translators and interpreters was \$45,000 per year. There were 63,600 such jobs in 2012, with a projected increase of 46% by 2022 (Bureau of Labor Statistics, 2012). April 2015, a search of the word "bilingual" on the job search site [indeed.com](http://indeed.com) yielded more than 82,000 jobs in the United States. 1,800 of these openings offered salaries greater than \$100,000 per year.

Most tellingly, the Committee for Economic Development reported in 2006:

U.S. businesses are concerned with developing the workforce that they need for the United States economy to retain its position as the global leader. Foreign language skills, knowledge of other world regions and cultures, and overseas experience all contribute to creating the employee who has the cross cultural competence needed by American businesses in the twenty-first century. (p. 8)

While English remains the global business language at present, proficiency in a second (or third) language is a practical investment of time that, among many other benefits, gives jobseekers a valuable advantage in a competitive job market. Development of these skills and abilities in the youngest of our children will help to create a more globally competitive workforce for future generations and support U.S. economic leadership.

### **Cultural Connections**

Before any level of understanding can occur between two entities, some form of mutually recognized communication must be established. With the exception of formal sign language, communication beyond the most rudimentary, i.e. pantomime or pictures, requires some form of linguistic transaction. It is through this transaction, be it verbal or written, that thoughts, ideas, instruction, feelings, information, experiences, etc. are conveyed with the goal of an intact transference of the thought (idea, instruction, feeling, etc.) from one party to the other.

Generally, reasonably successful communication requires a verbal or written language common to both parties. For the vast majority of Americans, English is the only mode by which any level of sophisticated communication can take place. The English-only speaker is, therefore, dependent upon other entities to *make themselves understandable*. This is an important point, because such dependency leads the English-speaker to *expect* bi- and multilingual skills in others

without considering that the same expectation should be held for him- or herself; this is largely the American mindset today. Litvinov assesses the state of American monolingualism bluntly:

What does it say about America that we are the only industrialized nation that routinely graduates high school students who speak only one language? Frankly, it says that if you want to talk to us—to do business with us, negotiate peace with us, learn from or teach us, or even just pal around with us—you'd better speak English. The fact that we're woefully behind in world language skills has long registered somewhere between, "Hmmm," and "Yeah, so?" on the national priority gauge. (2008)

As a nation, the United States has been generally comfortable with this stance. However, the twenty-first century world seems to be evolving in a way that does not lend itself so readily to linguistic complacency, according to many leading economists, business leaders, academics, and governmental entities. In a 2006 report, the Committee for Economic Development stated:

The U.S. will become less competitive in the global economy because of a shortage of strong foreign language and international studies programs at the elementary, high school, and college levels. Our diplomatic efforts often have been hampered by a lack of cultural awareness. (2008)

Understanding world languages can help break down social, verbal, and cultural barriers. Foreign language study facilitates and increased curiosity, and often an enhanced appreciation of the world beyond the learner's native land. Such learning exposes the student to opportunities for experiences that tend to yield a greater connection to other parts of the world and the people who live there. When traveling or conducting business abroad, it is a distinct advantage to be able to

communicate directly in that country's language. Otherwise, one is dependent upon others to translate or to have English spoken by both parties; if neither of these requirements is met, then much confusion, frustration, and possibly unfortunate consequences can result. Speaking the native language can help break down cultural barriers and – very importantly – conveys respect for the citizens of that country. As Michael Gove, British Parliamentarian and former Secretary of State for Education, states: “[l]earning a foreign language, and the culture that goes with it, is one of the most useful things we can do to broaden the empathy and imaginative sympathy and cultural outlook of children” (BBC, 2011). With respect to the educational landscape in the United States, the Committee for Economic Development participated in a panel with education and business leaders to discuss language training and the importance of global competence.

They concluded that:

In order for America to succeed in the 21st century, our students must receive a well-rounded education that includes high-quality language learning. While the rest of the world is becoming increasingly multilingual, the US is lagging behind. As we move to reform education in this country, the US must continue to learn from the best practices of other countries in order to deliver a world-class education that prepares American graduates to be linguistically literate and culturally competent. (2011)

This conclusion is consistent with the notion that learning a foreign language is an effective means of exposing learners to other cultures by creating awareness of the global community and providing the experience of involvement with different cultures through the study of language. Such exposure is particularly enhanced when study is conducted



in tandem with opportunities to participate in culturally authentic experiences (Curtain & Dalhberg, 2004).

In the aftermath of September 11, 2001, Senator Paul Simon of Illinois (deceased in 2003) became a champion on the issue of “promoting peace and security through understanding and global awareness” (Durbin, 2006). He argued that an effective component of achieving this vision would be to provide greater numbers of students the means to study abroad. His belief was that such a program would promote personal connections with those from other lands and help create a generation more globally aware, culturally competent, and experienced with other societies, customs, and belief systems. The Senator died before he could follow through on his vision, but others carried it forward, creating a bill for a program inspired by Senator Simon that was called the Abraham Lincoln Study Abroad Fellowship Program. Senator Durbin’s introductory remarks to congress when introducing the bill for consideration in 2006 included the following:

Paul Simon, like so many committed to strengthening our ability to lead by investing in the education of young people, struggled with the question of how America could lead while so few of our citizens have an appropriate knowledge and understanding of the world outside of our borders. The United States is a military and economic superpower, yet it is continuously threatened by a serious lack of international competence in an age of growing globalization. When you travel overseas, you cannot help but be struck by the fact that people in other countries know so much more about us than we know about them.

Our lack of world awareness is now seen as a national liability. The

challenges we face as Americans are increasingly global in nature, and our youth must be well prepared for its future. Our national security, international economic competitiveness, and diplomatic efforts in working toward a peaceful society rest on our global competence and ability to appreciate language and culture throughout the world.

The capacity of the United States to lead in the 21st century, not just in Iraq but all over the world, demands that we school new generations of American citizens who understand the cultural and social realities beyond what they have experienced here at home. (2006)

The bill died in committee, a noteworthy fact in the context of any discussion of the imbalance between the number of international students hosted by the United States, and the number of American students that study abroad.

The 21<sup>st</sup> Century has been dominated thus far by ever increasing global conflict, terrorism, natural disasters, and economic instability. Knowledge, understanding, and the ability to discern the multiple layers of historic, religious, political, racial, and cultural context involved in events throughout the world -- as well as within our own country -- is critical for future generations whose task it will be to manage them. Since studies suggest that foreign language learning tends to cultivate in the learner a more highly developed threshold of tolerance and understanding of differences among people (Carpenter & Torney, 1974), this is an added value which may be considered in particular demand in today.

## Findings

### Barriers to Second Language Learning in the U.S.

As discussed in this paper, decades of research have produced strong evidence that foreign language study, particularly in the early years, positively impacts the learner on a variety of levels. These impacts include, but are not limited to:

- increased cognitive development;
- enhanced brain function supportive of academic progress in multiple subject areas;
- strengthening of both basic skills development as well as higher order thinking;
- narrowing of the achievement gap among learners;
- boosted prospects of college education;
- valued language skills that expand career opportunities;
- increased personal development;
- greater social tolerance of cultural differences; and
- heightened curiosity and desire to learn about the world's various cultures.

Given the preponderance of evidence pointing to the far-reaching benefits of bilingual education, the question arises as to why second language study is not prioritized in U.S. schools.

While a full examination of this question is beyond the scope of our study, we can identify a few factors:

**Lack of understanding by the general public regarding the degree and extent of second language learning benefits.** The average American is often more likely to view foreign language study, at best, as a benign and not necessarily practical extracurricular subject; at worst, negative attitudes rooted in past ideologies may identify the notion of bi- or multilingualism as elitist, threatening, and/or unpatriotic (Mitt Romney Lambasted in Attack Ad for Speaking

French, 2012; Franklin, 2013). Discussion of the many and various positive benefits of foreign language study has not readily made its way into “Main Street” American households, at least not in a manner that can permeate firmly fixed notions.

**Lack of political will to elevate foreign language study to a priority core curriculum subject.** There seems to be a critical disconnect between the conclusions of foreign language study advocates in education, science, and business on the one hand, and a majority of the administrative and political bodies that determine school curriculum, learning standards, and the funding allocations that schools depend upon on the other. Though the issues of global competitiveness and improvement of poor student achievement in U. S. schools are identified as national priorities, policy makers largely fail to grasp how foreign language learning would contribute toward meeting these objectives, and an effective strategy is remains underutilized.

**Systemic impact of former and/or narrowly focused Federal educational initiatives.** Foreign language educators face numerous challenges, largely due to No Child Left Behind era policies. Teacher-reported challenges include: insufficient “best practices” resources; lack of professional development opportunities; too large classroom size; disparate support among schools; and “curriculum narrowing”, or shifting of other subjects’ instructional time and resources toward math and English language arts (“ACTFL 2012 Annual Research Report”, 2012; Common Core, 2012).

**Disparate opportunities depending upon geography or economic status.** The availability and quality of foreign language programs varies widely among states and districts. Determinant factors are often heavily influenced by location type (urban or rural), school type (private/charter or public), and income levels of the local population (economically disadvantaged vs. middle-class and wealthier taxing districts), among other factors.

## **Suggested Remedies**

There is abundant research and literature outlining the many benefits of second language learning, much of which is found in science and academic journals, major newspapers, government and independent reports, professional and academic websites, professional organization literature, and stories on radio stations such as NPR. More needs to be done, however, to “market” second language study to the general public through more popular mediums. Parents are not motivated to support their child spending time learning something that has little discernible value; once the many and far-reaching benefits are clearly communicated in a consistent message, they will better be able to realize the significant impact second language learning can make on their child’s academic achievement and future success. This will facilitate support and/or compel action. In addition to formal reports and journal articles, agencies would do well to create accessible and appealing materials to educate and advocate for strong second language learning programs. Bilingualism needs to overcome labels such as superfluous or “elitist” by having these perceptions replaced with images such as “bilingualism grows children’s brain power” and as a means to gain the competitive advantage personally, academically, and in the world marketplace.

Technology is the tool of the twenty-first century. Major organizations that promote foreign language education – such as the American Council on The Teaching of Foreign Languages, the Modern Language Association, JNCL-NCLIS, Committee for Economic Development, Center for Applied Linguistics, the National Research Council, and others – could increase the effectiveness of public education by collaborating to present a consistent message in a variety of mediums coupled with a clear strategy and a call to action. Finding an esteemed spokesperson or “champion” is an effective tool, as well. If families, neighbors, business

leaders, community leaders, school administrators, and teachers collectively work to gain wider support for strong early second language learning programs in their schools -- and include educating government officials in their strategy -- political bodies may be empowered to take positive action steps, such as implementing a comprehensive second language learning policy, and supporting curriculum standards that would include language proficiencies.

Change takes time. Since research, as discussed in this paper, demonstrates the window of opportunity for language learning to be zero through approximately nine-years-old, we suggest that second language learning may most effectively begin in daycare/preschool programs. Our research, though not exhaustive, did not reveal any current programs in our area; Headstart has developed Multicultural Principles, however these pertain to ESL children and their families rather than native English speakers.

Where K – 12 curriculums are rigidly mandated, daycare centers and preschools are generally more flexible. Second language development at this age would provide benefits, even if there are no elementary school programs for the children to continue their studies; in fact, it is possible that these daycare/preschool level programs may help to provide an incentive for elementary second language program implementation.

Many daycare/preschool programs that may want to include second language learning in their curriculum may face challenges if no staff member is able to speak with adequate proficiency. Whether this is the situation or not, the value of partnerships cannot be overstated. Using Spanish as an example, Hispanic community groups, businesses or business organizations, such as the Hispanic Chamber of Commerce for example, may take a great interest in partnering to sponsor or provide resources to facilitate implementation of a daycare/preschool Spanish program. Community Foundations and other local grant-makers should be investigated as

potential sources of funding assistance. Inquiries to local colleges and/or universities may yield a partnership in which foreign language students visit the classroom to assist. Student family members that may be native Spanish or dual language speakers could be enlisted to visit and speak, allowing the children to experience learning to communicate naturally. This offers multiple potential benefits: by operating in the role of “teacher”, the Hispanic child and family member take on the role of expert as opposed to other possible experiences of being made to feel an “outsider”; increased participation encourages increased interest and investment in education, particularly for the child; and English-only children have the opportunity to be introduced to both the language and the culture in a firsthand, personal way, perhaps enhancing relevance and increasing motivation.

Another challenge is that providers may not have time to search for resources. In anticipation of this challenge, we have provided a starter “Toolbox” of ideas that may be used by centers to introduce a second language – in this case Spanish – into daily activities. This toolbox is included in this study as Appendix A. For wider access, we have also developed a website from which may be accessed this paper, the Toolbox of ideas, and links to additional resources. The website address is: <https://sites.google.com/site/early2ndlanguage/>

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## Appendix A – Foreign Language Program Toolbox

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## **Crafts**

Craft learning has many advantages to children. Students who create things are able to foster their creativity, develop fine motor skills, and fine tune their hand-eye coordination. By allowing a student “free reign” while creating craft items, they are allowed to express themselves in a structured way. Most craft projects are self limiting, catering to a child’s shortened attention span.

“In order to become healthy, happy and productive teenagers and later healthy, happy and productive adults, children ages five- to 12-years-old must have lots of experiences and repeated practice with tasks in each of these four areas. Arts and crafts help children experience and practice their skills in all four of these areas.”

### **Arts & Crafts Develop Thinking Skills**

- Problem-solving skills develop from experimenting with a wide range of arts and crafts materials.
- Decision making is constant and continuous in assembling and decorating projects.
- Visual thinking skills and three-dimensional information processing are exercised in the process of assembling materials.

### **Arts & Crafts Develop Feeling Skills**

- Self-expression is the foundation of art making.
- Crisis intervention art is something you can use to help children handle stress and the trauma of any community crisis.

- Sensory Stimulation from art materials awakens children's five senses and teaches a healthy outlet for pleasure and satisfaction.

### **Arts & Crafts Develop Relating Skills**

- Sharing of art materials requires social interaction and cooperation.
- Cooperation inherent in art activities encourages relationship building and friendship skills.
- Shy or less verbal children can participate comfortably and be more active in a non-competitive environment like the art room.

### **Arts and Crafts Develop Coordinating Skills**

- Fine motor skills are developed using a wide range of arts crafts materials, craft accessories, and art room tools.
- Eye-hand coordination prepares children for real life tasks at school and home.
- Self-esteem correlates positively with a child's sense of physical coordination and mastery. (Reyner, 2008)

Pairing craft learning with cultural exploration allows a child to learn about a culture different from their own while still learning and being creative in their own ways. A teacher can take this a step further and create the basic instructions in multiple languages so that the learner can read/hear the instructions, then follow the instructions, reinforcing the meaning of the words. Below are two examples of craft learning items that can be used to facilitate the learning of Mexican culture centering around the Mexican celebration of Cinco de Mayo:

#### **Maracas**

Supplies:

Two large paper cups  
Paintbrush

Suminstros:

Dos grandes vases de papel  
Pincel

Red, white and green craft paint  
Dried pinto beans  
Hot glue gun

Pintura del arte dojo, blanco y verde  
Frijoles pintos secos  
Pistola de pigment caliente

Directions:

Instrucciones:

1. Paint and decorate the outside of each paper cup.  
(Pintar y decorar el exterior de cada vaso de papel.)
  2. Let dry.  
(Deje que se seque.)
  3. Fill one cup halfway with dried pinto beans.  
(Llene una mitad taza de frijoles pintos secos.)
  4. Apply hot glue to the top edge of the cup.  
(Aplique el pegamento caliente para el borde superior de la copa.)
  5. Place the second cup on the glue to create the maraca.  
(Coloque la segunda copa en la cola para crear la maraca.)
  6. Let dry  
(Deje que se seque.)
- (SheKnows, 2013)

## **Mariachi Guitars**

## **Guitarras de Mariachi**

Supplies:

Suminstros:

Cardboard  
Pencil  
Sharp scissors or X-Acto knife  
String  
Colored paper  
Hot glue gun or craft glue

Carton  
Lapiz  
Tijeras afiladas o un chuchillo X-Acto  
Cadena  
El paper de color  
Pistola de pegamento client o pegamento

Directions:

1. Draw a mariachi guitar shape on the cardboard.  
(Dibujar una forma de guitarra mariachi en el carton.)
  2. Carefully cut out the mariachi guitar with sharp scissors or have an adult use an X-Acto knife.  
(Extraer con cuidado la guitarra mariachi con tijeras afiladas o un cuchillo X-Acto.)
  3. Cut out colored paper to decorate both sides of the cardboard.  
(Cotar papel de colores para decorar ambos lados del carton.)
  4. Cut four to five long pieces of string, and glue them to one side of the cardboard to make the guitar strings.  
(Corte cuatro o cinco trozos largos de cuerda, y pegarlas en un lado del carton para hacer las cuerdas de la guitarra.)
- (SheKnows, 2013)

## Food and Cooking

Cooking has long been known to be a great learning activity for pre-school aged children. Preparing food teaches a child to follow directions by following a recipe, allows a child to practice basic math skills such as counting and measuring, and can introduce new words to a child by reading the recipe. Bringing children into the kitchen to help prepare food can also broaden their food horizons. Many pre-school aged children are picky eaters, and will only eat items that are familiar to them. By letting them assist in the preparation of food, they can see that many new foods are just compilations of items that they are familiar with. They will also take ownership in the foods that you are trying to feed them, which will give them more incentive to try the new foods (Gavin 2014).

When coupling this knowledge with foreign languages and cultures, the teacher can foster development of the language aspect by introducing those new words in the recipe in more than one language. Counting can be done in more than one language, and measurements can be done in both metric measurements and US measurements to allow them to see the differences. By bringing culturally diverse foods into the kitchen, a child can broaden their food horizons and also their cultural horizons. This will allow them to see that many of the same ingredients that are used to make their “comfort foods” are also used to make culturally diverse foods.

Some examples of Mexican foods that can be used during a Cinco de Mayo lesson may include:

### Taco Bar:

#### Ingredients:

Refried beans  
Shredded cheese  
Seasoned meat  
Grilled peppers

#### Ingredientes:

Frijoles refritos  
Queso rallado  
Carne sazónada  
Pimientos asados

Sour cream  
Shredded lettuce  
Corn Tortillas  
Flour tortillas  
Salsa  
Chips  
Guacamole

Crema agria  
Lechuga picada  
Tortillas de maiz  
Tortillas de flores  
Salsa  
Patatas fritas  
Guacamole

**Directions:**

1. Heat and prepare the beans, vegetables, and meat ahead of time.  
(Calor y preparar los frijoles, verduras y carne antes de tiempo.)
  2. Place each item in its own bowl  
(Coloque cada elemento en su propio tazón.)
  3. Allow the children to assemble their own tacos using the ingredients that they want.  
(Permita que los niños monten sus propios tacos usando los ingredientes que ellos quieren.)
- (SheKnows, 2013)

**Instrucciones:**

**Mexican Flag Dessert Cup  
Bandera Mexicana Postre Copa**

**Ingredients:**

Instant Jell-O, Strawberry or Cherry  
Instant Jell-O, Lime  
Whip Cream  
Clear plastic cups  
Small spoons

**Ingredientes:**

Instantanea gelatina, Fresa o cereza  
Instantanea gelatina, cal  
Crema batida  
Vases de plastic transparente  
Cucharas pequenas

**Directions:**

1. Make the red and green Jell-O ahead of time or with the children  
(Hacer la gelatina roja y verde antes de tiempo o con los niños.)
  2. Place two or three tablespoons of red Jell-O into the bottom of the clear plastic cup.  
(Coloque dos o tres cucharadas de gelatina roja en el fondo del vaso de plastic transparente.)
  3. Cover the red Jell-O with a thin layer of whip cream.  
(Cubra la gelatina roja con una fina capa de crema batida.)
  4. Place two or three tablespoons of green Jell-O on top.  
(Coloque dos o tres cucharadas de gelatina verde en la parte superior.)
  5. Serve immediately  
(Sirva inmediatamente)
- (SheKnows, 2013)

**Instrucciones:**

## Games

Games are a way of teaching children without them realizing that they are learning. Children play games as a way of “escaping” from their world. Games instill a sense of competition in a child, competition amongst other children, or even competing with themselves. Children’s games have a short duration, therefore, they are able to keep a child’s attention throughout the whole of the game. Social skills, taking turns, and sharing are some other things that playing games with children can help to develop.

“There is also evidence that games allow students to focus well enough to learn better.

Lepper and Cordova, 1992 have found that rewriting a lesson with a story context combined with a challenge for the student to overcome (in other words, making it into a game) significantly improves the learning performance of children”. (Why

Use Games to Teach, 2013)

There are many skills that a child can learn by playing games. Some games are more physical than others, teaching children gross and fine motor skills. Other games are more intellectually based, and can teach children memory skills, counting, and mathematics. An example of a game that can be used to help children learn Spanish is the Memory Game (Juego de Memoria). The memory game can be used with all ability levels and with any topic imaginable. The example presented here uses colors in Spanish. There are two cards that are to be matched to each other. One of the cards has the color name written in English, the other has the color name written in Spanish. Both cards are printed in color ink that matches the color name. In this game, all cards are mixed up and placed face down on a table. Each player takes turns turning one card over, then turning another card over to try to match the two. If there is a match, the player takes the cards, and if there is not a match, the player places both cards back

face down in the same spots they were at. Subsequent players can remember where the cards were at, potentially making it easier to make a match as the game goes on. Once all cards have been matched, the player with the most matches in front of them is the winner. Seeing the color name with the color ink helps to reinforce the name with the image, and can help pre-school aged children learn their colors in both languages.

### **Interactive Digital Storybooks, Audiobooks, and Storytelling**

Reading, listening to or even writing stories are powerful methods for learning language. Listening to stories can begin at birth and is an activity that children generally enjoy. An article on Colorín Colorado! agrees: “It’s never too early to read to your baby. As soon as your baby is born, he or she starts learning... By reading with your baby, you foster a love of books and reading from the start” (Tips for Parents of Babies | ELL Topics from A-Z | Colorín Colorado, 2008).

Ana Lomba is an advocate of using storytelling to teach children language. Lomba is an author, educator, and advocate with a passion for early language learning. Lomba argues that “when you read or tell stories to children you immerse them in rich language in context, which in turn leads to higher levels of sophistication in speech and literacy” (2011). This learning could occur from the teacher or child care provider reading to children or with the use of an audiobook or digital storybook.

Hearing the language being spoken in an audiobook or digital storybook also aids in pronunciations of the language and alleviates some pressure that teachers may feel to pronounce words perfectly. The authors of *Becoming a Bilingual Family – Help Your Kids Learn Spanish (and Learn Spanish Yourself in the Process)* agree saying, “One advantage of audiobooks is that you can be assured that the pronunciation is correct” (Marks & Marks, 2013, p. 17). This allows

audiobooks or digital storybooks to assist in accurate language development. These digital resources are available on CD's, computer programs, and apps. Many digital storybooks are interactive so the student is able to do such things as change the language or re-listen to a page.

### **Teaching Techniques and Ideas**

- Teacher Reading to students
- Audiobook/Digital Storybook Center
- Dual Language Books
- [Bosley the Language Bear](#)

### **Music**

Music and music training improves verbal memory or the brain's ability to remember words. Research suggests that this is an important factor in successful text comprehension for later stages of reading development. Verbal memory allows a child to retain material in memory and is essential for all children learning to read.

Music can enhance vocabulary acquisition and comprehension as it engages children in instruction. During the preschool years before children can read, children rely on the oral language they hear; listen to in order to acquire language. Research shows that stories read aloud and singing songs that include new vocabulary words, are an effective source of new vocabulary for young children. Along with instruction for language learners, song lyrics provide an incidental source for the acquisition of vocabulary, especially when picture cards and illustrations are used. It is also said that young children develop "word consciousness" and a love of words through being playfully challenged with learning new word meanings.

Music improves comprehension of the language and literacy skills. Research suggests that engaging your children in language and literacy rich musical activities that include playful



instructions in music skills and instrument exploration are correlated with later success in reading comprehension. Researchers believe that music instructions impacts a student's brain functioning in processing language, which in turn impacts reading sub-processes like phonemic awareness and vocabulary. Spoken language is comprised of connected phonemes or individual units of speech sounds. Music is comprised of a series of discrete musical notes or tones. Because of their similarities, the human brain processes music and language in similar ways. Researchers recommend integrating songs, and specifically rhyming songs, as an effective mechanism for building phonemic awareness with children in early childhood classrooms (Kindermusik, 2006).

Music promotes social, emotional and physical skills. Music played during transitions help children learn to calm and regulate themselves. Song-based games like "Ring Around the Rosey" encourage peer play. Songs like "Head and Shoulders, Knees and Toes" and "Hokey Pokey" encourage coordination, balance, and a better understanding of body awareness for toddlers. Use songs as a different way to tell stories. Hearing the story through music helps children understand sequences. Songs like the "Clean Up" song, with a specific activity help toddlers make connections and learn to anticipate what will happen next (sequences and patterns). It is also suggested to expose toddlers to music from other cultures. Set up a classroom music area with a variety of instruments, even from other cultures. Rhythm often makes it easier for children to pick up new words and phrases, even in languages that are not their own. Introducing hand gestures that accompany the lyrics enhances children's comprehension. Families are rich resources in identifying children's music from other cultures. Internet based sources, such as [www.mamalisa.com](http://www.mamalisa.com), also provide lyrics for children's songs world-wide in both

English and original languages. Many of the songs have accompanying MP3 files so teachers can hear the melody and pronunciations (Parlakian & Lerner, 2010).

### **Teaching tools:**

- Music Activities to Develop Language and Motor Skills
- Other Internet Sources
- The Itsy Bitsy Spider - Activity

An activity that can be used to help children develop their language and motor skills would include singing the Itsy Bitsy Spider in English and Spanish. With the use of Spanish sequencing cards this song is excellent for finger play and offer more activities to develop language learning for children. As you learn the song you can add the following activities to reinforce language learning.

1. Learn the song and the finger play.
2. Do the finger play and talk about each of the cards.
3. Do the finger play and color the sequence cards. The children's vocabulary is reinforced as they color and talk about each card.
4. Order the cards as a group or individually as you sing the song.
5. Make the cards into a mini-book and make a cool spider cover.
6. Children read books about spiders and do additional spider crafts.

(Spanish Playground, 2015)

### **Puppet Shows**

Puppet shows are another way to get students involved in language learning with use of a story. Puppets could be used by the teacher or staff to tell a story or by the student(s) to use the practice the language being learned. Using a creative method of storytelling may also make

students feel more comfortable with their language skills. Allyson Lepley of Fairfax County Public Schools agrees. “Creative dramatics, such as the use of puppets, provides a medium in which students become more comfortable expressing themselves or re-telling a story” (2001, p. 1). Due to this thought, Lepley studied the use of puppets in oral language development and confidence level of speaking. Lepley discovered that the puppets seemed to have a positive impact on student participation through observing increased participation, enthusiasm, and volunteerism from less proficient students. Part of this can be attributed to a fun learning environment. According to the Spanglishbaby blog, “The introduction of a “friend” creates a fun environment and helps to establish a new routine more easily” (Using Puppets to Raise Bilingual Kids, 2012). Children often talk to puppets with ease and when the puppet speaks a different language it establishes a precedent that all must speak that language when the puppet is present.

Puppetry not only aids in language learning. Puppetry aids in communication and cooperation skills as students work together and allows students to be creative and learn in a fun environment.

### **Teaching Techniques and Ideas**

- Use puppets to act out or enhance storybook
- Let students play with puppets on their own and encourage them to use non-English words
- Direct students to act out the events of a class trip
- During an occupations unit, bring puppets in that represent various careers

### **Skype**

Skype is a communication tool that combines voice, data, and video technology, allowing users the ability to communicate with others through videoconferencing. Skype is an excellent

tool to introduce to early childhood language learners. Skype can provide access to a wealth of information that will aid in the language development of children.

There is a consensus that children are more apt to early language development through live interactions with people rather than by any other form of pre-recorded videos. Studies show that infants who engaged in back and forth two way interaction with an adult developed more speech-like language. “Responsive interactions are key to toddlers’ ability to learn language” (Nemeth, 2013, p. 5). An important factor is the social connection and the immediate response that is established between the adult and the child. Studies suggest that once this connection takes place toddlers begin to identify and distinguish the different sounds of the spoken language. During live interactions eye contact is important and helps children with their ability to understand words. (Roseberry, 2014). Teachers can use skype in a variety of ways to help foster the language development for children. They can collaborate and connect with presenters from remote areas to tell stories to children in their native language. Children can learn about other cultures as they interact and engage in activities the presenter provides. The instructor can provide visuals or items the children are familiar with and introduce them in their native tongue.

More importantly, children will become receptive to the presenter as they become accustomed to the facial expressions and the tones of their voice (Nemeth, 2014).

### **Teaching Tools:**

- Live interactions with children and presenters who speak native languages
- Introduce children to stories, engage in activities, and provide visuals in the presenters native language

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