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THE COGNITIVE BENEFITS OF BILINGUALISM/ BILITERACY

By John De Mado

Empowering Students to Communicate with Confidence

The benefits of biliteracy in student achievement and the advantages of bilingualism in an increasingly interconnected world cannot be overstated—or their promise overlooked.

The Leveraging Biliteracy initiative is part of our commitment to enhancing language learning for all students. Join us as we seek to elevate language instruction and empower all students to communicate with confidence.

The Cognitive Benefits of Bilingualism/Biliteracy

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INTRODUCTION

Whether a student is learning English as a second language, or is a native English speaker learning a second language, this paper will demonstrate that the more opportunities students have to engage with more than one language, the greater their prospects will be for academic and career success, as well as for life-long cognitive prowess.

English learners today constitute the fastest-growing segment of our student population. They bring knowledge of a language other than English with them when they enter the U.S. educational system, and this is a tremendous asset for both them and their schools. We serve emerging bilinguals best when we nurture not only their progress in English, but also when we help them continue to refine their first language.

English speakers enrolling in world language courses often do so to earn mandatory college entrance credits. However, as this paper will outline, there are multiple benefits to learning a second language. We have learned that when students gain an understanding of 'Why' a discipline matters in their life, their focus on the content increases because this knowledge fosters the intrinsic motivation needed for success. For these reasons, understanding the benefits of bilingualism and communicating them to students can go a long way toward increasing their engagement.

BACKGROUND

Prior to 1960, researchers believed that the nature of the brain and its functions were fixed and strictly a byproduct of genetics. The watershed research of Dr. Marion Diamond, Professor of Anatomy at the University of California Berkeley, challenged this thinking in 1964 when she introduced her theory of 'brain plasticity'. This theory stated that anything done to enrich the human brain, at any age, enriches the cerebral cortex, thus increasing learning capacity. Furthermore, she outlined 5 broad areas in the human experience that are essential to developing a better brain: diet, exercise, challenge, newness, and love. Conversely, anything that impoverishes the human brain diminishes learning capacity. [1, 2, 3]

The third of Diamond's areas, challenge, will serve as the focus of this white paper.

Since the early 1960s, an ever-growing body of research indicates that bilingualism can be of great personal advantage. Prior to that time, however, the general consensus among researchers was quite the contrary, posturing bilingualism as a handicap that atrophied linguistic and cognitive development in children. In comparison to their monolingual counterparts, the prediction was that bilingual children would inevitably have smaller overall vocabularies, would never achieve full competency in either language and would generally exhibit reduced cognitive abilities.[4] Although it is now widely accepted that bilingual children tend to own smaller overall vocabularies initially, this distinction generally remediates by age 5, with bilingual children demonstrating more robust vocabularies than their monolingual counterparts.[5]

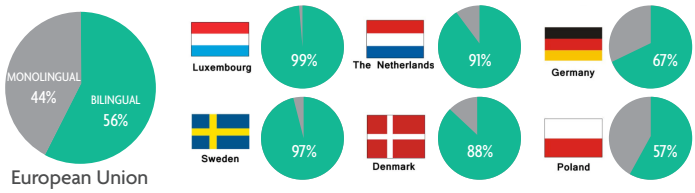
STATISTICALLY, IN FACT,

66% OF THE

WORLD'S CHILDREN ARE PRESENTLY RAISED AS BILINGUALS[7]

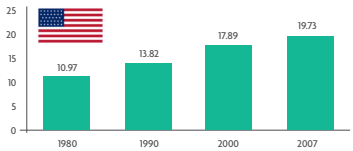
Figure 1

PERCENTAGE OF BILINGUAL SPEAKERS IN THE WORLD



Source: European Commission, "Europeans and their Languages," 2006

Percentage of U.S. population who spoke a language other than English at home by year



Source: U.S. Census Bureau, 2007 American Community Survey

Maria Polinsky, Professor of Linguistics at Harvard University, notes that the preeminence of monolingualism over the years is significantly underwritten by the economic reach and geographical mass of countries such as China (Mandarin), Russia (Russian), and the United States (English), with bilingualism viewed as the exception and not the rule. Yet, according to Professor Polinsky, it is actually monolingualism that is the "aberration", with the majority of the other smaller world states being bilingual. (Please see Figure 1.) [6] Statistically, in fact, 66% of the world's children are presently raised as bilinguals. [7]

The largely flawed research models employed prior to the 1960s were also responsible for the emergent negative attitudes toward bilingualism. Influencing factors, such as socioeconomic status (SES), gender, and age were largely disregarded, as monolingual and bilingual study participants were compared as a group, but not matched based on these influencing factors. Once factors such as SES, gender, and age were systematically applied to the research studies, the findings were virtually reversed, with bilinguals enjoying significant advantage over monolinguals, not only in verbal and non-verbal assessments, but in those that highlighted mental flexibility as well. [8]

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The remainder of this paper explores those advantages and benefits.

EXECUTIVE FUNCTIONS

It is important to note that, within bilinguals' brains, both languages are constantly functioning. As a result, these languages continually battle one another for preeminence, creating a 'challenge' for the human brain that causes linguistic interference. The consequences are particularly apparent when one of the two languages owned is clearly dominant over the other. Delivering or comprehending a message in Language A can be a daunting task if Language B is always interfering. This creates a need, in the bilingual brain, to control (inhibit) the amount and variety of language accessed in any given circumstance. In order to hit a balance, the bilingual brain counts on what is referred to as its 'executive functions'.[9]

The executive functions are a set of cognitive regulatory processes housed primarily, but not exclusively, in the prefrontal cortex of the brain. These processes help to select, monitor, and control human behavior based on situations and personally selected goals. Among those processes are problem solving, mental flexibility, attention control, inhibitory control, and the ability to task switch on the fly.

It is important to note that executive functions develop gradually over the entire human lifespan and can be affected negatively, as well, due to any confluence of events, such as neurological and/or psychiatric disorders.

In order to more fully understand executive functions, definitions of the various processes might be in order:

- **Problem Solving:** The ability to resolve issues by employing more complex thinking.
- **Mental Flexibility:** The ability to adapt cognitively to circumstances.
- **Attention Control:** The ability to focus intently on critical factors.
- **Inhibitory Control:** The ability to initially disregard factors that are not of immediate importance.
- **Task Switching:** The ability to spontaneously and simultaneously manage tasks and situations.

Each time a bilingual speaks (output) or listens (input), these five processes are automatically stimulated and triggered, causing mental challenge, thus rendering the respective areas of the brain more robust. As a result, the research notes that bilinguals are generally more adept at tasks that require conflict resolution (Problem Solving).

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Bilinguals also appear to be more adept than their monolingual counterparts at switching tasks. This skill is largely derived from the constant need for bilinguals to ignore competing perceptual information (Inhibitory Control) in favor of the more relevant details dictated by the situation or context (Attention Control). Furthermore, bilinguals appear to move from task to task more rapidly (Mental Flexibility), signifying better cognitive control in general. Needless to say, these characteristics exert an overwhelmingly positive influence on academic learning, learning in general, and employment opportunity in the United States as well as around the world. Bilinguals generally outperform their monolingual counterparts, not only in spoken language, but in assessments of reading ability as well.[10, 11, 12, 13] In addition, a 2012 study conducted by John Best, Patricia Miller, and Jack Naglieri, yielded significant correlations between high executive function and academic success across age ranges and subjects.

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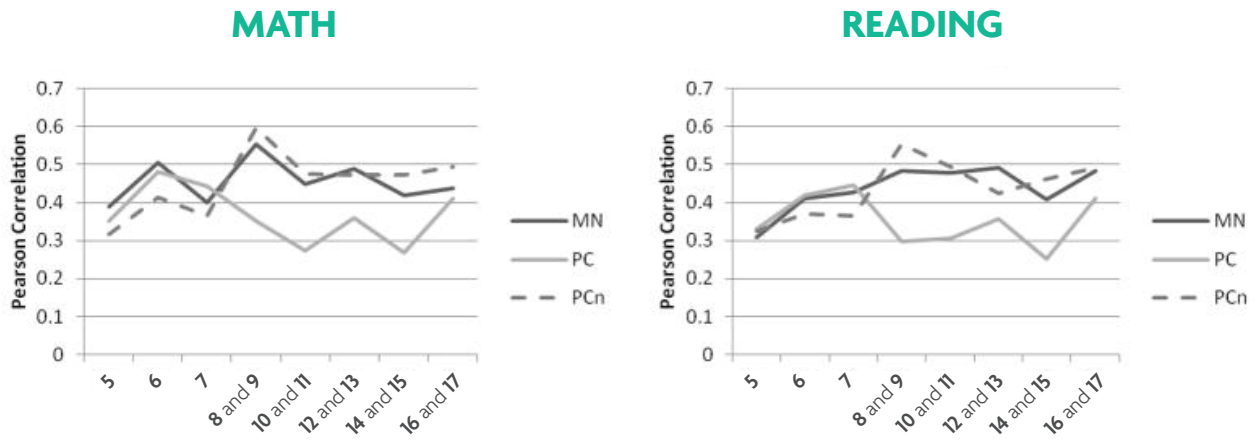


Bilingualism also opens doors for additional employment opportunities in the United States, as well as around the world. **According to a New American Economy report, in 2010 there were 239,267 job listings targeting bilinguals while in 2015, that figure had more than doubled to 627,182. In addition, the need for bilingual skills is spread across the economy rather than limited to one industry or skill focus.**

The cognitive benefits of bilingualism may be enjoyed throughout life, not only for those raised bilingually, but even for those attempting to acquire a second language later in life. Those benefits include enriched cognitive control, neural enhancement, increased social interaction across cultures, and improved metalinguistic awareness (manipulating language systems). It is precisely this improvement in metalinguistic awareness that enhances understanding of language systems and fosters better comprehension of what is heard, read, and viewed. **In other words, we find that literacy is a direct outcome of enriched language and not the contrary.**

LIFE-LONG BENEFITS OF BILINGUALISM

A preponderance of the research, both past and present, still tends to focus upon the impact of bilingualism in early childhood. Nevertheless, there is growing interest regarding the effects that bilingualism has upon the aging process. As humans beings age, there is a gradual and natural decline in cognitive prowess. In its most extreme state, this decline can manifest itself in the form of dementia or Alzheimer's Disease, with the individual eventually losing all perception of self; the cognitive reserve being virtually depleted.[14,15] As stated by Dr. Marion Diamond, "Take away the brain, you take away the person."

The term 'cognitive reserve' pertains to the sum total of cognitive processes and executive functions each individual maintains within the brain. As it relates to human existence, it is clearly imperative to maintain that reserve for as long as possible, thus forestalling the onset of general cognitive decline. **Although bilingualism will not serve as a permanent hedge against dementia or Alzheimer's Disease, research shows that, on balance, bilinguals who fall victim to such cognitive disorders experience their first symptoms 5.1 years later than their monolingual counterparts and are diagnosed 4.3 years later. (Please see Figure 2.)** It is believed that this is the direct result of the executive functions being recurrently challenged and deployed as they work to control and manipulate two languages existing side by side in the bilingual brain. Thus, bilingualism has the capacity to modify the neural structure and activity of the aging brain, resulting in improved memory, more mental sharpness, and rerouting of neural paths potentially damaged by the aging process.[16,17]

BILINGUALS EXPERIENCE ONSET OF DEMENTIA LATER THAN MONOLINGUALS

FIRST SYMPTOMS Monolingual	**FIRST SYMPTOMS** Bilingual
75 Years	80.1 Years
DIAGNOSIS Monolingual	**DIAGNOSIS** Bilingual
75 Years	79.3 Years

Figure 2 [18]

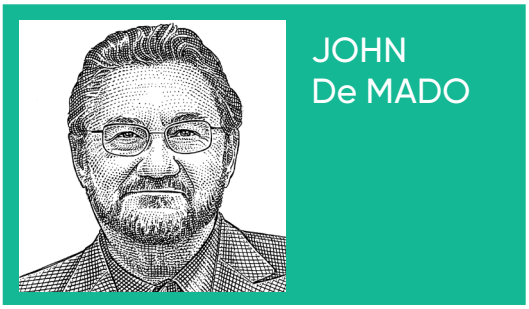
SUMMARY

Growing contemporary research recognizes the significant cognitive benefits that bilingualism brings to the human experience. We are now aware that the human brain is not predestined from birth, but rather adapts to circumstances throughout life. It can be enriched or impoverished at any time, thus expanding or limiting the capacity to learn.

It is now apparent that being bilingual challenges and, in effect, exercises the brain, developing it in ways never before imagined, modifying its function and its very composition. The rewards are many and varied. Among them, we can count enhanced ability to problem solve, greater mental flexibility, improved focus and attention control, and heightened ability to multitask, task switch, and think in more complicated ways along with enhanced reading comprehension, semantic processing of words, and employment opportunity. Furthermore, bilingualism appears to postpone the deleterious affects of cognitive disorders and cognitive decline.

As researchers Ellen Bialystok and Kenji Hakuta remind us in their book In Other Words, being bilingual brings much more to humanity than just functionality in two languages and appreciation for other cultures. There are vast cognitive benefits to be enjoyed and celebrated as well. This fact may be best summed up in their own words ...

"The knowledge of two languages is greater than the sum of its parts."[19]



JOHN De MADO

John De Mado has been a vocal advocate for language acquisition in the United States for many years. Beginning his foreign language studies in high school, Mr. De Mado attended Montclair University in Upper Montclair, NJ. There, he received his BA and teaching certification. During that time, John was selected to participate in an immersion experience in Grenoble, France sponsored by Princeton University. He began his French and Spanish teaching career in the state of New Jersey, simultaneously completing his MA degree in French language and literature at Middlebury College, Middlebury, VT. His degree was funded in part by the French government. Mr. De Mado then undertook his second French and Spanish teaching assignment in Connecticut. He also served on his local Board of Education, spearheading a successful campaign to implement a K–5, content-related Spanish program.

After several years of classroom experience in both public and independent schools, John began his career in educational publishing, serving as Senior National Consultant for Foreign Languages and ESL, Foreign Language Marketing Manager, and Editorial Director for Foreign Languages.

Mr. De Mado is co-author of Allez, viens! and Bien dit!, middle/high school, proficiency-based French programs published by Houghton Mifflin Harcourt® and the Creative Consultant to ¡Avancemos!, a middle/high school, proficiency-based Spanish program published by Houghton Mifflin Harcourt as well. He has also authored several texts with various other publishers.

John has also composed and recorded a series of instructional French and Spanish rap CD/DVDs entitled **La Boutique Magique**, **Une Boum Cool**, **¡Festejemos!**, and **¡Somos Campeones!**, respectively. Each features original raps designed to transmit specific linguistic functions and related vocabulary, structure, and syntax.

Since 1993, Mr. De Mado has directed **John De Mado Language Seminars, LLC**, a full-service consulting firm dealing exclusively with language acquisition issues. John has also consulted to the U.S. Department of Defense Schools in Europe and conducted workshops throughout the United States as well as abroad. A member of several national, regional, and state language organizations, John is best known for his motivational keynotes, provocative conference sessions, and insightful professional and staff development workshops.

You may visit John's website at **demado-seminars.com** for further information.

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