COVID -19 and ADOLESCENT DUAL LANGUAGE LEARNERS

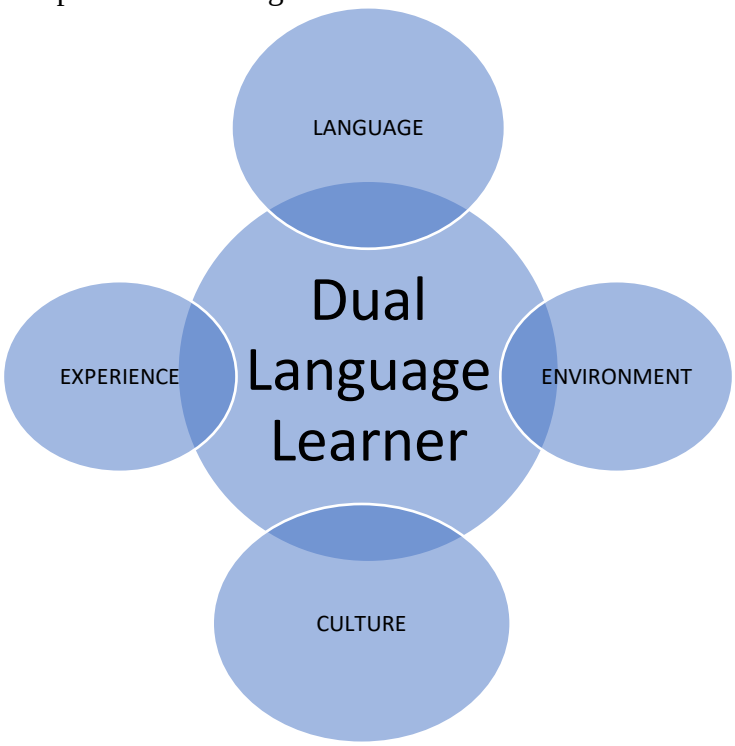
NEUROSCIENCE

"Social emotional interactions and experiences are the gateway to learning" surmises Dr. Patricia Kuhl during the Aspen Institute's 'Nation of Hope' education conference, 2019.(1) Based on years of brain development research focused on 'how students learn', neuroscientists posit specific environmental and social factors which undergird the academic success of all learners, especially adolescent DLLs.

Randomized control trials examining optimal learning conditions, emphasize face-to-face, in-person exchanges as fundamental to learning. Adolescents thrive clustered in small groups or working in pairs where students make eye contact, interpret facial expressions, and decipher physical gestures while debating, discussing, exchanging information and problem-solving together. They 'light up' in educational surroundings that are stable, flexible, non-judgmental, and promote open dialogue and sharing of ideas within a safe and secure place to explore, make mistakes and challenge norms.

Why

It has long been understood that rapid brain development occurring early in life, from birth to 8 yrs. old, forms the brain's initial structure or architecture for learning. However, with the advent of puberty, a second developmental phase begins which triggers brain 'plasticity' or the ability to change and form new neurons based on input from experiences, language, culture and the environment; the four pillars of learning.



Adolescence is a seemingly tumultuous period, biologically and cognitively, as the brain enters another phase of neural reorganization in preparation for adulthood. Brains are busy pruning or eliminating no longer needed synapses in order to build new cognitive pathways for more sophisticated intellectual demands such as visioning, problem-solving, predicting, planning, and delaying immediate gratification. "During early adolescence, the human brain increases the rate at which it forms synapses, or connections between the brain's nerve cells. This burst of neural activity strengthens necessary communication networks and builds an individual's capacity to engage in complex mental tasks." (2) However, the pre-frontal cortex or neural region which controls emotions, decision making and empathy, characteristics displayed by successful leaders and CEO's, does not finish developing until mid to late 20s.

Indubitably, the environment, within which these complex mental tasks develop, is of prime importance. It is extraordinarily difficult for adolescent learners to reach maximum cognitive function in isolation, social interaction is a must. Additionally, since neuro-research links comprehension and cognition to language development, culture and experiences; dual language learners are notably dependent on collaborative, highly communicative learning communities.

FEATURES of ADOLESCENT DLL INSTRUCTION

According to education neuroscience, optimal education settings and instruction for dual language learners include the following;

Educational Environments

> Predictable – Consistent-Stable- Heterogeneous Grouping- Social Interaction- Flexible-Balanced Dual Language Development- Expert Teachers- Whole School Involvement-Mission Driven- Data Driven- Access to Rigorous Academic Content- Inclusion- High Expectations- Linguistic Support and Cultural Acceptance

Instruction

Evidence-based Pedagogy, Standards Aligned, Horizontal and Vertical Lesson Planning- Student Profile Analysis-Differentiated, Individualized Direct Instruction- Phonological Processing-Phonemic Awareness- Phonics- Grade Level Academic Content Reading- Writing, Vocabulary Development- Language Modeling- Ongoing Dual Language Assessment, Valid Content Assessment, Progress Monitoring, Collaborative Teaching, and Student Choice.

CHALLENGE and OPPORTUNITY

The past months of forced school closures has exposed numerous vulnerabilities to the traditional classroom and 'teaching and learning' process. Schools scramble to replicate classroom instruction using online, distance-learning protocols to keep students engaged. This is especially difficult for young learners as well as adolescents. Middle School students need as much social interaction and thoughtful adult guidance as early learners, given the adolescent brain is in the throes of change and developing at least as rapidly as their younger counterparts. It

is an overwhelming period of uncertainty for students launching into their next phase of physical, emotional and intellectual prowess.

The aftermath of the current crisis provides educators an opportunity to assess how best to ensure learning occurs. Current empirical brain research regarding the social and emotional aspects of learning combined with dual language development and knowledge acquisition indicates that total immersion using only online distance learning does not advance this age group's neurological, cognitive or linguistic development.

Admittedly, there are no easy answers or a clear path forward. We do know that blended learning models with students participating in face-to-face interactions combined with technology, work. However, research has not yet offered sufficient information regarding a 'balanced' ed/tech approach to learning. Returning to traditional forms of classroom instruction may not be feasible in the foreseeable future, therefore, as we redesign education delivery systems and develop new instructional models it is important to consider education neuroscience in order to 'Teach How the Brain Learns'!

References

(1) Kuhl, Patricia, "Nation at Hope, Aspen Institute Conference, January, 2019.

(2) P. R. Huttenlocher and A. S. Dabholkar, "Regional Differences in Synaptogenesis in Human Cerebral Cortex," Journal of Comparative Neurology 387, no. 2 (1997): 167–78; J. N. Giedd et al., "Brain Development During Childhood and Adolescence: A Longitudinal MRI Study" Nature Neuroscience 2, no. 10 (1999): 861. 28 P. R. Huttenlocher, "Synaptic Density in Human Frontal Cortex—

For more information regarding systems design based on Education Neuroscience:

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