

The

Adult Basic Classroom

For Florida Adult Basic
Education Practitioners

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The Brain Lab: It's your classroom!

How much can my adult students really learn? Hasn't the brain quit developing by adulthood? Perhaps I'm really just teaching my adults new ways to cope with or work around their old limitations. How much can I really expect old dogs to learn new tricks?

The Brain Lab: It's Your Classroom!

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The Brain Can Change, At Any Age, With Experience.

As a teacher you are changing not only your students' brains, but also your own!

That's the good news of brain research of the past two decades. Although scientists have taught us much about the importance of early learning, we can take heart as adult educators that science is also proving it is never too late for learning. Our adult students do still learn, all adults do. So as you watch your students learning, be aware that your brain is changing and growing as well.

What does the research tell us?

New knowledge about the brain has exploded in the past 20 years, which is tremendous news for educators, because the better we understand the brain, the better we will be able to educate.

With 100 billion neurons, or nerve cells, the brain is a highly complex network, with each of those neurons having numerous dendrites, fingerlike bodies for sending and receiving information among the neurons. It's estimated that there are one million billion neuronal connections in the cortical outer layer (the thinking/learning part) of the brain alone! That is a number greater than all the stars in the

sky; or it is as if 100 billion people, 20 times the world's population, were chatting over phones connected to thousands of others at the same time (Given, ASCD, 122).

The brain has plasticity

We are born with as many neurons as we will ever have, but the brain does possess a quality called *plasticity*, meaning that with stimulation, neurons can increase connections by growing additional dendrites. One nerve cell alone can receive messages from up to 20,000 other neurons! This is where the challenge to educators comes in. While we know that neurons grow quickly in the first 8 to 10 years of life, it is still possible to build those dendrite connections throughout life.

A noted researcher, Marian C. Diamond, of the University of California at Berkeley, has studied the effects of stimulation on the cerebral cortex in lab rats. She discovered that animals given enriched environments—other animals and toys to play with—grew dendrites. Animals put in impoverished environments, that is, without other animals and without toys, showed a marked decrease in dendrites at the end of the experimental period. And these results were not dependent on age!

Emotion drives attention, which drives learning

Robert Sylwester, another prominent educational researcher from the

University of Oregon, has helped us to learn more about how important **emotion** is to learning. He notes that "far more neural fibers project from our brain's emotional center into the logical/rational centers than the reverse, so emotion is often a more powerful determinant of our behavior than our brain's logical/rational process." This tells us that classroom activities that evoke positive emotions for students will enhance the potential for learning and retention. Anticipation, mystery and suspense that are not threatening, and excitement can engage students' attention and enhance memory. Learning is a circle, beginning and ending with emotion. What this circle creates is memory. However, Sylwester's research also tells us that fear and other negative emotions will shut down learning. As students' brains "downshift" into a protective "fight /flight" mode, learning is not possible. If a threat is perceived, the brain can't concentrate on learning. So classrooms with anxiety, punitive behavior controls and unrealistic demands actually hinder learning.

Patterns and memory, programs and memory

The human brain is constantly striving to make sense out of nonsense, and responds to *patterns or repeated classification schemes*, so that new information gets "hooked onto" existing information.

Certain patterns of memory, or

memorized tasks, can free the mind for other tasks. Think of the domino effect: once one neuron fires, a chain reaction is set off without conscious effort on the part of the learner. Examples of these rote tasks are writing, typing, basic math skills, etc. where the brain actually sets up its own program for accomplishing these functions. Language involves patterns and rhythms, as does music and movement, which help with learning other patterns.

How Do I Set Up A "Brain-Compatible" Classroom?

Adult education classrooms that enhance learning provide active, meaningful learning. This means the adult student must participate in directing and following through with learning and must be able to respond to patterns both in what is learned as well as how something is learned. To assist in this, adult education teachers must give accurate and timely feedback that is student specific. A brain-compatible adult education classroom also offers stimulating, varied input, allowing both teacher and students to contribute in a variety of ways. Guest speakers, art displays, films, and music stimulate many areas of the brain. Finally, but maybe most importantly, a brain-compatible classroom is a safe, non-threatening environment. Students feel comfortable asking questions, making mistakes and failing. Students are rewarded for victories and encouraged through defeats. The expectations and rules are clear and fairly enforced. (Based on a model by Wayne Jennings and Joan Caulfield, 1997)

What Does Active Learning Mean For The Adult Student?

Geoffrey Caine, an educational consultant, said this during an interview: "It is absolutely clear that there is going to be a need for a different type of teaching and a different approach to education... Teachers are going to need to know how to function with an ever-changing curriculum, with a massive in-flow of information, with changing cultural environment because different ethnic groups are meeting within their classroom... The person who can do that

is a facilitator of learning... not somebody who is in control of what happens, but who can create the conditions so that people can take charge of their own learning with support from resources in the environment." *And isn't this what adult educators already do?*

We know that our adult students need a stake in what they are learning. We know that the rich array of life and work experiences they bring can be a strong bridge for learning new knowledge. It is important to have an inventory of your student's skills (such as the TABE) and then to use that inventory to help you successfully encourage cooperative learning (with teacher guidance). In addition to absorbing knowledge, students will gain experience working in a team setting, a key ability employers are seeking in workers.

What Can Adults Do With Brain Knowledge To Help Their Children and/or Grandchildren?

Haven't we all had the sense, in ourselves, or in one of our students, that the brain wiring just wasn't working for certain tasks? Dr. Mel Levine, author of *A Mind at a Time* (2002), said: "Each of us is endowed with a highly complex, inborn circuitry - creating innumerable branching pathways of options and obstacles... we all live with minds wired to excel in one area and crash in another. Hopefully, we discover and engage in good matches between our kind of mind and our pursuits in life,"

Dr. Levine, a pediatrician with 30 years experience and study of children with learning difficulties, helps us to understand that "different kinds of kids' minds are destined to lead different kinds of adult lives... and should find their best ways of functioning during school years."

While our adult students may not have had the help they needed drawing on their strengths and bypassing their areas of weaknesses, they can help the children in their lives in several ways. First, they can strongly encourage expectant mothers to exercise good nutrition, and avoid drugs and alcohol, which are known to be the cause for many children's learning difficulties. They can also assist in providing the very young with safe and secure

environments, and stimulations for neuronal growth. Providing colorful rooms, talking to infants, reading to children every day, playing music, encouraging games of movement - all of these will enrich the lives of children, and enhance their abilities to learn through strengthening young brains. Adults can also be vigilant in watching for signs of learning problems, and seeking early intervention so that the children they love do not fall far behind before receiving the specialized help they need and deserve.

Conclusion

So there is good news for adult students and educators. Our brains are still working and growing! As adult educators, we can enhance the chances for our students' success by providing them with the brain-compatible environment they need.

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We hope you enjoy this newsletter. If you have any comments or questions, please contact Lynn Cunill, Leon County Schools Adult & Community Education, (850) 922-5343, cunilll@ACE-Leon.org