Building a Better Brain is within Every Student’s Power

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A neurologist and teacher, Dr. Judy Willis specializes on brain research regarding learning and the brain. She often writes for professional educational journals, explaining the connection of the mind, brain, and education to enhance classroom teaching strategies.

I can think of no other scientific knowledge that is as life changing to students as knowing what you can do to change your brains and reach potentials you never believed possible. Understanding how your most powerful tool—your brain—operates gives you a sense of control and optimism about your future. I believe a better brain is within every student’s power. Empowering yourself with a basic understanding of how your brain learns and remembers gives you the most potent keys to success in school, careers, relationships, and every other aspect of your life.

Developing greater intelligence is within the control of every brain owner because genius is more than genes. In other words, intelligence isn’t simply a set amount of aptitude or intellect that you are born with. We now know there are many influences on intelligence.

We know, for example, that superior learning takes place when learning experiences are enjoyable. We know superior learning takes place when you perceive the information to be learned as relevant to your life, your interests, and experiences.

Your emotional state also has an effect on learning, as well as on your judgment, memory storage, and information retrieval and transfer. You create positive emotions in yourself when you activate your prior knowledge. You create positive feelings when you see the personal relevance of new information.

In addition to having a positive emotional state, it is beneficial and brain efficient to reduce your stress. When you are experiencing highly negative emotions or severe stress, incoming information is routed to a different part of your brain. Rather than being routed to the prefrontal cortex, where high-level thinking occurs, the information is routed to your reactive lower brain. When this happens, memory is affected. Active learning stops.

When you know more about your brain, you begin to recognize and value incremental progress, the gradual gains that come from your effort. This boosts your motivation and enables you to deal more effectively with setbacks you encounter. You develop what Stanford psychologist Carol Dweck calls a growth mindset. According to Dweck, people with growth mindsets “believe their abilities can be developed though dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment. Virtually all great people have these qualities.” (http:mindsetonline.com/whatitis/about/inde.html) With a growth mindset, you
realize that just because you have had a failure in the past doesn’t mean you will have one in the future. With a growth mindset, you appreciate your brain’s *neuroplasticity*, its essentially unlimited potential to grow in memory and intelligence. (In contrast to people with growth mindsets, people with *fixed mindsets* believe intelligence and talent are givens, that they are basic qualities that cannot be changed. They believe these qualities alone create success and that effort doesn’t matter.)

Once you become “brain wise,” you know how to seek and construct patterns of new information that match the way your brain most successfully stores information. You understand why patterning tools, such as concept maps and comparisons of similarities and differences, are such effective learning tools. As a brain savvy student, you know to the importance of taking time to think about which strategies helped you succeed, a process called *metacognition*.

The goal of your education should be to equip yourself with tools for success in life, and not just in the classroom. In order to succeed in this way, you must repeatedly stimulate neural networks you have created. (*Neural networks* consist of groups or circuits of brain cells that work together to perform a specific function, such as solving a math problem.) You stimulate neural networks by reviewing and applying what you have learned, especially by applying it in situations that go beyond the classroom (for example, applying certain math concepts to calculate the driving time between two cities). When you repeatedly activate neural networks this way, you take advantage of the brain’s ability to expand its intelligence.

As you learn about brain-research compatible strategies and apply them consistently, your motivation will grow. You will start to recognize and appreciate incremental progress in challenging subjects. With each success, your confidence will expand. You will be able to make increasingly wise choices in work and social situations, and to work out first-rate solutions to problems. You will come to realize that your social, emotional, and academic intelligence is within your control. You will come to realize that your potential is virtually limitless.