Super Teaching to Quantum Learning

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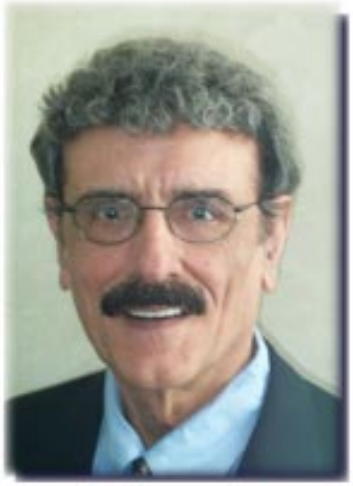

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Super Teaching is a breakthrough technology that is revolutionizing the way we learn, absorb, and retain new information. Utilizing a multi-sensory approach with three large screens behind the instructor and computer controlled projectors to distill the essence of each concept being taught, students are demonstrating a much more focused concentration, an ability to process new information at greater speed and an accelerated learning response with a significant increase in memory retention and the joy of learning. As one student stated after a powerful, Super Teaching-quantum learning experience, "It was the difference of driving down the highway at 30 miles per hour and experiencing meandering distractions versus driving at eighty miles per hour and taking everything in because you are so focused."

But why has Super Teaching been so effective and challenging? It is especially provocative to the old middle ages paradigm of left brain rote learning and repetition that has not kept up with the new theories of brain function. Why is it that twenty-five percent of college seniors could not even remember when Columbus landed in America? American business is spending twenty-four billion dollars annually to re-teach and compensate for the educational amnesia and forgetfulness of an educational system that some educators have referred to as a "dumbing down of America." Let us begin to answer some of these concerns by examining that "three pound universe" inside our heads.

Our brain speaks four electrical languages that reflect four different octaves of consciousness, methods of processing and learning new information.

Beta waves are the most rapidly oscillating brain waves and range in frequency from about thirteen cycles per second (called Hertz, abbreviated Hz) to more than 100 Hz. In our normal everyday eyes open waking state focused on the outside world, beta waves (particularly between fourteen and forty Hz) are the most dominant and powerful frequencies in the brain. Beta waves are associated with arousal, alertness, concentration and are critically important for hyperefficient learning.

Alpha waves appear when we close our eyes and shift downward into the slower alpha state which ranges in frequency form eight to twelve Hz. This octave of consciousness is characterized by more passive and relaxed physical state while becoming mentally unfocused. Alpha seems to be the brain's neutral or "idling" state and is suggestive of low anxiety and stress. This is the most common state for meditators and long term meditators produce considerably more alpha bursts and density.

"...process new information at greater speed..."

The next level of brain activity is the Theta (four to eight Hz) and is associated with profound, unexpected dream-like mental images and often vivid childhood memories. It is the state we experience just as we are falling asleep or as we awaken in the morning and has been referred to as the reverie or 'twilight' state of consciousness. It is very elusive and difficult to maintain for any length of time and is also the state we slip into when we experience sudden insights and creative ideas.

Delta (0.5 to 4 Hz) characterizes the sleep state. Delta is where our brains release large quantities of growth hormones and much of our daily cellular regenerative and healing takes place in our deepest octave of consciousness.

Further to understanding the theory and success of Super Teaching, our brain is divided into two hemispheres which function and process information in totally different ways. The left brain (in right handed persons) processes information like a digital computer. It deals with new material in an analytic, organized, logical, sequential, rational verbal manner and perceives things in a sharpened, focused manner. The right brain on the otherhand sees primarily the big picture (bird's eye view) and processes information in a visual, non-verbal, holistic, intuitive, creative and simultaneous fashion - much like an analogue computer. The left brain deals with the facts while the right brain perceives overall patterns, meanings and connectedness of information. Metaphors, parables and teaching stories thus appeal to the right brain as one can immediately grasp the meaning of a lesson without wading through a plethora of points and details. Ideally, of course, one needs to create a whole brain approach to new learning combining words (facts) and images (the big picture). One of the basic foundations of Super Teaching is to ignite and engage both brains and to create the optimal whole brain approach to superlearning.

What happens to the brain during the multi-sensory stimulation and enrichment of Super Teaching? Research scientists at the University of California (Berkeley) have made discoveries about brain activity and anatomy during peak performance learning states that are astonishing and revolutionizing our understanding of brain function. Certain types of stimulation not only change the chemistry of the brain but can actually increase brain cells and brain size and dramatically boost intelligence.

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Our brains have two types of brain cells, approximately ten billion neurons and one hundred billion glial cells. Neurons are the cells that actually create brain activity and are adapted to transmit electrical and chemical signals from one brain cell to another. Glial cells are like miniature transistors or liquid crystals that provide the electrical power of the brain and release of certain neurotransmitter activity*. We reach the peak of our mental abilities in our twenty's and by age thirty our brain begins shrinking and, starting in our forties and fifties our brain shrinks by two percent in brain weight every decade. Men lose brain tissue three times faster than women and by mid-life, men's brains shrink to the same size as women's brains. However, one ratio remains the same - ten glial cells for every single neuron. This is what may have prompted psychologist William James at the turn of the century to state that we only use ten percent of our brain. I disagree with that statement and feel that we use one hundred percent of our brains but perhaps, are only aware of ten percent of our potential because of limiting beliefs.

However, the good news is the brain is very malleable and can be molded by environment. For over thirty years, University of California neuroanatomist Dr. Marion Diamond (1) has been researching the influence of environmental stimulation and its effect upon mammalian brains. Her interest was aroused when she had the opportunity to study Albert Einstein's brain in the 1960's. To her astonishment, she discovered that he had seventy-two percent more glial cells in his brain than the average person. Of course, this led to the perennial question of how much does nature (or heredity) have to do with genius and how much does nurture (or the environment) contribute to intelligence?

Most of Dr. Diamond's research was conducted on the brains of rats which, because they are mammals, are very similar to human brains. They differ in that the human brain has more inward folds or convolutions and thus contains more brain cells and synaptic connections. Dr. Diamond created a rich, novel and stimulating environment for her animals. They were thus continually stimulating and exercising their brains with the freshness and novelty of their toys and activity wheels. Ninety-one days later she conducted a histological examination of their brain tissue and to everyone's amazement there was a 27% increase in glial cells above the baseline where the study began. The same animals were then placed into an environ-

*Glial cells are also associated with increased intelligence.

mentally barren environment, no stimulation other than food and water. Ninety-one days later another brain probe was done and the sample of brain cortex revealed that the animals lost not only the 27% increase gained with novel arousal, but they ended up with 19% fewer glial cells then what they started with! A stunning but impressive loss of 19% below the original baseline. The use it or lose it hypothesis seems specially relevant to brain function and stimulation of hyper efficient learning.

Dr. Diamond's research team went on to establish that rapid brain growth was not confined to young animals, but even extremely old rats responded to novel stimulation with significant increases in brain growth and intelligence. Later, Dr. Diamond examined hundreds of human brains and the complexity and density of neurons and glial cells correlated with the amount of stimulation the person received either through their profession or extra-curricular activities. Subsequent research with monkeys and other primates in super-enriched environments would increase brain growth and density within days of the hyper-stimulation.

Implications for Super Teaching:

Thus, peak performance and hyper efficient learning involve significant changes in the electro physiology of our brain. As indicated, alpha (8 to 13 Hz) represents the neutral or "idle" position for the brain. Evans and Abarbanal(2) suggest that the broad band of Beta (13 Hz and above) equates to drive and hyper drive whether one is an athlete of preparing for final examinations.

Sterman(4) described research with stealth bomber pilots whose brain wave activity remained in the vigilant high beta range while performing and maneuvering their aircraft. The moment the wheels touched the ground upon landing however the brain activity 'let up' and dropped immediately into the alpha-idling range.

While it could be conjectured that high stimulation and the multi-sensory approach of Super Teaching prove to be distracting to learning and absorbing new information, there is research to suggest the contrary. Festinger and Macoby(3) conducted an experiment to determine if a group of students engaged in two tasks simultaneously would be distracted sufficiently to lower their score in a learning assignment. The experimental group listened to a tape-recorded lecture while simultaneously watching a highly entertaining silent movie. The control group were not distracted by the film, but listened to the same taped lecture. The subjects who were distracted while watching the film learned and returned information more easily and displayed more mental flexibility than those who were not distracted. This is certainly consistent with the hypothesis of Super Teaching: One is able to attain greater focus and recall while being taught in a highly stimulating multi-sensory environment compared to the passive-receptive approach of most classroom settings.

In summary, Super Teaching provides an extraordinary opportunity for accelerated learning and retention by creating a heightened state of awareness. Research in various settings has demonstrated that the electrical language of the brain will increase in frequency (Hz) to parallel the escalation of multi-sensory stimulation. Athletes sometimes define this state of heightened mindfulness and visualization as being "in the zone". Sales persons refer to the same state as being "tuned in" to their client, while mystics may speak of different octaves of meditation. Regardless of the discipline, Super Teaching utilizes visual and auditory stimulation to create greater mental efficiency, more rapid information processing and can thus be referred to as a peak performance state.

"...Super Teaching provides an extraordinary opportunity for accelerated learning..."

References

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