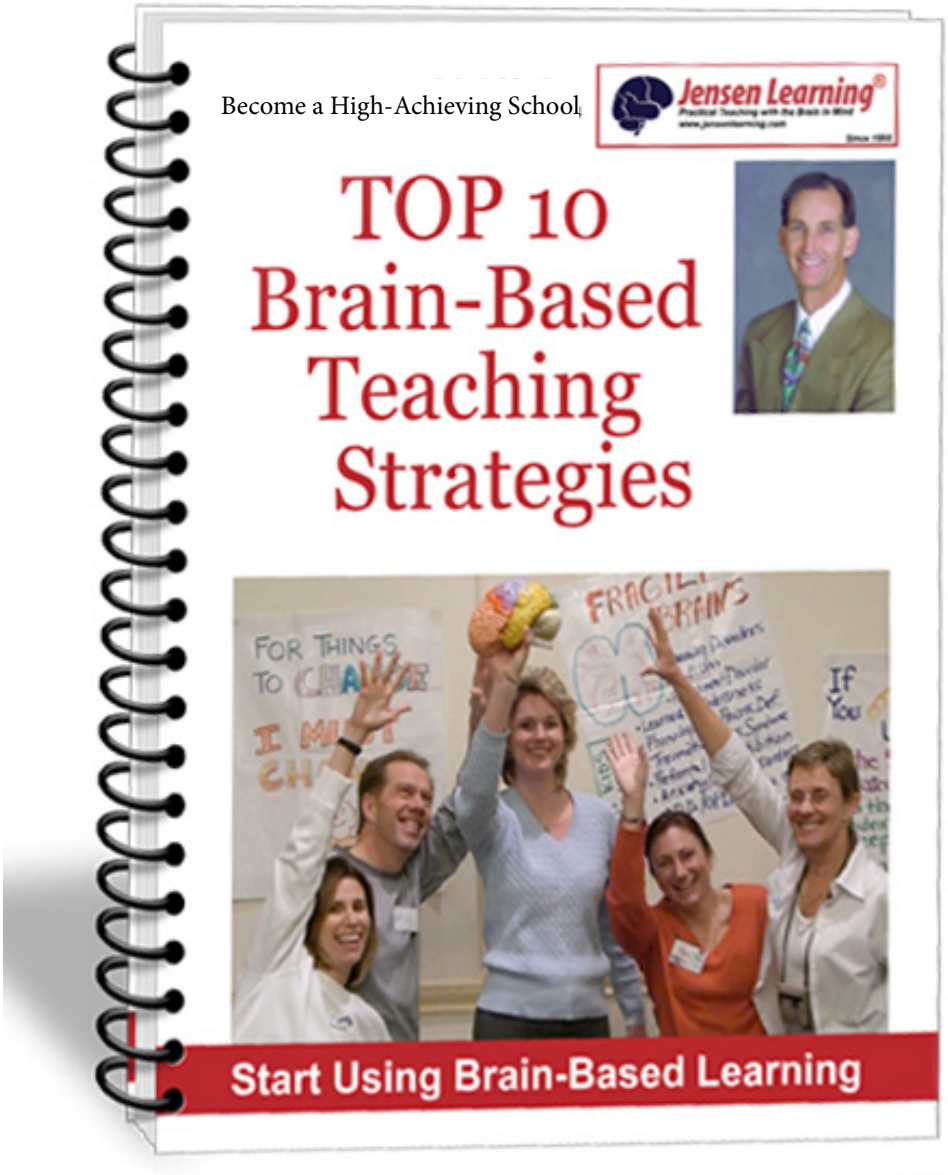
Jensen Learning
Guide To Brain-Based Teaching



Jensen Learning • PO Box 291 • Maunaloa, HI 96770 • 808-552-0110

10 Most Effective Tips For Using Brain Based Teaching & Learning

Brain-Based Education is actually a "No-Brainer."

Here's a simple, but essential premise: the brain is intimately involved in and connected with, everything educators and students do at school. Any disconnect is a recipe for frustration and potentially, disaster. Brain-based education is best understood in three words: engagement, strategies and principles. You must engage your learners and do it with strategies that are based on real science. (I'm a big fan of cognitive science, neuroscience, psychology and other mind/brain sciences.)

How reputable is brain-based education? Harvard University now has both a master's and doctoral degrees in this field, known as the "Mind, Brain, and Education (MBE)" program. There's also a peer-reviewed scientific journal on brain-based education. The journal, which is published quarterly by the reputable Blackwell Publishers and the International Mind, Brain, and Education Society (IMBES), features research reports, conceptual papers, reviews, debates, and dialogue. Now that I've reminded you that brain-based education is the "real deal" there's one more thing.

There are what you and I might call "macro strategies" and "micro strategies."

The micro strategies are very situation specific. For example, when you are giving directions, only give one a time, because the brain needs time to process the location, the action and the qualities of the action ("Go find your teammates and wait quietly at your team stations."). I provide these in our actual workshops because they require demonstration and context to maximize the understanding and transfer. In this special report, we'll focus on macro (the "big picture" strategies. These are the "biggies" that reap huge rewards. But you'll need to use your own experiences to customize them for your situation.

They all are achievement boosters, so here they are...

1. It's confirmed: Physical Education, recess and movement support learning and are critical to education.

We now know that we can grow new neurons through our lifetime and that they are highly correlated with memory, mood and learning. This process can be regulated by our everyday behaviors, which include exercise. The optimal activity is voluntary gross motor, such as power walks, games, running, dance, aerobics, team sports and swimming. We also now know that early childhood movement wires up the brain to make more efficient connections. That supports the later academic learning. Schools can and should influence these variables.

Practical school applications:

Support more, not less physical activity, recess and classroom movement. It raises the good chemicals for thinking, focus, learning and memory (noradrenaline, dopamine and cortisol). Students need 30-60 minutes per day to lower stress response, boost neurogenesis and boost learning. For the first few weeks of school, expose students to a variety of physical activities.

Then, offer choice. That's critical because voluntary activity does more good than forced activity, which may cause an overproduction of cortisol.

Citations: Bruel-Jungerman E, Laroche S, Rampon C.(2005) Eur J Neurosci. New neurons in the dentate gyrus are involved in the expression of enhanced long-term memory following environmental enrichment. Jan;21(2):513-21.

Kirk I. Erickson, Ruchika S. Prakash, Michelle W. Voss, Laura Chaddock, Liang Hu, Katherine S. Morris, Siobhan M. White, Thomas R. W—jcicki, Edward McAuley, Arthur F. Kramer. Aerobic fitness is associated with hippocampal volume. *Hippocampus*, 2009.

Pereira AC, Huddleston DE, Brickman AM, Sosunov AA, Hen R, McKhann GM, Sloan R, Gage FH, Brown TR, Small SA. (2007) An in vivo correlate of exercise-induced neurogenesis in the adult dentate gyrus. Proc Natl Acad Sci U S A. Mar 27;104(13):5638-43.

Ratey, J. (2008) Spark: The revolutionary new science of exercise.

2. It's confirmed: **Social conditions** influence our brain in multiple ways we never knew before.

Sociology is guided by the journal of *Social Neuroscience*. School behaviors are highly social experiences, which become encoded through our sense of reward, acceptance, pain, pleasure, coherence, affinity and stress. In fact, poor social conditions, isolation or social "defeat" are correlated with fewer brain cells! Nobody knew this occurred five or ten years ago.

Practical school application:

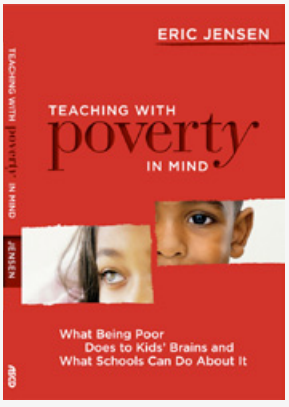
Do NOT allow random social groupings for more than 10-20% of the school day. Use targeted, planned, diverse social groupings with mentoring, teams and buddy systems. Work to strengthen pro-social conditions. Teacher-to-student relationships matter, as do student-to-student relationships.

Citations: Champagne FA, Curley JP. (2005) How social experiences influence the brain. Curr Opin Neurobiology. Dec;15(6):704-9.
R. M. Sapolsky (2005) The Influence of Social Hierarchy on Primate Health Science, April 29; 308(5722): 648 – 652.
Yap, J. (2006) Behavioral Brain Research, Sept 25; 172(2):344-50

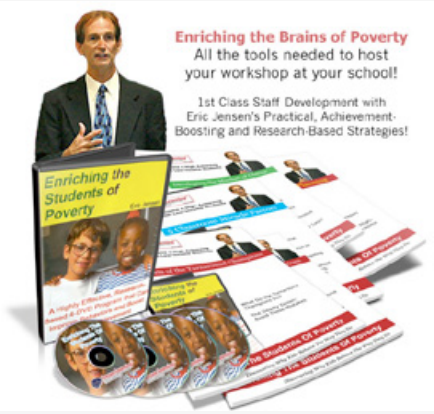
Jensen Learning Resources:

Click below for more information:

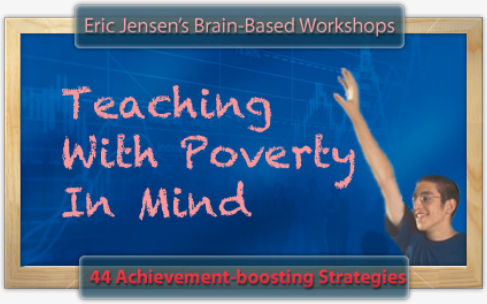
Get the Book:



In-School Training Program:



Jensen Learning Workshop



3. The brain changes! All educators should know the brain can and does change every day. In fact every student's brain is changing as they attend school. The ability of the brain to rewire and remap itself via neuroplasticity is profound. The new *Journal of Neuroplasticity* explores these and related issues. Schools can influence this process through skill building, reading, meditation, arts, career and building thinking skills that build student success. The evidence is compelling that when the correct skill-building protocol is used educators can make positive and significant changes in the brain in a short period of time. Without understanding the "rules for how our brain changes" educators can waste time and money, and students will fall through the cracks.

In fact, neuroscience is exploding with discoveries about the brain as being highly malleable. We used to think about the paradigm as either genes or experience. We now know it can be a hybrid of both!

New journals called *Gene Expression, Gene Expression Patterns* and *Nature Genetics* explore the mechanisms for epigenetic (outside of genes) changes. We now know that environments can trigger genes to express themselves in ways we never would have predicted—IF you know what to do.

You can upgrade a student's capacity for memory, processing, sequencing, attention and impulsivity regulation. Why not teach these skills to give students the tools to succeed?

Practical school application:

Give teachers a mandate of 30-90 minutes a day and 3-5x per week to upgrade student skill sets. Teach attentional skills, memory skills and processing skills. Progress requires focus, "buy-in" and at least a half hour a day. Here are several of the online programs that build memory and attentional skills:

http://www.soakyourhead.com

http://www.happy-neuron.com/games/#memory

http://www.neuroactiveprogram.com

http://www.happy-neuron.com/games/#attention

http://www.playattention.com/adhd/

Citations: Ball K, Edwards JD, Ross LA. (2007) The impact of speed of processing training on cognitive and everyday functions. J Gerontology B Psychology Science Soc Sci.Jun;62 Spec No 1:19-31.

Draganski B, Gaser C, Busch V, Schuierer G, Bogdahn U, May A (2004) Neuroplasticity: changes in grey matter induced by training. Nature 427:311–312.

Jonides, J. (2008) "Musical Skill and Cognition" Pgs. 11-16. In "How Arts Training Influences Cognition" in "Learning, Arts, and the Brain: The Dana Consortium Report on Arts and Cognition" Organized by: Gazzaniga, M., Edited by Asbury, C. and Rich, B. Published by Dana Press. New York/Washington, D.C. web access: www.dana.org.

Polley DB, Steinberg EE, Merzenich MM. (2006) Perceptual learning directs auditory cortical map reorganization through top-down influences.J Neurosci. 2006 May 3;26(18):4970-82.

4. Chronic stress is a very real issue at schools for both staff and students.

Recent studies suggest 30-50% of all students fell moderately or greatly stressed every day. Acute and chronic stress is explored in the *Journal Stress*, the *International Journal of Stress Management, the Journal of Anxiety, Stress* and *The Journal of Traumatic Stress.* In some schools, the numbers are double that!

For those from poverty, the numbers can be higher. These pathogenic allostatic stress loads are becoming increasingly common and have serious health, learning and behavior risks. This issue affects attendance, memory, social skills and cognition.

Some stress is good, chronic or acute stress is very bad for behavior and learning.

Practical school application:

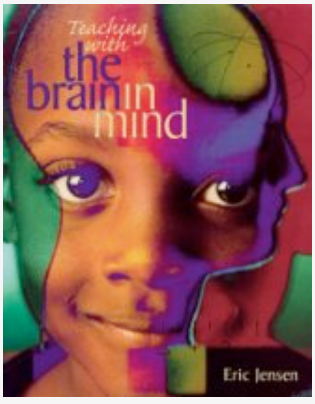
Teach students better coping skills, increase student perception of choice, build coping skills, strengthen arts, physical activity and mentoring. These activities increase sense of control over one's life, which lowers stress. All of these can reduce the impact of stressors.

Citations: Johnston-Brooks, C. H., Lewis, M. A., Evans, G. W., & Whalen, C. K. (1998, Sep-Oct). Chronic stress and illness in children: The role of allostatic load. *Psychosomatic Medicine,* 60(5):597-603.
Koomen, H. M. & Hoeksma, J. B. (2003, Dec). Regulation of emotional security by children after entry to special and regular kindergarten classes. *Psychological Reports,* 93(3Pt 2):1319-34.

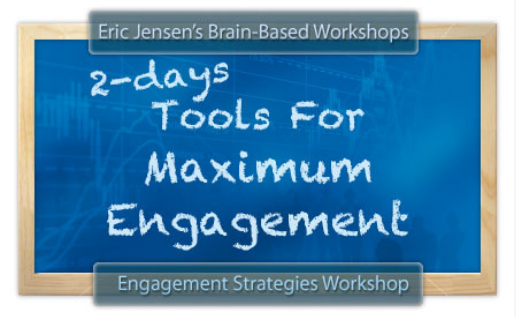
Jensen Learning Resources:

Click below for more information:

Get the Book:



Jensen Learning Workshop



5. Schools are pushing "Differentiation" as a strategy to deal with the differences in learners. That's close, but not quite the truth. In fact, instead of there being mostly "typical" students with some with "differences" the brain research tells us the opposite. Let's find out how common it is to have a "healthy brain."

Of those who responded to the UCLA "healthy brain" student advertisement and considered themselves to be normal, only 32% passed the initial telephone screening process. Of those who qualified for the in-person health history and physical examinations, only 52% passed these screening procedures.

Now we can do the math: only 11% of those individuals who believed they were healthy/normal even qualified for brain imaging. Of the original 2000 students, just over 200 ended up meeting the criteria. The actual study concludes by saying, "The majority of individuals who consider themselves normal by self-report are found not to be so." Let me repeat: almost 90% of human brains are atypical, damaged or in some way not healthy. That does NOT mean that many students have not compensated; they have.

Practical school application:

Make differences the rule, not the exception at your school. Validate differences. Never expect all students (4th graders, for instance) to be on the same page in the same book on the same day. That runs counter to an extraordinary research databases that shows variations in maturation rates and other brain differences. Allow kids to celebrate diversity, unique abilities, talents and interests. Give them the skill sets, relationships and hope to succeed.

Citations: Mazziotta JC, Woods R, Iacoboni M, Sicotte N, Yaden K, Tran M, Bean C, Kaplan J, Toga AW; (2009) The myth of the normal, average human brain--the ICBM experience: (1) subject screening and eligibility. Neuroimage. Feb 1;44(3):914-22.

6. New evidence suggests the value of teaching content in even smaller chunk sizes. Why? The old thinking was that students could hold seven plus or minus chunks in the head as capacity for working memory. But that science is outdated. The new research says two to four chunks are more realistic. In addition to this shorter capacity for working memory, our midterm "holding tank" for content, the hippocampus, has a limitation on how much it can hold. It is overloaded quickly, based partly on learner background and subject complexity.

There are other reasons our students get overloaded quickly with content. Learning and memory consume physical resources such as glucose and our brain uses this quickly with more intense learning.

Practical school application:

Teachers should teach in small chunks, process the learning, and then rest the brain. Too much content taught in too small of a time span means the brain cannot process it, so we simply don't learn it.

Breaks, recess and downtime make more sense than content, content and more content. Here's the guideline: the less background the learner has and the greater the complexity of the content, make the time chunk of content shorter (use 4-8 minutes). The greater the background knowledge, the less the complexity, the longer you can make the "input" stage (8-15 min. is acceptable).

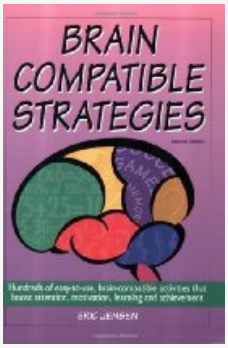
Under no condition, should there be more than 15 consecutive minutes of content input. Share this with your teachers. But share it in a small chunk, and then allow time for processing it.

Citations: Gobet F, Clarkson G. (2004) Chunks in expert memory: evidence for the magical number four... or is it two? Memory. 2004 Nov;12(6):732-47.
Cowan, N. (2001, Feb). The magical number 4 in short-term memory: A reconsideration of mental storage capacity. The Behavioral and Brain Sciences, 24(1):87-114.

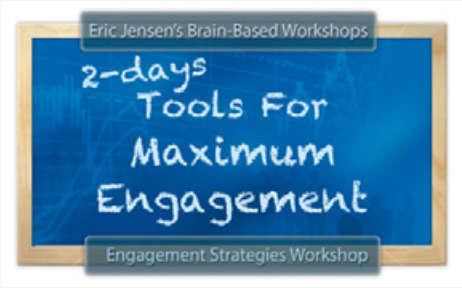
Jensen Learning Resources:

Click below for more information:

Get The Book:



Jensen Learning Workshop



7. The role of the arts in schools continues to be under great scrutiny. But five neuroscience departments at five universities (University of Oregon, Harvard, Univ. of Michigan, Dartmouth, and Stanford) have recently completed projects studying the impact of arts on the brain. *Arts and Neuroscience* is a new journal that tracks the connections being made by researchers.

The recent results suggest that arts are far better than earlier believed. They show that certain arts boost attention, working memory, and visual spatial skills. Other arts such as dance, theater and drama boost social skills, empathy, timing, patience, verbal memory and other transferable life skills.

Practical school application:

Make arts mandatory and give students the choice of several, support with expert teachers and the time to excel at it. Right now, evidence suggests that you get the most value from 30 to 60 minutes a day three to five days a week. Arts support the development of the brain's academic operating systems in ways that provide many transferable life skills.

Citations: Posner, M., Rothbart, MK, Sheese, BK, and Kieras, J. (2008) "How Arts Training Influences Cognition" Pgs. 1-10. in "Learning, Arts, and the Brain: The Dana Consortium Report on Arts and Cognition" Organized by: Gazzaniga, M., Edited by Asbury, C. and Rich, B. Published by Dana Press. New York/Washington, D.C. web access: www.dana.org.

Jonides, J. (2008) "Musical Skill and Cognition" Pgs. 11-16. In "How Arts Training Influences Cognition" in "Learning, Arts, and the Brain: The Dana Consortium Report on Arts and Cognition" Organized by: Gazzaniga, M., Edited by Asbury, C. and Rich, B. Published by Dana Press. New York/Washington, D.C. web access: www.dana.org.

Spelke, E. (2008) Effects of Music Instruction on Developing Cognitive Systems. at the Foundations of Mathematics and Science. " Pgs. 17-50 In "How Arts Training Influences Cognition" in "Learning, Arts, and the Brain: The Dana Consortium Report on Arts and Cognition" Organized by: Gazzaniga, M., Edited by Asbury, C. and Rich, B. Published by Dana Press. New York/Washington, D.C. web access: www.dana.org.

8. Humans have the remarkable capacity to display many emotions, but only six of them are “hard wired” or built in at birth. This is profound because it tells us that unless children get these emotional states taught to them early (ages 0-3), when they enter school, they’ll be emotionally narrow. Kids rarely ever get the emotional skills built in to ready for school.
This leads to more discipline problems and weakened cognitive skills in school.
This means we’ll have kids at school who do not understand appropriate emotional responses (e.g. cooperation, trust, shame and humility) unless we teach them at school. Most kids are not getting these taught at home. You class should offer quick, daily skill-building with blended-in-daily practice.

Otherwise students will misbehave, not understand directions, fail to be respectful to teachers and show no empathy when others are in pain. There are more early childhood kids in day care (60-80%) today compared with 10-12% in two generations ago. This is also profound because out of the possible hundreds of emotional states, only a few are good for learning (e.g. anticipation, curiosity, suspicion, confusion). Most states are, in fact, bad for learning.

Practical school application:

This suggests two things. One, we must teach appropriate emotional states as life skills (e.g. honor, patience, forgiveness and empathy) and, secondly, it’s important to read and manage the other emotional states in the classroom. In good states, students learn well and behave better. Insist that teachers build social skills into every lesson. Ask that they use the social structures that are advocated in cooperative learning programs every day. The better the social skills, the better the academics. Many good programs are in books, workshops and online. Why put effort into this area? Kids who learn patience, attention, empathy and cooperation will be better students.

Citations: Duckworth, Angela L.[4]; Seligman, Martin E.P.[4] (2005) Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents Psychological Science, Volume 16, Number 12, December, pp. 939-944(6).
Ekman, P. (2003). *Emotions Revealed*. New York: Henry Holt and Co.
Ostberg V. (2003) Children in classrooms: peer status, status distribution and mental well-being. Soc Sci Med. 2003 Jan;56(1):17-29.
Marjoribanks K. (2003) Family and ability correlates of academic achievement: social status group differences. Psychol Rep. 2003 Oct;93(2):419-22.
Summers CH, Forster GL, Korzan WJ, Watt MJ, Larson ET, OVerli O, Hoglund E, Ronan PJ, Summers TR, Renner KJ, Greenberg N. (2004) Dynamics and mechanics of social rank reversal. J Comp Physiol A Neuroethol Sens Neural Behav Physiol. Sep 11.

9. There have been stunning strides in rehabilitation of brain-based disorders, including Asperger's, learning delays, dyslexia, and autism.

The discovery that aggressive behavioral therapies, new drugs and revolutionary stem cell implantation can be used to influence, regulate and repair brain-based disorders has been amazing. Now we have the *Journal of Rehabilitation* and *The International Journal of Rehabilitation Research.* Psychiatry is now guided by the journal *Biological Psychiatry.* These journals showcase innovations suggesting special education students may be able to improve far more than we earlier thought.

Practical school application:

Make sure all teachers (not just special ed) learn the latest in dealing with special education learning delay recovery. Most kids can be brought back into regular ed classes, but not with inclusion-only strategies. It takes consistent hour-a-day skill building or the student won't change. Learn the right skills and go to it 3-5 days a week.

Citations: Ball K, Edwards JD, Ross LA. (2007) The impact of speed of processing training on cognitive and everyday functions. J Gerontology B Psychol Sci Soc Sci.Jun;62 Spec No 1:19-31.
Draganski B, Gaser C, Kempermann G, Kuhn HG, Winkler J, BŸchel C, May A (2006) Temporal and spatial dynamics of brain structure changes during extensive learning. J Neurosci 26:6314–6317.
Gaab, N. (2007) Correlates of rapid auditory processing are disrupted in children with developmental dyslexia and ameliorated with training: an fMRI study. Neurological Neuroscience. 25(3-4), 295-310.

Jensen Learning Resources:

Click below for more information:

Eric Jensen's Powerpoint presentations:

In today's world, budgets are tighter than ever. Principals are now tasked with a great amount of staff training and we've made it easier for you!

Eric Jensen has prepared a wide variety of PowerPoint presentations to help deliver a powerful presentation... to help you deliver a clear concise learning experience.

10. The recent brain/mind discovery that even memories are not fixed but, instead, are quite malleable is powerful. Every time you retrieve a memory, it goes into a volatile, flex state in which it is temporarily easily reorganized.

This is highly relevant for teachers and administrators who are responsible for student learning and classroom testing. Every time students review, they might change their memory (and often do). Yet, without review, they are less likely to recall their learning. It suggests that teachers use several strategies to continually strengthen memory over time instead of assuming that once learned, the memory is preserved.

Practical school application:

First, teachers should review the content half way between the original learning and the test. If content is taught Monday and tested on Friday, then review should be on Wednesday. Second, teachers should mediate the review process with students through structured reviews such as written quizzes or group work that ensures quality control. Otherwise the material is more likely to get confused and test scores drop.

Citations: Pashler H, Rohrer D, Cepeda NJ, Carpenter SK. (2007) Enhancing learning and retarding forgetting: choices and consequences. Psychon Bull Rev. Apr;14(2):187-93.
Pashler H, et al. (2005) When does feedback facilitate learning of words? J Exp Psychol Learn Mem Cogn. Jan;31(1):3-8.

Jensen Learning Resources:

Click below for more information:

Eric Jensen's 10-Minute Lesson Plans:

Lesson Plans The Fast And Easy Way!

set startedStudies show that teachers that use and follow lesson plans produce better results. The reason teachers avoid creating lesson plans is that they are time consuming and compli-cated... that's about to change.

We've designed our lesson plan builder so that you can create a lesson plan in just 10 minutes... and, best of all, it's FREE!

Brain-Based Education Insider

This is a new paradigm which establishes connections between brain function and educational practice. A field has emerged known as “brain-based” education and it has now been well over twenty years since this “connect the dots” approach began.

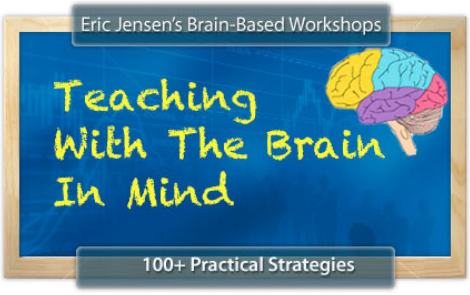
In a nutshell, brain based education says, “Everything we do uses our brain; let’s learn more about it and apply that knowledge.”

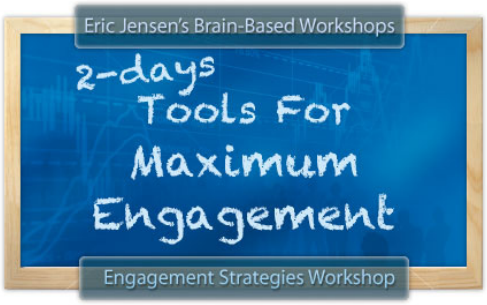
If your question was, “Are the approaches and strategies based on solid research from brain-related disciplines or are they based on myths, a well-meaning mentor teacher or from “junk science?” Now you know the answer. We would expect an educator to be able to support the use of a particular classroom strategy with a scientific reasoning or studies.

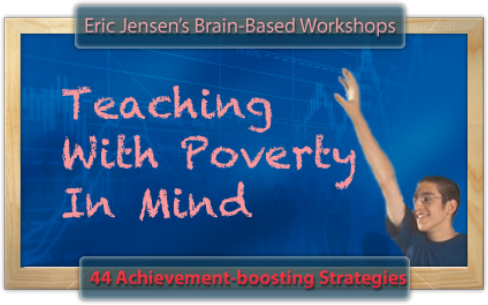
Each educator ought to be professional enough to say, “Here’s *why* I do what I do.” I would ask: Is the person actually *engaged in using* what they know, or simply having knowledge *about it,* but not actually using it? Are they using strategies based on the science of how our brain works? Brain-based education is about the professionalism of knowing *why one strategy is used over another*. The science is based on what we know about how our brain works. It’s the professionalism to be research-based in one’s practices. Keep in mind that if you don’t know *why* you do what you do, it’s less purposeful and less professional.

This is what you wanted: the science and the strategies. But how can you learn it when you have little background and very little time? Jensen Learning offers you clear, practical, cutting-edge solutions.

Every one of Eric Jensen’s sock-hopping, fun-filled trainings combines clear, compelling research in easy-to-understand language with practical strategies you can implement immediately. The workshops are on topics such as engagement, poverty, differentiation and teaching strategies. Download our workshop brochure by clicking here.. or click a workshop below for details.







Jensen Learning • PO Box 291 • Maunaloa, HI 96770 • 808-552-0110