Promote Brain-Based Teaching and Learning

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Setting up a successful classroom is one of the most important tasks educators undertake. The goal is to create an environment where all students can learn and thrive. The education community (helped by research that is identifying brain regions and the processes that are involved in learning) is beginning to recognize the importance of applying cognitive and neuroscience research and theory in the learning process. This information has direct implications for classroom practice. As we gain a better understanding of the learning process, we can make more informed decisions about how to structure teaching and learning. To get you started, here are some suggestions based on what is currently known about the brain.

SIX WAYS TO PREPARE THE LEARNER

1. **Teach students about their brains.** When students understand the basic structure of their brains, they can better regulate their own behaviors. Stress that their brains all have the same basic physiology; it's what they do with their brains that will help make a difference.

2. **Set goals.** Stress to students that setting personal goals helps them to "think smart." Teach your students goal-setting skills and integrate goal setting into class assignments (e.g., "How many references/resources can you find by Friday for your project?").

3. **Help students learn what proper sleep does for their brains so that they can "sleep smart."** Inadequate sleep can affect how students learn and their ability to concentrate, retain information, and turn short-term memory into long-term memory.

4. **Teach your students about foods and nutrition and their relationship to behavior and achievement so they can "eat smart."** The most direct and easily available way for your students to positively affect their brainpower is

through their diets. Students can boost their ability to learn and remember by reducing fats and certain proteins, maintaining a moderate intake of sugars and carbohydrates, increasing vitamin B12, and increasing intake of antioxidant fruits and vegetables.

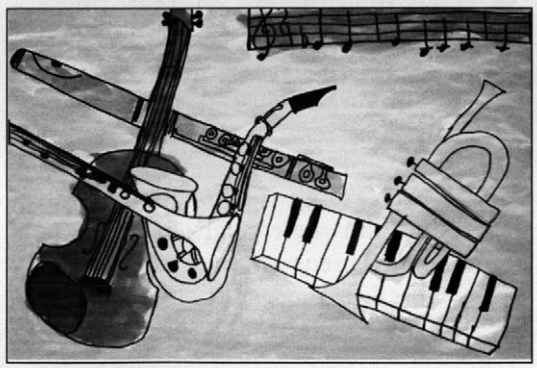
5. **Let students know that water plays a major role in the effective functioning of all body systems, especially the brain.** Encourage students to drink water throughout the day, and help them understand the connection between dehydration and poor learning—help your students to "drink smart."

6. **Teach students about learning preferences.** Help them understand the different ways in which their brains receive, process, and express information. Help your students capitalize on their preferred styles, and teach them how to add other ways of learning to their learning repertoires.

FOUR WAYS TO MANAGE THE ENVIRONMENT

7. **Establish a positive atmosphere.** Pay attention to the physical and visual aspects of the classroom as well as the auditory and emotional atmosphere in the room. Keep the environment positive, remembering that students learn not only content but also context.

8. **Use music.** Music can affect pulse, blood pressure, muscle tension, and brain waves. Use upbeat music for transition times, and use classical or instrumental music for group work, testing, and other "quiet time" work. Research on music and learning has shown that music that plays at or near 60 beats per minute improves learning and memory, actually slowing down brain waves and increasing optimum functioning.



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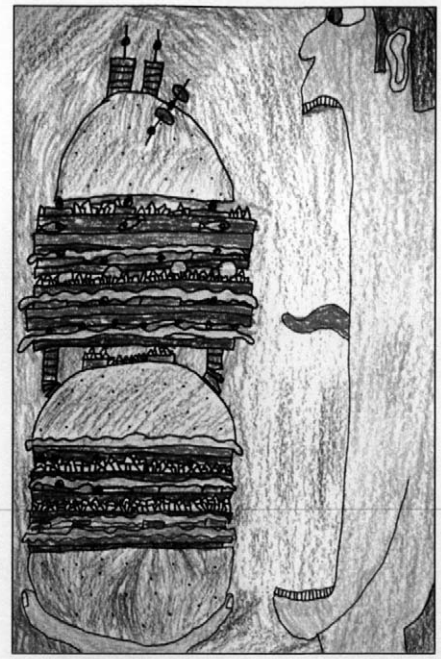

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9. **Use positive visual reminders.** Make classroom visuals constant reminders of student potential and achievements. Posters, positive "I" messages, I Know–I Want to Know–I've Learned (KWL) charts, the question of the day, quotable quotes, and graphs of student progress are all ways to remind your students of their success.

10. **Create an interactive environment.** The brain learns best with active rather than passive learning (doing vs. absorbing). Transform your classroom into the learning environment by bringing the content to life. For example, if you are studying tropical rain forests, the classroom becomes a tropical rain forest where students become a community of learners, learning key concepts and principles through total interaction with the "rain forest." Get your students involved in creating the environment, instead of having the classroom consist of just teacher displays.

FOUR WAYS TO GAIN AND KEEP LEARNER ATTENTION

11. **Integrate novel or strong emotional connections to learning.** Emotions are a critical source of learning and can be engaged through music, games, stories and analogies, role modeling, classroom rituals and customs,

celebrations, debates, and student reflections. Have a weekly student-selected "start-up song" that is played at the beginning of each day/class that signals that it's time to begin learning or have students create a special "class clap" to transition to the next part of a lesson.

12. **Use laughter.** The body reacts biochemically to laughter. Appropriate humor and jokes can help lower stress and create a fun and relaxed atmosphere. Try a "joke of the day" related to your subject matter (e.g., "What do you get when you divide the circumference of your jack-o'-lantern by its diameter?" "Pumpkin pi.").

13. **Allow movement.** Integrating movement into learning activities increases circulation and oxygen flow to the brain, which in turn can increase student attention. Plan your class activities so that movement is built in (e.g., use manipulatives; have students change their location in the classroom; encourage clapping, dancing, stretching; help students monitor and manage their own movement in the classroom).

14. **Be aware of external and internal attention.** Remember that it is important to stimulate a student's external attention to learning, but learners also need time to process what they are learning. So consider integrating "downtime" into your lessons where students can process information. Students may engage in small-group discussions, write in journals, or complete personal "KWLs."

SIX WAYS TO INCREASE MEMORY AND RECALL

15. **Recognize the importance of emotion.** Simply put, our emotions are our response to the world around us. Emotions can motivate and reward as well as punish. Emotions may be the deciding factor in what students will remember. Therefore, the challenge lies in engaging emotions appropriately as a part of teaching and learning. Analogies, models, metaphors, music, games, drama and storytelling, celebrations, debates, classroom rituals, visualizations, and self-reflection are all ways to engage emotions in learning.

16. **Create sensory associations.** The only way we can get information into the brain is through our senses. Students remember best what they "experience" by seeing, feeling, smelling, touching, hearing, and tasting. Integrating sensory associations into teaching and learning will greatly facilitate memory and recall. For example, to remember states and their capitols, students can use sensory visualizations: "Imagine a washing machine. Open the lid and you see that it is full of agitating, aromatic lemons." The washing machine represents the state of Washington; the lemons represent the capital, Olympia.

17. **Make learning personally relevant to students.** When learning is personally meaningful, related to our own life, it has a greater effect and, thus, is better remembered. Help your students find the personal relevance in what they are learning by providing "connections" through personal stories, analogies, and "serendipities." Through guided sharing of their own experiences, students can find personal meaning in their learning.

18. **Use creative repetition.** The old adage of "use it or lose it" applies to memory and recall. Students need drill and practice to retain

information. Brain-friendly drill and practice involves "creative repetition" so that students are not drilling and practicing in the same way every day. Using games, computer drills, music, rap songs, cooperative learning, and other activity-based drills and practices can all help students remember knowledge and skills.

19. **Remember the importance of first and last.** The brain remembers best what is presented at the beginning and the end of a lesson. Therefore, it is important to create powerful beginnings and endings in teaching and learning. Present new material early in a lesson, and make sure your lesson closures include a brief review of what was accomplished as well as a preview of what is next.

20. **Teach specific recall techniques.** We can teach students to use a variety of specific techniques to help recall information. Mnemonics, associations, linking information, and creating personal recall techniques can all help improve memory and recall.

Last, but NOT LEAST. Chances are, you are already using many or all of these techniques and strategies. Reading all you can about the brain and the latest information and research (as it relates to teaching and learning) is invaluable in your quest to tailor these and other brain friendly strategies to fit both your students' and your particular needs. At the end of this article is a list of resources and readings that can help you on this quest.

Persons interested in submitting material for 20 Ways To . . . should contact Robin H. Lock, College of Education, Box 41071, Texas Tech University, Lubbock, TX 76409-1701.

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Resources For Brain-Based Teaching And Learning

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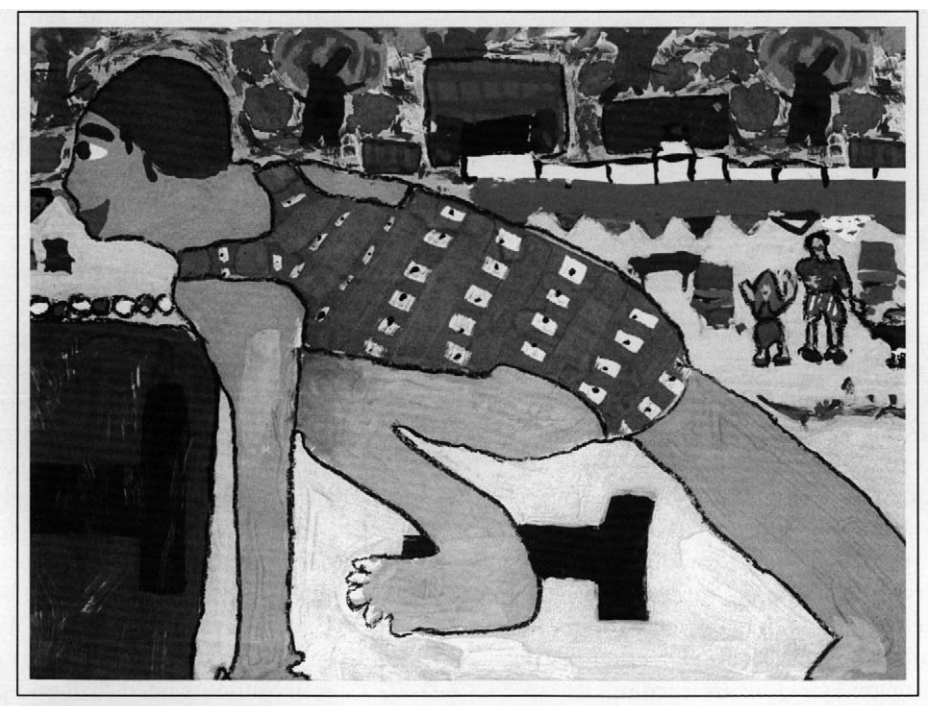

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