Practical Teaching & Learning Strategies:

Applying Brain Research to Classroom Instruction

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The Human Brain





Parietal Lobe



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Factors That Affect the Learning Process

- Attention
- Executive Function
- Working Memory
- Processing Speed
- o Learning Differences: Dyslexia, Dyscalculia, etc.
- Stress, Anxiety, Sleep, Nutrition & Exercise

Working Memory



Killing the ANTs Automatic Negative Thoughts



Draining Working Memory

Reading a passage on one page and having to

answer questions on the back of the page

Mental math vs showing your work

Scrolling on a device



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Add W	/hite Sp	ace	
	VOCABULARY	Main Popic	
	Word	Definition	
	disease	when your normal loody functions arc disrupted	
	non infectious disease	·discoces that don't spread from one- place to another	
	infictious discuss	a discuse can go from one living tsung to subteer	
	pathogens	agents that cause infectious disease	
	Lavis Pasteur	a french scientist he created pastourization	
	Edward Jenner	led to the 1st vaccure)	
			Provide State
	AL ROT REPORT	Companya Carrier O 200	

















Processing Speed



Processing Speed

Trouble with:

- Needing more time
- Getting started
- Answering questions quickly
- Performing mental math
- Finishing homework and tests on time
- Making decisions
- Missing nuances in conversation
- Following a series of directions or multiple steps
- Completing homework in a timely manner
- Becoming overwhelmed when a lot is demanded at once

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10. Give cues or cue sheets with a list of action steps to follow

Processing Activities

- Ask students to write three things they learned, or three main ideas covered in the instruction on a note card.
- Have students draw a picture of the information recently presented.
- Instruct students to spend 10 minutes rereading their notes, highlighting important information, and making notes in the margin.
- Have students highlight the three primary ideas in the reading material, in their notes or on class handouts.
- Ask students to discuss what they learned with a partner.
- Have students reread their margin notes and annotations in the passages they just read.
- Instruct students to list four or more questions they have about the content presented.
- Give students time to write a short summary of the content, stating what the information presented means to them and how it connects to one of their emotions.
- Provide students with the opportunity to engage in a physical, rote task immediately following the learning episode. For example, have students go for a walk or participate in stretching activities in the classroom.
- Give older students free time to talk to one another or give younger students time to play quietly in the classroom.
- Give students quiet time. Allow them to mentally rest, zone out, lay their heads on their desks, or sit quietly. The quiet, undisturbed time provides a helpful cognitive break and gives their brains time to process recent instruction.

Attention Strategies

- 1. Act as an external executive assistance to students with attention problems
- 2. Encourage aerobic exercise (which has been found to increase dopamine, increase executive functioning, and increase some math performance).



- 3. Have students engage in exercise with complex motor movements that engage the attention system such as: tai chi, karate, martial arts, and dance programs. There is a link to improved attention and improves continuity and flow in attention and in emotional systems.
- 4. Set short term goals with immediate rewards rather than long term rewards
- 5. Create "In your face reminders" Cues that are visually in the line of sight
- 6. Have students "write it down" to make a written record of information
- 7. Train students in procedures, routines, structure and develop habits of mind
- 8. Encourage the student to reflect on his or her behavior at the time of behavior
- 9. Use a homework coach to keep student on task and to remind the student of the goal: what he or she is supposed to be doing at each moment
- 10. Identify a mission or purpose for each task
- 11. Encourage students to eat protein along with complex carbohydrates
- 12. Have students take fish oil or eat foods rich in Omega 3's

Executive Functioning Strategies





Attention Strategies

- Self Talk Strategies
- Strategies Notebook



Whose brain is getting better at planning, organizing, prioritizing, monitoring, etc.



Executive Functioning Strategies

Practice planning →planners, agendas

- Review & reflect → how do you reflect on previous tasks or assignments to inform future performance?
- **Teach self-monitoring** → during reading or while taking tests

TRILLAS

• Cue & direct → avoid multi-tasking, where do you direct your attention



- · Forgive yourself
- Set up a reward for yourself





VERITAS

Executive Function Strategies



Tips for Reducing Test Anxiety

1) Start **Smiling** and thinking about enjoyable events. The simple, physical act of putting a smile on your face causes the brain to recognize this physical pattern and release endorphins.

2) Get a drink of **Water** 5 -10 minutes before a test. Drink water during the test. Water has been found to lower levels of cortisol, stress hormones released in the brain.

3) Incorporate **humor** before a test. Humor decreases stress and anxiety and has been found to increase retention 15%. Telling or reading jokes before a test may help reduce the anxiety and improve test scores.

4) Get **moving**! Move around, stretch, walk, etc before a test. Exercise is important for learning, getting rid of the "noisy brain", reducing anxiety and relieving nervous energy.

6) Repeat a phrase over and over again. Research suggests that the **repetition** of a familiar phrase or verse has a calming and relaxing effect on the brain - reducing some of the effects of stress and anxiety.

7) Play calming or classical **music** for prior to taking a test. Music has the ability to create a relaxed effect and put the brain in a "flow" state of mind.

8) Breathing is key! Fill your lungs and then exhale slowly. Taking slow and deep breaths bring greater amounts of oxygen to the brain and can help calm you down.

9) Become involved in **COGNITIVE WORK**. The more you become involved in solving crossword puzzles, fun puzzles, or other "thinking" activities, the less active your amygdala (fear center) becomes and the faster you will begin to feel less nervous and afraid.

10) Encourage, encourage, encourage! Remind yourself of your strengths and how you know about the material on the test. Fill your mind with healthy, positive thoughts instead of discouraging, negative thoughts.

Active Study Strategies

- 1. Highlight your notes. Highlight only the key words in a sentence (usually the nouns and verbs who and what did they do). Do not highlight full sentences.
- 2. Color-code your notes. Highlight all dates in blue, all _____ in yellow, all _____ in green, and all _____ in orange.
- 3. Recopy your notes. As you study, rewrite only the important points from your notes. Try to write down only the main terms and how they relate to the other terms. The goal is to consolidate your notes and reorganize them in your own way.
- 4. Write all of the "hard stuff" you have to learn on a white sheet of paper. As you study your notes, handouts, and terms rewrite the "hard to remember information" on another piece of paper. Then, go through and highlight different parts on the paper with different colors. Adding color to your studying will help improve your memory of the material.
- 5. Use a dry erase board and colored dry erase markers to draw charts and diagrams on.
- 6. Talk out loud. Pretend to be teaching someone the material. Read and explain your notes or parts from the book by talking out loud to yourself. This is one of the very best study tactics!
- 7. Use a tape recorder or Dictaphone.
 - a. Reread your notes, explaining parts as you go, out loud on the recorder. Rewind the tape and listen to your notes over and over again.
 - b. Call out questions from your study guide, chapter review, or from old quiz questions on the recorder. Rewind the tape and then listen to your questions. Write down your answers on notebook paper. Go back and check your answers to see if you got them correct. Study the ones you missed.
- 8. Make up your own analogies. What can you relate this idea or term to?
- 9. Think of a song that the material, word, or definition reminds you of. State out loud why the material reminds you of the song. Hum or sing a verse or two of the song out loud. Adding music to learning increases your ability to remember it later.
- 10. Attach a personal judgment or opinion to the material you just studied. What do you think about it? Is this interesting to you? What part is your favorite part? What part do you dislike the most? Why? Say this opinion out loud or write it down.
- 11. Draw pictures of everything! Pictures are easier to remember than long strings of words.

- 12. Before you begin studying a section, ask yourself, "What do I already know about this topic?" Try to picture related ideas in your mind. Do this for about 2 minutes. Then begin to read and learn your notes.
- 13. Create graphic organizers for the content. Highlight them, cut them out, make copies of them with the information blacked out.
- 14. Reorganize your lists of things to memorize. Write the hardest ones to remember at the beginning and end of the list. Place the easy ones in the middle.
- 15. Try to learn new material by associating it with familiar material and experiences.
- 16. Come up with your own examples for things you are learning. If you generate an example you will remember it better than the example that your teacher or friend came up with. Be creative and detailed with your examples.
- 17. Use different colored note cards to learn various things. Assign one color card for each category. Write each word on one side of the appropriate color note card. Write the definition on the back along with a drawing of the definition.
- 18. Reorganize your lists of things to memorize. Write the hardest ones to remember at the beginning and end of the list. Place the easy ones in the middle.





	Signal Words	
Same Direction Words	Different Direction Words	Additional Signa Words
Also	However	All
And	But	None
Thus	Although	Only
So	Rather	Reason
Therefore	Instead	Purpose
Because	Despite	Significant
In addition	Yet	First, Second, Third
Hence	In contrast	Finally
As a result	Nevertheless	Before
Consequently	On the other hand	After
Additionally	Contrary	



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Additional Tips

- 1. Use colors to highlight key words or draw attention to specific details.
- 2. Write hard information, formulas, key words, etc. with a large, think marker or in a large font. The larger the writing - the easier it is to remember.
- 3. Do not cram a bunch of information together on one page. Use white space wisely. Leave white space between new sections of notes or information. This will actually make it faster for you to memorize the content.
- 4. DO NOT MULTITASK while studying. Turn off the music, television and put your phone on do not disturb mode. Every time you look at Instagram or Facebook or check a text from a friend, it disrupts your learning process and interferes with how efficient you are storing information in memory. If you want studying to go by faster and be more effective and efficient only do one thing at a time.
- 5. Eat protein each morning before the test. Studies have shown that students who have breakfast with protein in it perform better on certain kinds of tests. The protein helps you pay attention longer and improves your decision-making skills.
- 6. Exercise during the two weeks of exams. Exercise actually primes your brain for learning and when you exercise before learning it helps information stick better. Exercise will also help you reduce any anxiety and will quiet a noisy brain (when you have lots of thoughts and worries bouncing through your mind). Plan to exercise 30-40 minutes per day for the two weeks before exams.
- 7. Sleep affects your learning. You need between 8-9 hours of sleep every night. You may do a terrific job studying, but if you are sleep deprived, you may make poor decisions, have trouble paying attention and make more careless errors on your test. So plan to get enough sleep every night.
- 8. Build in some down time too. You cannot study 24/7, so plan some fun breaks and fun things to do (short duration 20 minutes or so) during your evenings so that you can reenergize in between study sessions.

VOCABULARY

Chapter: ____

Word	Definition

Main Topic: _____

Chapter:_____

Term / Key Question Words	Definition / Answer

Study Planner for

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Grade I Plan to Get: _____

Additional Resources



TRANSFORMING YOUR TEACHING

A book for educators, students, and parents that is filled with practical strategies to help students improve:

- Organization
- Time Management
- Attention
- Reading Comprehension
- Note-Taking
- Memorization
- Study Strategies
- Test Taking
- And Much More

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