

Brain-Friendly Strategies and Why They Work: An Introduction



Strategy 1: Create the state you want from the beginning of the class session.

Examples: (1) Greet students at the door. (2) Put a brain-teaser/icebreaker activity on the board. (3) Put a cartoon on the overhead. (4) Use music. (5) Establish a class ritual.

Why this works: It focuses students to your class—not the class they just came from, a conversation they just had in the hall. It piques interest. It reduces stress. It makes them more receptive to learning.

Strategy 2: Start with the “big picture,” the overall goal, purpose or value of a learning a skill or doing an assignment. Use framing.

Examples: Explain how understanding main ideas is the key to better comprehension, outlining, summarizing, marking a text, note taking, and higher test grades. (For fun, use a prop, such as an actual picture frame, when you present the “big picture.”)

Why this works: Framing works because humans are purposeful in their learning. Framing leaves students predisposed to learning; it answers their question, “What’s in it for me?” It’s motivating to students to know what’s in it for them. Presenting the Big Picture is especially helpful to global learners: they benefit significantly from knowing when they begin what the final goal or product is.

Strategy 3: When possible, present skills inductively. (Give students a set of examples so they can reason out the general principle *for themselves*.)

Examples: Have students reason out (1) types of context clues, (2) characteristics of the topic or main idea, and (3) organizational patterns.

Why this works:

- Humans are meaning-seeking creatures. One way our brain goes about this is by looking for patterns. Visual spatial learners, in particular, like discovering patterns, and they’re usually excellent at figuring out the “rule” for themselves. This also helps them remember it.
- Figuring things out for ourselves feels good physically. The brain delivers “feel good” chemicals—serotonin, dopamine, and endorphins—to reward us for *striving* to solve problems. (The reason is that problem solving is crucial for survival.) The *effort* itself causes brain growth, regardless of whether we come up with the right answer. (This is good info to share with students who are pre-occupied with getting the right answer and see no value in their efforts unless they come up with it.)

Strategy 4: Use visual aids and models that make the learning more concrete. Simply telling students isn't enough.

Examples: (1) Show a paragraph with the topic and main sentence highlighted in two different colors. (2) Encourage students to use visualization that includes color, or perhaps to visualize the stated main idea in bold and the rest of the paragraph in regular print. (3) Create a model, such as a main idea "house" and puzzle pieces. Have students create paper models using ideas from Dinah Zike's books. (The more interactive, the better.) (4) Have students trace their own hand and mark on the fingers information they need to remember. (5) Show an example of the finished product helps students (Big Picture). (6) Use realia, such as chocolate chip cookies in which each chip represents a detail and the cookies represent paragraphs with implied main ideas. (7) Show a PowerPoint presentation, a movie clip, an artifact. (8) When possible, use color in the visual aids and on white boards and transparencies.

Why this works:

- 90% of brain's input is from visual sources.
- Brain has an immediate and primitive response to *symbols, icons, and other simple images*.
- Concrete images are especially helpful to visual learners.
- The brain responds to color.
- Visually stimulating material and manipulatives activate the right hemisphere; text presentations activate the left. To cover the waterfront, use both.
- Models and visual aids can provide opportunities for rehearsal (practice), so have students create and/or explain what they represent.

Strategy 5: Incorporate novelty.

Examples: Several things I've mentioned already have this element. By you could also

- (1) Stand in a different place from where you usually do in the classroom, or sit if you normally stand.
- (2) Have students sit in different places.
- (3) Switch classrooms with a colleague or hold class outside one day.
- (4) Add the vocal equivalent of bold, italics or underlining. Vary the tempo volume or pitch of your voice. Say an important word more slowly. Whisper it.
- (5) Change the lighting for a few minutes.
- (6) Use a little citrus or lavender spray in the room.
- (7) Use a prop or bit of costume.
- (8) Do a magic trick; it doesn't have to be sophisticated to be effective and fun. (Magic tricks and cartoons are great for introducing the concept of inference.)
- (9) Put a cartoon on the overhead that they see when they enter class. Show a cartoon, a weather forecast, an "ad" for a skill, or some other 30-second visual break when their attention begins to flag.
- (10) Add some mystery. Use teasers like the evening news does. Come back to the topic later. "How many of you think it would be great to be a multi-millionaire? Today we're going to read a selection that may make you at wealth in a completely different way." [Selection might be about ultimately unhappy lottery winners who got rid of their fortunes.]

- (11) Invite a guest speaker. Invite your dean or college president to spend 15 minutes telling the class about the book or books that most influenced their childhoods, their lives, or their careers.
- (12) When students are going to be working collaboratively, group them in novel ways.
- (13) Give them a 5-minute doodle-break when you change from one major topic to another.

The possibilities are limitless.

Why this works:

- The brain craves novelty. It has an attentional bias for high contrast and novelty. (Some of the most effective, memorable advertisements capitalize on this.) The brain attends to anything out of the ordinary since survival can depend on it.
- The brain is hardwired to seek and respond to novelty it, especially during cognitive tasks.
- When students have to direct their attention for prolonged periods of time, they have to shut other distractions out. Over time, the brain's neural inhibitory mechanisms (frontal lobe) begin to fatigue, and competing stimuli begin to creep in and vie for their attention.
- Novelty also makes a learning experience more rewarding, and therefore more memorable.

Strategy 6: Use metaphors and analogies; have students create their own.

Examples: (1) Analogize comprehension skills with roles of players on a football team analogy. (2) Use the metaphor of a paragraph with "King Stated Main Idea" and his loyal (supporting detail) "subjects." (3) Use illustrations from everyday life: e.g., a student walks up to friends who are chatting, and is able to out the *topic* of their conversation by seeing what all of the comments (details) pertain to.

Why this works:

- Global learners respond particularly well to metaphors and analogies.
- It helps students when they make connections between the material and their personal frame of reference.
- They tap their prior knowledge when they create their own metaphors and analogies.
- If you can incorporate humor, so much the better!

Strategy 7: Incorporate movement.

Examples: (1) Have them move at least every 20 minutes. Have them stand up and stretch. Have them take a few deep breaths. (2) When you introduce a new topic or about to uncover a new transparency on the overhead, have students do drum roll on their desk or tabletop. (3) Have them role-play or do a skit. (4) Toss handouts in the air and have every student pick one up. (5) Have students stand up and remain standing while you conduct a couple of minutes of review, get feedback from them, or have them do a quick pair share.

Why this works:

- Movement helps get oxygen to the brain. The brain weighs only 3 pounds, but uses up to 20% of the body's energy. The brain doesn't store energy. It needs a constant supply of oxygen and glucose. When it's insufficient, students get restless or listless.

- Simply standing up increases blood flow. Increased blood flow stimulates the adrenal glands to put adrenalin into the system. Adrenalin can be a memory enhancer. (Incidentally, the calf muscles are the best for pumping blood through the body. Having students walk in place for a few minutes will perk them up!)
- Skits work for a variety of reasons: They involve movement, are engaging, are novel, make learning more concrete, and can provide a connection with a personal frame of reference (prior knowledge).
- For many students, especially global learners and those with ADD or ADHD, movement helps dispel excess or nervous energy.

Strategy 8: Incorporate humor.

Examples: (1) Use a cartoon projected on the screen, a prop, or a bit of costume. (2) Include a joke or cartoon on a handout or test (“How many stars are there in the sky?” Answer: “All of the above”). (3) Tell a joke or do a Joke Share. Find ways of incorporating humor that fit you and your teaching style. Humor can be especially helpful right before a test or as a lead-in or follow-up to a challenging lesson.

Why this works:

- Laughter releases endorphins, lowers blood pressure, gets oxygen to the brain, and increases the flow of cerebrospinal fluid.
- Many parts of the brain are stimulated by a joke since jokes require you to look at something from a different angle or unexpected point of view. You have to use abstract reasoning—make the correct inference—in order to understand a joke or cartoon. Verbal jokes involve language, and often multiple meanings or plays on words.
- Humor is also a terrific stress reducer. Stress triggers the release of the hormone cortisol. It kills brain cells, has severely negative effects on every organ of the body, and is implicated as a significant factor in aging.
- Reducing threat—stress—enables the brain to switch to slower, more reflective responses (as opposed to fight-or-flight responses) and to reason and solve problems more rationally.

Strategy 9: Use cooperative learning activities and strategies.

Example: You’re already familiar with cooperative learning and the myriad ways it can be used, but here’s an example of an activity that also involves movement before the groups begin their processing (a bonus!). Hand out index cards with main ideas (MI) on one color card and supporting details (SD) on another color. There should be 2-3 details per main idea. (All main ideas should pertain to the same topic.) “MIs” and “SDs” must hook up with each other (create a paragraph) and be able to explain why they believe they go together.

Why this works:

- Movement into groups or in the completion of the task helps get oxygen to the brain.
- The brain craves safety as much as it does novelty, and a key element of cooperative learning is that it’s a supportive, non-threatening way to learn.

- Active involvement—engagement—is vital to forming new neural connections in the brain. Sitting and listening, even observing, doesn't do it!
- Cooperative learning is typically a multi-sensory experience that involves speaking, listening, reading, and writing. Analytical learners remember what has been spoken; global learners remember images of what has been seen or experienced.

Strategy 10: Offer students a variety of options in the way they are assessed.

Examples: (1) Give them the option of consolidating and summarizing information with concept maps and flow charts in addition to conventional summaries, outlines, and review sheets. (2) Allow them to create models, games, or skits. (3) Have them keep learning logs, make presentations, or do a performance task. (4) Have them use checklists or other rubrics.

Why this works:

- Flow charts are good for auditory-sequential learners.
- Concept maps are great for visual-spatial learners who think in images and respond to color. Maps are also personal. Furthermore, they remove the stumbling blocks of spelling and writing complete sentences. (The goal is to capture important information.)
- Offering choices gives students the locus of control.
- Options provide opportunities to exercise creativity.

Strategy 11: Suggest memory pegs and encourage students to create their own.

Examples:

- (1) Create song lyrics or chants to help students remember important information. Have students make up a song or rhyme. (You can also have them raise a finger as they say each of the four topic clues or other information they need to remember.)
- (2) Have them trace an outline of their hand; on each finger jot down related information they want to recall. (See #4, above.)
- (3) In math, the order of operations is parentheses, exponents, multiply, divide, add, subtract—PEMDAS: “Please excuse my dear aunt Sally.” (You can also have students visualize a balance scale to help them understand algebraic equations.)
- (4) In writing, use “FANBOYS” to help students remember the 7 coordinating conjunctions.
- (5) Narratives can be used for information that needs to be remembered in sequence or to weave together facts students need to recall. Throughout the ages, myths, parables, fables, and other stories have been used to transmit information, religion, and culture. They are powerful ways to learn because they have a built-in sequence (beginning, middle, end). Moreover, they can include vivid descriptions, which enhance learning. Introduce an emotional element to narratives. If you're making up a story, personalize the content by adding students' names, the name of the college or city it's in, and so forth.

Why this works:

- It is excellent for students who think in words and are auditory-sequential learners.

- It can also involve multiple senses: students can walk or march in place while reciting the information. This helps encode the information in an additional way (and also gets oxygen to the brain).
- Student-created mnemonics connect with their personal frame of reference (prior knowledge).
- Mnemonic “lyrics” capitalize on a familiar tune and rhyming words, and obviously are great for auditory learners. (Incidentally, lyrics are stored in one part of the brain; the tune in another.)
- Memory devices provide rehearsal.
- Narratives are stored in a particular area of the brain. The brain has a huge capacity for remembering visual information, the reason vivid descriptions enhance learning. If students can picture something in their minds, they are likely to remember it.
- Learning (and narratives) accompanied by strong emotion is much more likely to be encoded in LTM.)

Strategy 12: Be sure students receive feedback several times an hour.

In addition to arranging for adequate feedback, it’s important to alternate instruction and rehearsal. The brain needs time to process new information. Teachers often do not realize how much practice (application) students need. If you don’t build in enough practice, you’ll find yourself re-teaching the same material.

Examples: Feedback doesn’t always have to come from you.

- (1) It can come from another student, computer assisted instruction, or a checklist that individuals or groups are using.
- (2) Students can explain a concept or its application to a classmate; they can also write in a journal, paraphrase, do a 5-minute writing to consolidate information, make a drawing or other visual representation, etc. (Again, give students options.) Have students evaluate each other’s efforts for accuracy, completeness, etc.
- (3) Use metacognitive talk-alouds or show effective reader’s “thoughts” in print to illustrate a skill. (Reminder: “Big picture” students also need to see a demonstration *before* they try something.)

Why this works:

- The more immediate the feedback, the better: wrong information gets encoded just as easily as correct information, and it’s difficult to *unlearn*. The goal is to preempt incorrect learning.
- Paraphrasing allows students to process information by putting it in their own, personally relevant words. It also provides rehearsal that aids encoding in memory.
- These strategies address a range of learning styles.
- According to the Association for Supervision and Curriculum Development, the brain learns 95% of what it teaches to someone else.
- These techniques allow student to sort through information, organize it, and present it in a coherent fashion. The brain likes information that’s organized in a personally relevant way.

A few other thoughts. . .

- Don't insist that students always be able to "show their work." Some visual-spatial learners arrive at answers very quickly and intuitively, but have difficulty breaking down what they did and translating their mental images into words.
- The biggest problem for adults isn't *lack* of prior knowledge, but incorrect or partial knowledge.
- Use technology as part of your instruction.
- Make learning challenging. Challenge integrates the two hemispheres.
- Experiment with giving students a "harder" task if they're struggling with an easier one. (For example, some students may find tackling the main idea easier than trying to identify the topic.) This strategy seems counterintuitive, but it works for many visual-spatial learners.
- Teach students to look up to retrieve material from their visual memory. People naturally look *up* when they're thinking, but students who feel embarrassed or put on the spot tend to look down to avoid eye contact.

Help students understand that *everything* about them depends on their brains.