

## 12 Principles Overview

1. **Learning engages the entire physiology** - Anything that affects our physiological functioning affects our capacity to learn (food, water, nutrition=critical components of thinking).
2. **The brain is a social brain** - Social interactions can actually change the functioning of our brains through solidifying our beliefs, challenging our perceptions, testing our assumptions, and fine-tuning the way we interact with others.
3. **The search for meaning is innate** - Both familiarity and novelty must be combined in a learning environment.
4. **The search for meaning occurs through patterning** - The brain's goal is to invest information with personal meaning through making and detecting patterns based on what we already know or have experienced (link to prior knowledge).
5. **Emotions are critical to learning** - Emotions from each experience determines whether we want more or less of that experience (positive = enhance learning / negative = inhibit learning)
6. **Every brain perceives and creates parts and wholes simultaneously** - Both hemispheres interact in almost every activity – the brain reduces information into parts and perceives holistically at the same time.
7. **The brain is a parallel processor** - The brain responds to the entire sensory context in which teaching and communication occur (information is absorbed through all facets of the environment).
8. **Learning always involves conscious and unconscious processes** - Much of our learning is the result of unconscious processing, which means that understanding may NOT occur during class, but may occur hours, weeks or months later.
9. **We can organize memory in different ways** - *Spatial Memory* = registers everything; always engaged; inexhaustible; motivated by novelty; *Rote Memory* = recalling unrelated information; motivated by reward and punishment
10. **Learning is developmental** - Building the necessary neural connections by exposure, repetition, and practice is important to the student; the richer and more complex the experiences we have, the more elastic our brain becomes (a denser brain leads to greater capacity for new and deeper understanding).
11. **Learning is enhanced by challenge and inhibited by threat** - The brain learns optimally with maximum connections when appropriately challenged, but becomes less flexible and reverts to primitive attitudes and procedures under perceived threat.
12. **Each brain is unique** - Each person's brain matures differently, and brain size and weight can vary by as much as 50%; the brain works better when facts and skills are embedded in real experiences.

# TOP 24 FOODS

## **Lean Protein:**

- **Fish (especially salmon, tuna, mackerel, herring)**
- **Poultry**
- **Meat (Lean Beef and Pork)**
- **Eggs**
- **Tofu and Soy Products**
- **Dairy (low fat and skim)**
- **Beans (especially garbanzo beans and lentils)**
- **Nuts and Seeds (especially walnuts)**

## **Complex Carbohydrates:**

- **Berries (especially blueberries)**
- **Oranges, lemons, limes, grapefruit**
- **Cherries**
- **Peaches, plums**
- **Broccoli, Cauliflower, brussel sprouts**
- **Oats, Whole Wheat, Wheat Germ**
- **Red or Yellow Peppers**
- **Pumpkin Squash**
- **Spinach**
- **Tomatoes**
- **Yams**

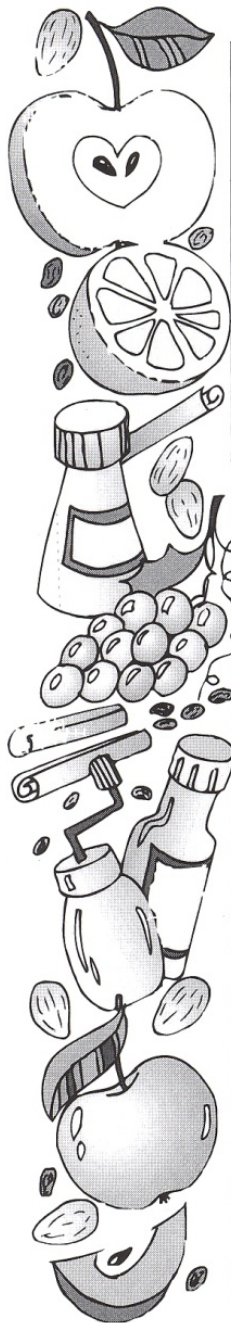
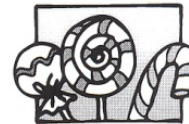
## **Fats:**

- **Avocados**
- **Extra virgin, cold pressed olive oil**
- **Olives**

## **Liquids:**

- **Water**
- **Green or Black Tea**

# Taste the Learning Chart



Taste or Food Source	Possible Influence on Behavior or Mood
<b>Carbohydrates</b>	Release endorphins: quiet, tranquil mood. Too much at lunch, and the children will nod off. Save these for afternoon snack time.
<b>Protein</b>	Delivers energy jolt to the system. Feeds the brain. Good for morning snack time.
<b>Vanilla</b>	Calm, reflective mood enhancer
<b>Peppermint</b>	Attention-grabber; may help retrieve information from memory
<b>Ginger or Cinnamon</b>	Calms nausea; enhances creativity
<b>Apple</b>	Natural sweet for energy, with a scent that promotes creativity
<b>Orange</b>	Energy jolt with a color and scent that make a complete "alertness" package
<b>Almond</b>	Enormous protein boost with a scent that is relaxing as well. Good snack for precooperative group lesson.

## Healthy Tips to Maximize Brain Power

Good student health is vital to student learning and test taking. Here are some tips for helping your students do their best on the FCAT!

### The Days Before the Test

- Elementary school students need 10-11 hours of sleep each night. Because sleep loss adds up over many days, encourage your students to get a good night's sleep throughout the days leading up to FCAT. Students will have improved focus on test day if they are well rested.
- Breakfast is important! Remind students to eat breakfast on each day of the test. Encourage them to choose hearty breakfasts like eggs, bagels, or oatmeal instead of sugary cereals, toaster pastries, or other sweet options. A breakfast high in sugar could cause them to feel hungry during the test as their blood sugar drops. A breakfast high in protein or complex carbohydrates will keep them full longer and allow them to concentrate on their test, instead of their stomach.

### On Test Day

- Encourage the students to socialize in the morning or do fun activities to break the tension. Before the test, remind the students that you, their principal, and their parents believe in them.
- Remind your students to sip water before the test and during breaks. Water is the preferred fuel for the brain. A dehydrated student will be sluggish, but an over hydrated student will need to use the restroom during the test.
- Before the test booklets are handed out, have your students stand up at their desks. Lead them through 1-2 minutes of light stretches (jumping jacks, toe touches, etc.) before they sit down. This will help get their blood pumping and their brains alert.
- During break time, provide a healthy snack for your students. Good examples include cheese, milk, peanut butter crackers, sunflower seeds, pretzels, applesauce, whole wheat fig cookies, drinkable yogurt, whole grain granola bars, or fresh fruits. If solicited in advance, parents are sometimes willing to donate these items for test day.
- To help the students recharge, use one or more of the following "brain break" ideas to do with the students during break time.

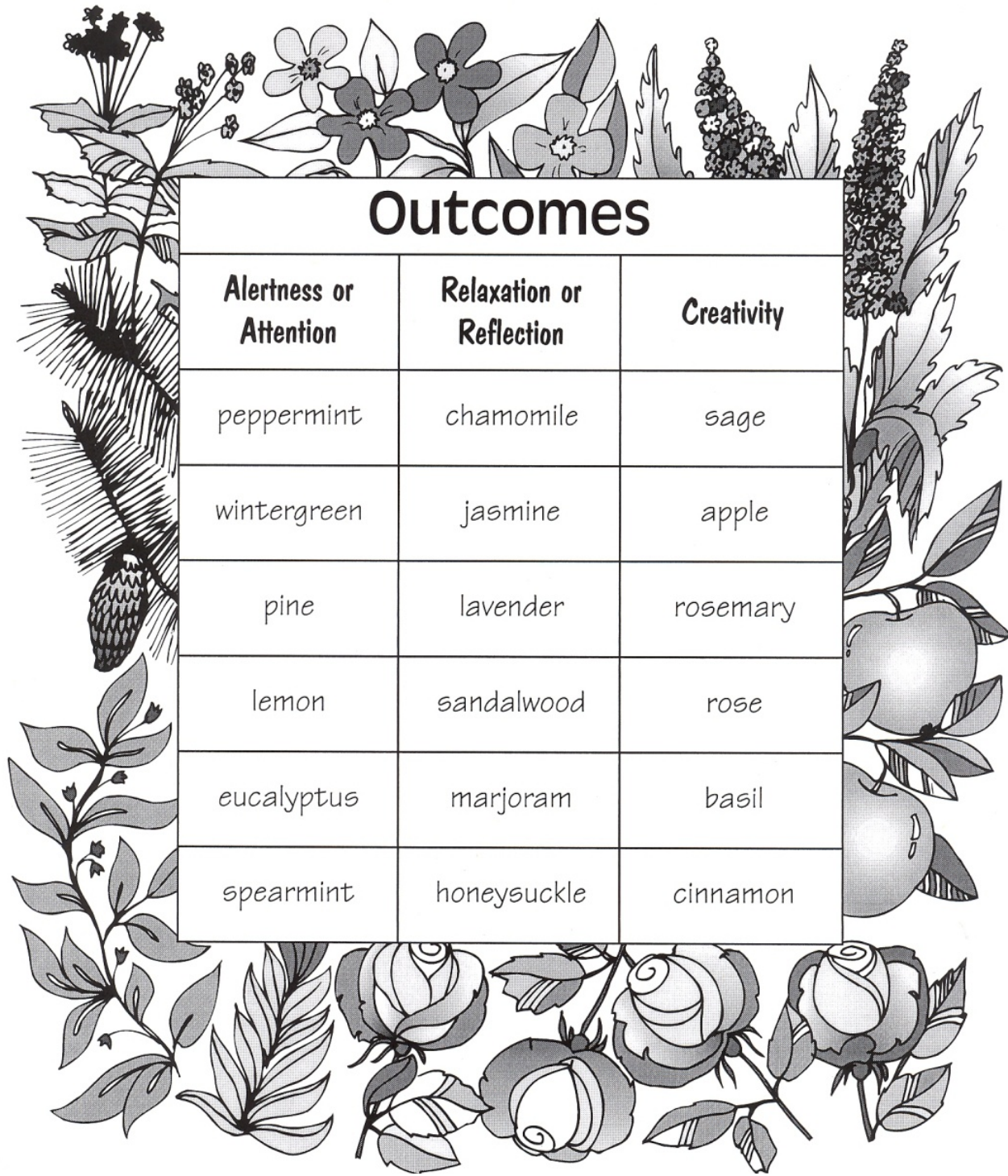
### After the Test

- Your students would benefit from recess time or a structured physical activity period outside each day after testing is finished at your school. If you are unable to go outside, try some more brain breaks or active games with the students in the classroom. Their brains will need some down time to recharge before another day of testing.
- When the test days are over, celebrate the end of FCAT testing with your students. Be sure to tell them that you are proud of how hard they worked! A class celebration will be a good stress reliever for both you and them.

# Brain-Based Techniques Implemented the Classroom

Technique	Results	How this relates to the brain
water bottles, more bathroom breaks	Most students have a water bottle from which to drink freely. With increased hydration, the students needed more bathroom breaks. I don't have thirsty students anymore! They can also tell me why it's important to drink water.	According to Jensen, research has shown that dehydration causes higher salt levels in the blood which in turn raises blood pressure and stress. Also, since the brain is made up of more water than any other organ in the body, dehydration takes a toll quickly. It causes a loss of attentiveness, and lethargy (26).
morning snack	We have a small snack, drinks, and they are ready to listen. No complaints about hunger anymore!	Jensen suggests eating certain types of food for optimal learning like fruits and vegetables, nuts, and lean meats (25).  While we did not eat these types of foods, we know that the brain needs energy and children need to be comfortable in order to learn.
provide breaks between activities	We started taking our bathroom break in the middle of our reading time rather than before or after. When we moved on after the break, they were more focused and ready to work.	According to Jensen, movement can help focus attention (44). He also suggests providing processing time after teaching in order for students to solidify learning. This, however, pertains more to down time when external stimuli is shut down and allows the brain to make associations (47).
change schedule to fit students' needs	I decided to schedule work time when they were ready to work, and rest time when they were ready to rest. After lunch, we have centers or instructional time. After snack, we have rest time. Everybody's happy!	Jensen says everyone has natural attentional highs and lows throughout the day. Teachers should take advantage of these cycles rather than fight them. (44 - 45).
have positive interactions with students	I try to personally greet each student when they arrive in the morning, and I am more aware of what I say to students.	Threats biologically impair a student's ability to learn. In his book, Jensen points out that there are three areas of threats: threats from outside class, threats from other students, and threats from the teacher. The teacher can control threats from him or herself and threats from other students (59).
improved transitions	The children now have a set routine they follow during transitions, and I ALWAYS warn them 5 minutes ahead of time.	Like threats, stress also biologically impairs a student's ability to learn. Knowing what to expect and establishing a routine helps reduce stress.
rearranged the room	The furniture was rearranged to provide more space, and to more comfortably seat students. I added a small table for my groaner, which made table time much easier for him.	The new arrangement reduced stress by allowing students to have more personal space, and see the front of the room without having to turn their chairs around.
vary learning activities	We used musical instruments to find beats in words, cut apart sentence strips and used our bodies to order words in sentences, played rhyming games, and cut back on activities with less active student involvement.	"We remember that which is most emotionally laden," says Jensen. Emotions stimulate our brains to recall things better. Choosing activities which are new, or require students to engage their emotions, facilitates learning (79-80). Novel activities also attract attention.

# "Scent"sational Aromatherapy Chart



## Outcomes

<b>Alertness or Attention</b>	<b>Relaxation or Reflection</b>	<b>Creativity</b>
peppermint	chamomile	sage
wintergreen	jasmine	apple
pine	lavender	rosemary
lemon	sandalwood	rose
eucalyptus	marjoram	basil
spearmint	honeysuckle	cinnamon



# Color and Cognition Chart

## Color

## Cognitive or Symbolic Impact

	Excitement	Alertness	Creativity	Reflection	Relaxation
Black		X			
Blue	X Royal		X Sky	X Aqua	X Pale
Brown					X Light
Cream				X	X
Green			X Jade		X Pale
Grey					X
Gold	X		X		
Lavender				X	X
Orange	X	X	X		
Peach				X	X
Pink				X Warm	X Light
Purple	X	X	X		
Red	X	X	X		
Rose			X	X	X
White					X

Avoid yellow-green

Avoid stark whites

Keep in mind the fact that each person will have a different response to color, influenced by his or her experiences. While red might excite *many children*, it could actually *relax* the child who associates the color with his or her favorite stuffed animal or "night night" blanket. Color is an accent for instruction.

## 25 brain breaks to try in class

1. Practice rolling your head in circles, slowly one way, then slowly the other way. Then practice deep breathing - count in and out slowly for ten breaths.
2. Choose a piece of energetic music and perform actions for children to mime and copy.
3. Write the key vocabulary from the lesson in the air with one hand. Now try doing the same with your nose. Write the keywords on your partner's back and see if they can work out what you wrote.
4. Trace the number 8 in the air with two hands held together keeping your head still.
5. Practice finger aerobics - sit opposite a partner and both place your hands flat on the desk. Take turns to lift different fingers then try it together and in sequence. Try simple lifts, taps and then stretches.
6. Stand on one leg whilst writing the alphabet in the air.
7. Mime an everyday task around the home or in school and ask your partner to guess what it is. For example, washing the dishes or changing a nappy!
8. Practice making three faces - extremely happy, very sad or really confused. Children stand up whilst you face away from them. Children have to guess which face you will pull by pulling a face themselves. When you turn round, if they pull the same face as you then they score a point.
9. Choose a piece of dramatic classical music then organize the class into small groups telling them which instrument they are going to mime playing. Allow children to 'warm-up' then play the music and conduct the silent orchestra as they play.
10. Blow up some balloons and put inside a silly message. Divide the children into small groups and give each team a balloon. One member of the group is elected to burst the balloon but must do what the message asks!
11. Tape two large pieces of paper to the wall and split the class into two teams. Give each team a colored pen and challenge the children to draw a picture, e.g. a dog driving a bus, a camel surfing. Children take turns to draw for ten seconds at a time. Use a bell to signal when to swap over. Each team tries to guess what the other team has drawn.
12. Ask children to imagine that their hands are their feet then get them to show you how they would eat their lunch, wash their hair, write in their books. Adapt this activity and ask children to imagine their eyes on their knees or their noses on their elbows.
13. Give children a piece of funny text and assign particular words and punctuation marks with a silly sound. For example, a full stop could be a drum, a comma could be a bell, an exclamation mark could be a collective sigh, a question mark might involve everyone standing up and scratching their heads and speech marks could be two claps.

14. With a partner children can tell the class one-line jokes. Children take it in turns to come out to the front of the class with one child asking a question (e.g. 'What do you get if you cross a field with a cow?') and the other child repeating the question by saying 'I don't know, what do you get if...' with the rest of the class saying 'Boom, Boom!' when the punch line is told (a lawn-mower). Repeat this quickly at a pace so that the momentum is not lost.

15. With one hand pat your head, and with the other circle your tummy. Swap actions or hands, change direction.

16. Put your arms straight down and point your index fingers to the floor. Now close eyes and draw the biggest circle you can with both fingers. Get children to join exactly at the top.

17. Move your right hand to hold your left ear then your left hand to hold your nose. Now swap and repeat again and again.

18. Lift your left knee and touch with your right hand, then right knee to left hand. Progress to elbows and knee, then hands around back to opposite heels.

19. Hold your ears and slowly roll your ear lobes between finger and thumb. Do it nice and slowly and all the way around your ear. How does it feel?

20. With your elbows at shoulder height, practice making big circles, then small circles, forwards and backwards

21. Use finger sums by showing your partner a number sum with your fingers and then seeing if your partner can get the correct answer.

22. Stand opposite a partner and place your palms against your partner's palms, then make the numbers 1-20 together in the air.

23. Face a friend and draw their outline in the air with two hands together following your hand movements with your eyes only.

24. Practice yawning stretching your mouth as wide as possible and sticking your chin out from side to side.

25 Sitting down on your hands, extend your feet forwards and rotate your feet in opposite directions

And finally...

Drinking water in lessons has become more commonplace as a way of keeping the brain in tiptop condition. However, it is still the case that certain fluid intakes, such as fizzy drinks and those containing colorings or additives, are causing havoc in the classrooms.

### Techniques Used by Teachers at Brookshire Elementary

- **The brain likes chunking and layering. In a lesson students need to say it, show it, do it. We must make learning memorable when teaching.**
- **Take breaks during a lesson to move (head, shoulders, knees, toes or Simon Says and have students hop, skip, jump). This reduces cortisol/stress. Also a child who is physically inactive has a smaller prefrontal cortex.**
- **When introducing sight words or number or coins, etc.. I use orange or yellow paper to get the student's attention.**
- **When introducing a new concept, I hide citrus scented dryer sheets in the classroom. The orange scent encourages creative thinking. It reduces stress and stimulates the brain.**
- **I buy scented markers and stickers for my students. It stimulates creativity. Also, I make home-made play-doh with cinnamon or ginger to stimulate the brain/creativity.**
- **Play classical music in the classroom.**
- **Correct papers using a purple marker. Purple "softens the blow" for students who have incorrect answers. Also if a student isn't do well (behavior issues, academic issues, etc..) I send home a note on purple paper for the parents.**
- **If students are feeling anxious, I give them a piece of dark chocolate (Hershey kiss). It raises their level of dopamine.**
- **I give my students apple or orange juice 20 minutes before a math task. The scent and taste will linger as they attend to their work. I also give it to them before their unit science test. The brain needs glucose to regulate blood sugar. There is a study (I believe American Journal of Clinical Nutrition) where subjects who drank juice did twice as well as those who didn't. The subjects performed better on memory based tests.**
- **Body pegs for the days of the week: I start at the head and work my way down.**
- **In my math class, we have been learning about line segments, rays, and lines. We stand, and with our arms straight out, indicate one of those by making a fist, two fists, or hand/hands straight. For instance, a line segment with have two fists, a line would be both hands straight out.**
- **When I first began teaching I was having some transitioning difficulties. There were a couple of brain-based techniques that worked nicely for my kiddoes. Something that I have done for some kiddoes was put on a specific shirt when teaching a target subject. The kiddoes enjoyed it and it also signaled their brains and made them aware that a specific subject was going to begin. I have also used a squeaker (such as a dog toy) to notify students about the beginning of an activity. This seemed to help diminish the verbal, in addition to making transition times a happy time and not a chaotic time. The mere sight of the shirt and/or squeaky frog in time shaped their behavior and helped with transitioning.**
- **Graphic Organizers, music - songs to remember concepts and ideas**
- **We do ABC yoga. I have the kids make letters in the sky during our 5 minute yoga breaks.**
- **using different colored highlighters/markers to accent learning of specific material**
- **sitting in different places around the room to teach different skills**
- **placing visual cues/prompts in specific location of room**
- **using specific smells in the room to alert/calm the kids**
- **using different music to transition students or as background noise**
- **having students work in cooperative groups**
- **incorporating movement in learning a new skill**
- **taking a 'brain break' every 15-20 minutes**
- **Dark chocolate or mints**
- **Body/room pegs**
- **Photographic memory**