

# Your Fantastic Elastic Brain



### NISD GT Process Standards

GT Process Standards provide guidance on what GT students should know, understand, and do as part of GT program services. Each lesson makes a connection to specific standards; however, teachers are encouraged to incorporate every standard where applicable.

**I. Creative Thinking**

Ability to look at problems or situations from a unique perspective through the use of imagination and/or innovative ideas

**II. Critical Thinking**

Ability to demonstrate clear, rational, open-minded thinking, informed by evidence

**III. Depth & Complexity**

Ability to dig deeper into a concept and to understand that concept with greater complexity

**IV. Scholarly Inquiry & Research**

Ability to interpret information that leads to new understandings and connects to the world beyond the classroom

**V. Effective Communication**

Ability to convey new learning through the use of written, spoken, and technological media

**VI. Leadership & Responsibility**

Demonstrates initiative, task commitment, and the elements of compromise and diplomacy



Language of  
the Discipline

physiology

anatomy

cerebrum

hippocampus

prefrontal cortex

amygdala

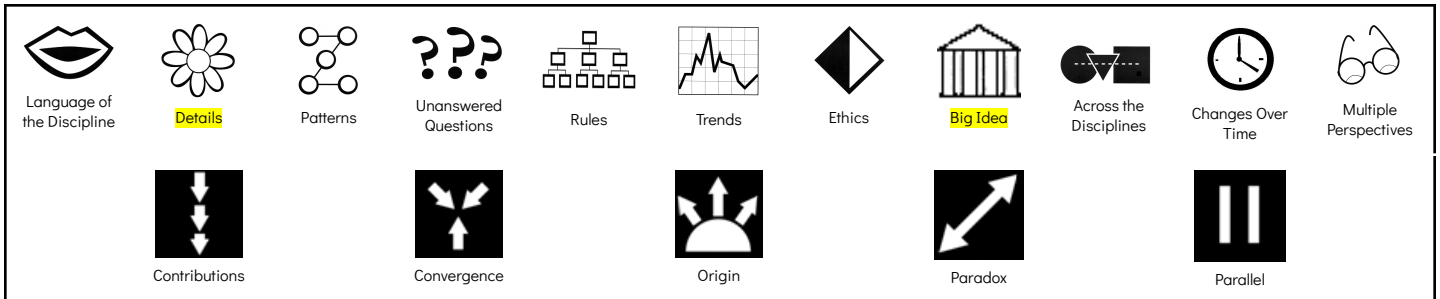
cerebellum

neurons

### Scholarly Habits

- Scholars utilize varied resources
- Scholars exhibit curiosity
- Scholars demonstrate academic humility
- Scholars save ideas
- Scholars ponder the big idea
- Scholars see from different perspectives
- Scholars are always prepared
- Scholars display perseverance
- Scholars set goals
- Scholars take intellectual risks

## Depth and Complexity & Content Imperatives



## Thinking like a Disciplinarian

Thinking like a *neuroscientist* (a scientist who focuses on the brain and its impact on behavior and cognitive functions).

## Universal Generalizations

- Systems have parts that work to complete a task
- Systems are composed of subsystems
- Part of systems are interdependent upon one another and form symbiotic relationships
- A system may be influenced by other systems
- Systems interact
- Systems follow rules

## Essential Questions

- What is a system?
- How are the parts of a system related to the entire system?
- How are system models used to predict and understand real world situations?

## Supported TEKS

### **Science**

3.1G, 4.1G, 5.1G (develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem)

### **RLA**

3.6G, 4.6G, 5.6G (evaluate details read to determine key ideas)

3.7E, 4.7E, 5.7E (interact with sources in meaningful ways such as note taking, annotating, freewriting, or illustrating)





3.7F, 4.7F, 5.7F (respond using newly acquired vocabulary as appropriate)

3.13C, 4.13C, 5.13C (identify and gather relevant information from a variety of sources)

### **Math**

3.1B, 4.1B, 5.1B (use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution)

3.1D, 4.1D, 5.1D (communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate)

Instructional Plan	Date:
Your Fantastic Elastic Brain (1 week)	
<p><b>Objectives:</b> Students will understand...</p> <ul style="list-style-type: none"> <li>the human brain and identify its major parts and functions</li> <li>how the parts of the brain interact with your body</li> <li>how other body systems are affect if the brain is injured</li> </ul>	
Learning Experiences	Resources/Materials
<p><b>Skill Stations (Slide 2)</b></p> <p><b>Curiosity/Puzzlement (Slide 3)</b> Tell the students they will use a time lapse to follow the arctic sun for 24 hours as it travels around the north pole.</p> <ul style="list-style-type: none"> <li>What do/did you notice?</li> <li>What do/did you wonder?</li> </ul> <p><b>Reflect on Systems (Slide 6)</b> Ask students to reflect on what they have learned about systems.</p> <ul style="list-style-type: none"> <li>What statement could describe all we have learned about systems?</li> </ul> <p>Encourage the students to document responses in their notebooks or another form of saving information.</p> <p>Using their responses, explain how systems are all around us and how they interact with each other. Tell students we are going to study a very special system. THEM!</p> <p><b>Physiology (Slide 7)</b> Have students record the definition of physiology.</p> <ul style="list-style-type: none"> <li><i>Physiology is the study of the human body systems and how they work together.</i></li> </ul> <p>Body systems depend on each other. If one breaks down, the whole body is affected. Let's look at just the brain.</p> <p><b>Details (Slides 8-9)</b> Tell the students we will be focusing on the details of the brain. Remind them that details are small, essential parts about a topic. Today's topic is the brain.</p>	<p> BI_ Your Fantastic Elastic Brain Le...</p> <p><a href="#">Byrdseed: Arctic Midnight Sun</a></p> <p></p> <p></p> <p><a href="#">Byrdseed: Details</a></p> <p></p>

### Your Fantastic Elastic Brain (Slide 10-11)

Read the book, *Your Fantastic Elastic Brain*, and model taking notes on the different parts of the brain and their functions. Give students the option of how they want to take notes. They can write words or draw pictures to help them remember the functions for each part of the brain. *Scholars save ideas.*

Example of notes:

- Amygdala - middle of the brain that controls emotions
- Amygdala - 😊 😟 😡 😱

After reading, ask students what are the attributes of our brain?

### The Brain For Kids (Slides 12-13)

Remind students that scholars utilize various sources of information. As you watch this video, add to your notes. At 2:37, take note of how the cerebrum is also divided into the two halves, the right and left hemisphere. The right half helps with abstract or creative thinking like art and music. While the left half is more analytical. It helps you speak, make logical decisions, and do math problems.

After viewing the video, ask students what information can be added to what we already know about the brain?

### Hemisphere Brain Hats (Slides 14-15)

Tell the students they will use their new knowledge of the brain to create a brain hat. They will use their notes to properly label their brain hat template. Use the blank template of the brain (pages 2 and 3).

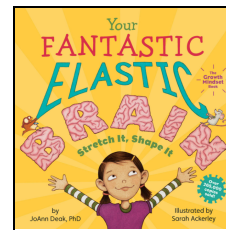
If students need support, you can use the labeled patterns, but you may still want your students to color code the lobes, or trace over the words with markers or crayons.

Do any coloring before you assemble the hats. These hats are designed to be one-size-fits-all. To assemble, first cut out both hemispheres, around the outside edge. Then snip on the dashed lines. Pull each dashed line over until it touches the other line, and secure with tape or glue. It should look like a half-round shape. To put these two halves together, simply choose one side to overlap just slightly onto the other and secure with tape.

### CI\_Brain Notes



*Your Fantastic Elastic Brain* by JoAnn Deak



Teacher Resource: [Left Brain vs. Right Brain](#) (contains a video near the bottom of the page)

The Brain for Kids | Learn cool fact...  
stop at 5:20



Materials for hemisphere brain hat:

- DI\_Brain Hat.pdf
- cardstock
- tape or glue (tape is quicker)
- crayons or markers

Teacher Resource:

Put on your THINKING CAP Brain ex...

Have the students put their hats on. Tell them to raise their right hand. Ask them what side of the brain they think they used to move their right hand. Explain that the right hemisphere controls the left side of the body, while the left hemisphere controls the right side.

Take students on a “Field Trip” using GoNoodle. They will get moving and dodge obstacles. During the field trip, objects will come at them from different directions. There will be objects that come to them on the LEFT side of their bodies, and they must move the right. This is a teaching moment to explain how our hemispheres control opposite sides of the body. If something is coming towards us on the left side, then our instinct is to move to the right.

### Hemisphere Brain Stations (Slide 16)

Students will break up into stations that focus on a certain hemisphere in the brain. Below are some ideas for activities. You can choose an activity for them to work on or let the students choose what they are working on. Depending on the task, students can work independently or in groups. Allow students about 20 minutes to work in stations.

As they are working, have the students complete a reflection sheet. They will rate how difficult the task was and how much they enjoy it. You may be surprised to see students really enjoying the difficult tasks, or being bored with the easier tasks.

Right Hemisphere Station:

- visual spatial game or activity
- transformation
- scattergories

Left Hemisphere Station:

- sudoku
- perplexor
- stem activity
- exemplar

### Brain Hemispheres Reflection (Slide 16)

After exploring the different hemisphere stations, students will reflect on their experience using the stations.

- Which hemisphere did you enjoy using the most?
- What hemisphere are you more comfortable using

[Go Noodle: Field Trip](#): You can play the [No Questions](#) version for 2-3 minutes. You choose the duration.

 EI\_Brain Hemisphere Reflection



### Examples of Visual Spatial Games:

Pattern Play  
Block by Block  
Set  
Shape by Shape  
QBitz  
Scramble Squares  
Wooden Hexagon Puzzle

when completing activities?

- Think about the hemisphere that was more difficult for you. How would you develop deeper thinking skills to strengthen that hemisphere?

### Systems Test (Slide 17)

View the systems test and determine how our brain is a system.

- Are there parts?
- Do the parts affect each other?
- Does the behavior of the system change if a part is taken away or is damaged?
- Do the interactions of parts affect each other?

### Reflection/Metacognition (Slide 18)

- How can we use our knowledge of the brain to improve learning, memory, and cognitive function (how we figure things out)?
- What are some strategies for staying safe during physical activities, such as sports or outdoor recreation?

### Extensions (Slides 19-20)


#### Injuries to the Brain

Tell students our brains are one of the most important organs in our bodies and we need to protect them as much as we can. Ask:

- What are some common disorders or injuries that can affect the brain?
- How do they impact brain function?

Explain to the students that there are many ways our brain can be disrupted. It can be from bumping our heads really hard, lack of oxygen, or getting really sick. Today we are going to watch a video about one type of injury called a concussion and how it can affect other systems in our body. [Brainpop: Concussions](#)

Ask your students to pick a lobe of the brain to research. Have them refer back to their notes or brain hats. Instruct them to research two symptoms that would occur as a result of damage to the lobe. Have your students create a comic explaining their findings.

 FI\_Comic Strip Template

#### Additional Resources

- [Functions of the Brain](#)
- [Ducksters: The Brain](#)
- [DK Findout: Inside Our Brain](#)