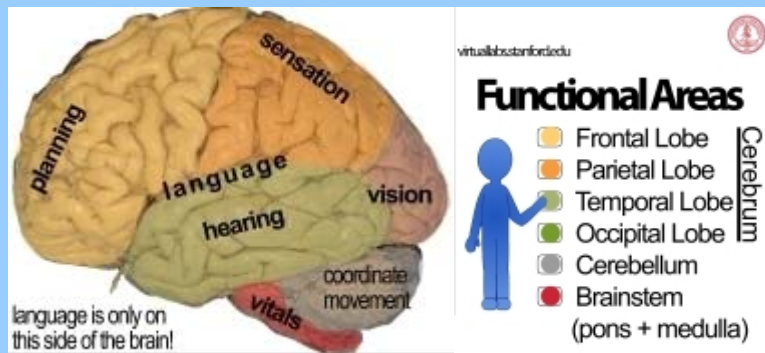


Build Your Own Brain!

What is it?

Our brain is the control center of our body. Everything we do, think or feel involves our brain. Our brain controls our body by sending electrical signals through our nerves. Our nerves act like wires because they can carry messages to and from different parts of our body. All the senses we have like, hearing, vision, and taste are controlled by different parts of our brain. There are different compartments in the brain that have different functions – for example, our senses, like hearing, vision, and taste are located in different areas of the brain.



There are two halves of our brain, a right hemisphere and a left hemisphere. As the nerve fibers leave the brain, they cross over from one side to the other. This means that the right side of our brain controls the left side of our body and the left side of our brain controls the right side of our body.

Conversation starters / Dialogue samples

- **Did you know that your brain is actually made up of different parts that each control a sense or function?**
- **Where do you think hearing is located (hint: point to ears)? Where do you think planning would be in the brain (hint: front of brain – “plan ahead”)?**
- **How big is the brain? How much does the brain weigh?**
The adult human brain weighs about 3 lbs
elephant brain = 13 lbs, □ chimpanzee brain = 1 lbs, □ rhesus monkey brain = 0.2 lbs,
beagle dog brain = 0.1 lbs, □ cat brain = 0.06□lbs, rat brain = 0.004 lbs
- **How many nerve cells are in the brain?**
It is estimated that there are 100 billion (100,000,000,000) neurons (nerve cells) in the human brain.
- **How fast does information travel to and from our brain and through our nerves?**
Information travels at different speeds within different types of neurons (nerve cells). Signals can travel as slow as about 1 mph or as fast as about 268 mph.
- **List some things that the brain can be compared to.**
Spider web, map, factory, computer, tape recorder, toolbox, tree, camera, river, telephone switchboard.

Deeper Content

Frontal Lobe - Plays an important role in reasoning, planning, parts of speech and movement (motor cortex), emotions, and problem-solving.

Parietal Lobe – Responsible for the perception of stimuli related to touch, pressure, temperature, and pain.

Temporal Lobe – Involved in the perception and recognition of auditory stimuli (hearing) and memory.

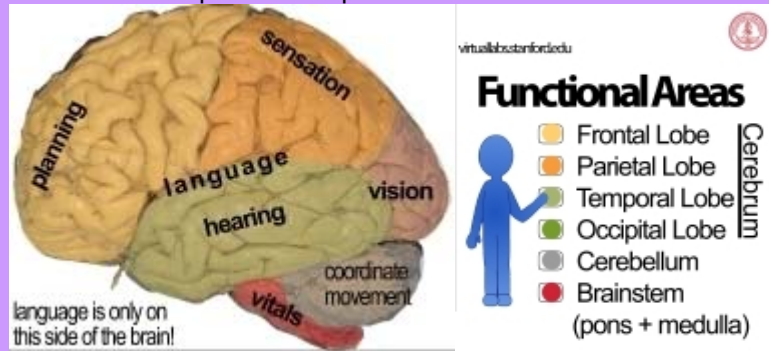
Occipital Lobe - Concerned with many aspects of vision.

Brainstem – Part of the brain that connects to the spinal cord. The brain stem controls functions such as heart rate, breathing, digestive processes, and sleeping.

Cerebellum – Coordinates the brain's instructions for skilled, repetitive movements, and helps maintain balance and posture.

Wernicke's area – The part of the brain that is important in language development.

Broca's area – The part of the brain important for speech.



Resources

Neuroscience for Kids

<http://faculty.washington.edu/chudler/neurok.html>

Nuts and Bolts: Set-Up

Materials:

Brain Box template (8.5" x 11")	Scissors
Brain Hat template worksheet (8.5" x 14")	Clear Tape
Acrylic large "Brain Box"	Mirror
Crayola Markers (yellow, orange, red, blue, green, purple)	
Computer/ Plasma for Virtual 3-D Brain	

1. Ask if visitor knows what each part of the brain does and invite them to make a brain to show each section.
2. Visitor chooses to make a Brain Hat or Brain Box and picks up respective template.
3. Visitor may use the virtual 3-D brain to find each of the functional regions listed on the legend of the paper brain-box.
4. Visitor uses markers to color the sections of their brain sheet match the laminated model (one side may be all the time visitors have) – recommend coloring the same view as the one in this document. (front of brain points left).
5. Use markers or highlighters to color code the different functional regions on the paper brain-box.
6. Visitor or interpreter cuts out the brain template along lines and folds it into a box.
7. Use small pieces of clear tape to fasten brain into a box or hat.

Nuts and Bolts: Clean Up

If you are the last person of the day make sure to...

- Pickup scraps of brain-template paper
- Collect all scissors
- Collect all highlighters
- Stack all unused brain template worksheets

Safety

- Be careful with scissors.

Sources

Brain and Senses Resources. Trial Edition. Berkeley: Lawrence Hall of Science, 1998.

"The Brain." Cancer Research UK. 13 March 2006. Cancer Research UK. 17 Aug 2007 <<http://www.cancerhelp.org.uk/help/default.asp?page=5019>>.

| Human Biology: Nervous System, Stanford University's Middle Grades Life Science Curriculum Project, Everyday Learning Corporation, 1999.

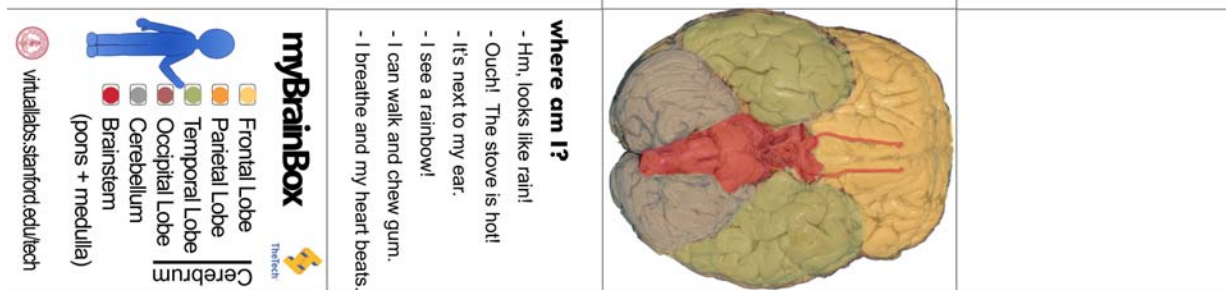
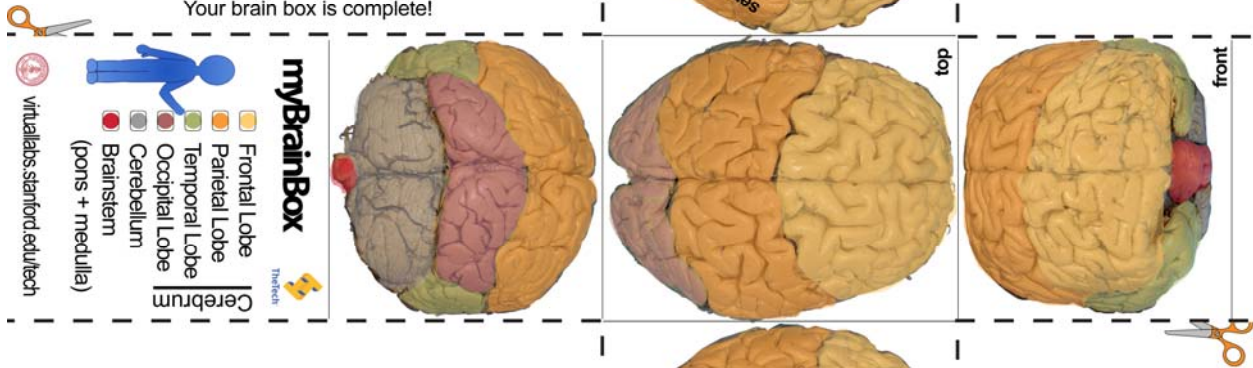
"Questions/Answers." Neuroscience for Kids. Neuroscience for Kids. 18 Aug 2007 <<http://faculty.washington.edu/chudler/what.html>>.

myBrainBox

Directions:

1. See where the functional regions are on the computer's 3-D interactive brain.
2. Color each region of your brain in a different color.
3. Cut along the dotted line on the outside edges.
4. Fold each panel on the lines between the different views.
5. Tape the edges together.

Your brain box is complete!



where am I?

- Hm, looks like rain!
- Ouch! The stove is hot!
- It's next to my ear.
- I see a rainbow!
- I can walk and chew gum.
- I breathe and my heart beats.

myBrainBox

Directions:

1. **See** where the functional regions are on the computer's 3-D interactive brain.
2. **Color** each region of your brain in a different color.
3. **Cut** along the dotted line on the outside edges.
4. **Fold** each panel on the lines between the different views.
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Your brain box is complete!

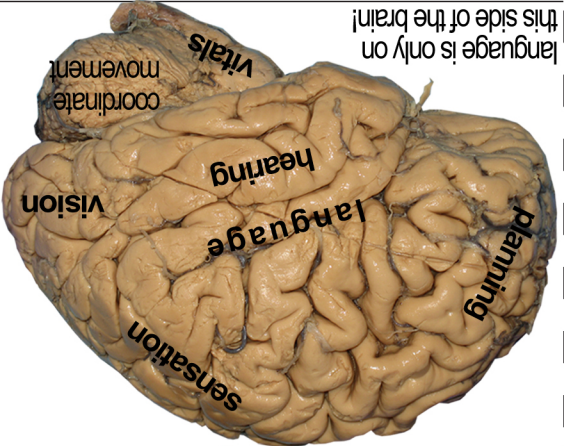


virtuallabs.stanford.edu/tech



- ☐ Frontal Lobe
- ☐ Parietal Lobe
- ☐ Temporal Lobe
- ☐ Occipital Lobe
- ☐ Cerebellum
- ☐ Brainstem
- ☐ (pons + medulla)

Cerebrum





bottom

myBrainBox

- ☐ Frontal Lobe
- ☐ Parietal Lobe
- ☐ Temporal Lobe
- ☐ Occipital Lobe
- ☐ Cerebellum
- ☐ Brainstem

Cerebrum

(pons + medulla)



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