

NW NOGGIN SUMMER OUTREACH

Boys & Girls Club



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June 22 – July 9, 2015, MTWTh, 9:15 – 10:20am: Course planning

July 13 – 30, 2015, MTWTh, 9:00 – 11:00am: Delivering instruction

Access our organizational calendar [right here](#).

WEEK ONE

7/13 Monday

Arrive at 8:30 am

Session leaders: Alex, Angela

Robin is bringing brown paper lunch bags for kids to store their projects (will bring brown paper shopping bags later in the week as space requirements dictate), lanyards for name tags, styrofoam bowls for jello

Key Vocabulary Terms: Lateral/sagittal. Arousal/consciousness. Motor. Plasticity. Mural. Media/Medium. Composition. Abstract.

I. Introduction 10-15 minutes

a. Who we are and what NW NOGGIN is

Some info here: <http://nwnoggin.org/about-noggin/noggin/>

b. What to expect for the three weeks, incentives to stay interested

- Today we're going to be filling in a "big brain", which will grow and evolve as you learn more information!
- We are also going to start working on your own personalized journals, which you will be able to take home at the end!
- Everyone is going to have an opportunity to become involved, and even teach one another.

c. Time to make name tags for their desks

- Hand out cards, fold in half, write their names.
- Hand out bags for storage of art materials?

II. Brain myths 10-15 minutes

a. What do you know about the brain?

- Raise your hand if you know something about the brain, or if there's something you've heard about the brain.
- Take down information either on the whiteboard or on a sheet of paper.

b. What do you want to know about the brain?

- Raise your hand if there's something about the brain that's always stumped you, or that you think is kind of weird. Do you ever wonder why we act a certain way, like when we're scared or angry?

c. What are some common myths or beliefs about the brain?

Here are some example myths:

1. We only use 10% of our brains
2. We only have five senses
3. The brain is hard-wired
4. We see the world as it is
5. The bigger your brain, the smarter you are
6. People are either right-brained or left-brained
7. The smarter you are, the more "wrinkles" your brain has

Let's try to have as many as possible so that we are prepared for students' questions. We also don't have to debunk them today, we can write them on a piece of paper or the whiteboard to debunk later/throughout the week.

III. Art project 30 minutes - Session Leaders: Carrie & Matty

Project: "Big Brain"

Essential question: "What are the parts of the brain and what are the myths associated with said lobes?"

Goals: Demonstrating art integration (painting, color theory, composition) to create new learning outcomes.

Younger group: Lateral view. Frontal lobe, parietal lobe, temporal lobe, occipital lobe, cerebellum, brain stem.

Older group: Sagittal view. Frontal lobe, parietal lobe, temporal lobe, occipital lobe, cerebellum, brain stem. Also corpus callosum, thalamus, midbrain, pons?

Subject connections:

Science:

Structure = function. Information processing.

(http://nextgenscience.org/search-standards-dci?field_idea_tid%5B%5D=120)

Art:

Creating, Presenting, Connecting. (<http://www.nationalartsstandards.org/>)

Creating:

- Engaging and brainstorming collaboratively with materials.
- Apply knowledge of available resources and tools to explore curiosity.
- Collaboratively set goals to create a piece of art that has meaning to its creators.
- Build skills in various media.
- Demonstrate the importance of safety and proficiency in using tools (scissors, etc).
- Use art vocabulary.

Presenting:

- Organizing art into a personal portfolio or journal.

Connecting:

- Identify the purpose of an artwork e.g. use of a large brain for visual impact.
- How can art and science interact?

(<http://ow.ly/zviYW>)

Lead in: Now that we've discussed what you already know about the brain, let's take a look at the brain's basic structure. This is something that you guys are going to add to as we learn more!

Procedures: We need to figure out how we want the kids to add to these throughout the lessons. Should it be instructor-led or should the children be able to draw on it? Do we want to make it have layers, so that each lobe can be lifted up to reveal the information about it? Words vs pictures?

Closure/segue: (B)rain stick? Okay everyone, great work on the lobes of the brain! Now we're going to take some time to work on the first page of your journal. Try to think of something new that you learned today or that you are looking forward to learning about.

IV. Activity last few minutes of class 10 minutes

- Hand out cards to the kids.
- Have a selection of markers, crayons, stickers and/or stamps available at each table.
- Introduce children to the concept of their journal. Have prompts either written on the whiteboard or available via handouts. NW Noggin people can aid at individual tables. Ideally we want to have a combination of art and concepts, maybe a picture on the front and some info on the back. On the first day they are not going to have a large amount of information to work from yet, so they could draw a brain, or a lobe, or their own reactions. They can write their own facts or myths on the back.
- We need to have a place to store these so that the children don't lose them. Maybe a baggie with the child's name on it, or a box, or a bin. Can even be a ziplock bag with the name in permanent ink.

Materials needed:

1. Brain molds (two colors/flavors per class)

- Angela will make these and bring them to B&GC

- Does anyone have a cooler that we could use? Or if we ever

get a hold of Chris (?) we could ask if there is fridge space

2. Big brain outlines - Carrie and Matty will bring.
3. Cards for journal - can be 3x5 notecards or another thick stock that we cut ahead of time.
4. Name tags for NW Noggin - lanyards? This is where we can also implement the idea of flashcards on the lanyards, too. Otherwise we can use pins, buttons or stickers for the name tags. Let's create a word document with everyone's names and a NW Noggin logo and/or brain.
5. Name tags for children - Carrie will bring in card stock.
6. Big bags for storage of art/name tags, etc.
7. Lunch bags for storing journal materials
8. Styrofoam bowls and utensils.

7/14 Tuesday

Session leaders: Chelsey, Robin

Key Vocabulary Terms: Lateral/sagittal. Arousal/consciousness. Motor. Media/mixed media. Cubism.

I. Explore the lobes of the brain 10-15 minutes

1. Teach basic structure/organization of lobes (temporal, occipital, parietal, frontal, cerebellum and insular lobes)
 - a. Have large picture (poster) and/or image (computer/projector) of brain with lobes so it's accessible for all to see
 - 3D Brain
 - Image/video on projector
 - b. Ask questions about the brain.
 - i. Where is the brain located?
 1. Under our skull (bony structure we can feel when we tap our head) which is under the skin on the top of our heads
 - a. How might that be helpful?
 - i. Helps protect the head should we fall or get hit by a flying object, etc.
 2. Soft structure made primarily of fat (feels like the jello we looked at/touched yesterday)
 3. Has lots of gyri (bumps) and sulci (grooves)
 - a. How might that be helpful?
 - i. Larger surface area can hold more things (information)
 - ii. What do we mean when we say/talk about the brain?
 1. The organ (a body part that does a specific thing) that allows us to think

2. The organ that allows us to express our feelings/emotions (love, anger, joy, fear, etc.)
- c. What does structure mean?
 - i. What something looks like, how you would draw/describe something
- d. What does function mean?
 - i. How something works, what something does
2. Structure/location of lobes
 - a. What are the lobes of the brain?
 - i. See handout
 - b. Frontal lobe
 - i. Located in the FRONT part of your head
 - c. Temporal lobe
 - i. Located on the sides of your head
 - d. Parietal lobe
 - i. Located on the top of your head
 - e. Occipital lobe
 - i. Located at the back of the head
 - f. Cerebellum
 - i. Located at the base (lowest part) of the brain
 - ii. Between the brain and spinal cord (for 6th thru 8th graders?)
 - g. Insular lobe (for 6th thru 8th graders?)
 - i. Located underneath (**INSULATED** by) the temporal lobe
3. General function of each lobe (<http://faculty.washington.edu/chudler/lobe.html>)
 - a. What does lobe mean?
 - i. Rounded area of the brain
 - b. What do stimulus/stimuli mean?
 - i. Something external that influences an action
 - c. What does perception mean?
 - i. Becoming aware of something
 - d. Frontal lobe
 - i. Concerned with decision-making (reasoning, planning, problem solving, etc.)
 - ii. Why would these functions be important?
 1. So we can think before we do something, learn from previous experiences, etc.
 - e. Temporal lobe
 - i. Concerned with perception/recognition of auditory stimuli (our ability to hear, it's located on the sides of the head where the ears which are used for hearing are located)
 - ii. What's important about being able to hear?
 1. So we can enjoy sound/music, move out of the way when necessary, etc.
 - f. Parietal lobe

- i. Concerned with perception of stimuli such as touch, pressure, temperature, pain; needed in order to move the way we want to move
 - 1. What are some movements you like to do?
 - a. Playing soccer, playing the piano, etc.
 - g. Occipital lobe
 - i. Concerned with many aspects of seeing
 - 1. Why is it important to be able to see?
 - a. So we can enjoy looking at beauty (nature, paintings, etc.)
 - h. Cerebellum
 - i. Respiration (breathing), coordination (graceful/skillful movement)
 - 1. Do you have to tell yourself to breath? Do you have to think each time you take a step? Why might it be important not to have to think about breathing or how to walk except when you want to?
 - a. Allows you to concentrate on other things you feel are important to do at the time.
 - i. Insular lobe (for 6th thru 8th graders?)
 - i. Processes taste, moral decision making, risky decision making esp when outcomes are uncertain, etc.
 - 1. Why is it important to have the ability to think about outcomes of risky behaviors before engaging in risky behaviors?
- 4. Break class into groups (3-4 students paired with a NW Noggin adult or two).
 - a. Each group will learn about a lobe and present what they have learned to the other groups.
 - b. Add in a fun activity where each group acts out (charades-type game) their lobe's primary function for the other groups to guess – the group that guesses correctly is the next to teach or chooses the next group if they have already gone
- 5. Handout that contains a brain and the lobes to label
 - a. Also, add a function for each area

II. Continue Brain Mural add Infographics- 30 minutes

Session Leaders: Carrie & Matty

i. Label individual actions of lobes and myths of the brain using infographics. Mediums; markers, paints and stencil cut-outs to create eye catching design.

1. **Journal entry last 10 minutes.**
 1. **Vocabulary words-** Typography study to cognitively retain technical terms
 - i. **Brain, skull, organ, lobe**
 - ii. **Frontal, parietal, temporal, occipital, cerebellum, insular**

Materials Needed:

Projector

Brain App
Stencils/media for art
Laser pointer
Egg in a thing
Powerpoint of lateral and sagittal views of brain with labels for lobes

7/15 Wednesday

Session leaders: Angela, Nate - Carrie and Matty lead art sessions

Key Vocabulary Terms: Lateral/sagittal. Arousal/consciousness. Motor. Contrast. Surrealism.

Project: "Intro to neurons" - 10-15 minutes

Essential Question: "What is a neuron, and what are its parts and functions?"

Goals:

We will begin by covering the basic elements of a neuron, including the dendrites, soma, axon, and the terminal buttons located at the end. We'll be using a whiteboard to draw the various components, with a condensed explanation of each part's function. We're also going to encourage the kids to write or draw the concepts as we teach them using sheets of paper. Let's not focus too much on action potentials--that will be included in week two's instruction. Expect this part to take about 10-15 minutes, then we'll turn the kids loose on art integration.

Subject Connections:

Science:

Structure = function. Types of interactions. Energy flow in organisms. Information processing.

Art:

Creating:

- Brainstorm multiple approaches to a creative design.
- Collaboratively set goals to create artwork that is meaningful.
- Develop art-making skills through practice and multiple mediums (pipe cleaners, balloons).
- Explain environmental implications/proper and safe use.
- Installation artwork.
- Reflect on artwork.

Presenting:

- Creating a display/installation.
- Artwork will be hung in class room

Responding:

- Recognize art in one's environment. Is this art? Is it science? Is it both?
- Does media convey meaning? Does the pipe cleaner neuron give you a different idea than the balloon one?
- Select a preferred artwork and explain why.

Connecting:

- Make art collaboratively and reflect on positive aspects of group cooperation.
- Identify the purpose of an artwork.

Lead in:

Yesterday we learned about the lobes of the brain and their basic functions. In order for these functions to occur, the brain must send messages back and forth via special cells called neurons. Each neuron is made up of parts that perform specific functions to aid in this communication.

Procedures:

- Soma - this is the soma, or cell body of the neuron. Its function is to _____. How can we represent the soma using our materials? What shape is it?
 - Build a soma using pipe cleaners or balloons. Look around at everyone's somas. Some of them are different but neurons can look different too, depending on their function.
- Dendrites - These are dendrites. They extend out kind of like branches on a tree. They receive information from synapses. Dendrites are created or removed (pruned) as our brains develop. How can we represent dendrites using our materials?
 - Add dendrites to the soma.
- Axon - This is the axon. It transmits information to other cells. It's surrounded by myelin...etc. How can we represent an axon using our materials?
 - Add the axon to the soma.

Closure/segue: Today we learned the basic anatomy of a neuron. Now you the way in which our brain transmits and receives information! Did you learn anything today that surprised you?

Art coordinators: Today we learned about working together to accomplish art, how art and science can coincide, working with different mediums, and how to create an installation piece that utilizes the space available.

Now let's work on our daily journal page! Draw a concept we covered today, then write something new that you learned.

IV. Activity last few minutes of class 5 minutes

- Journal entry. Add to each child's "file".

7/16 Thursday

Session leaders: Gaile & Brianna

Dual Group Poster Design- Right/Left Myth Battle - 30 minutes *Session Leaders: Carrie & Matty*

Concepts:

Neuron and/or basic neuron anatomy.

Lobes of the brain: Draw to represent one of their main functions instead of the physical lobe itself

Myths: One idea is to draw a brain as a pie chart to represent the “10%” myth.

Goal: To demonstrate collaboration strategy and critical thinking through artistic practice.