## Similarities & Differences Learning Experience Plan

Subject: Biology Grade level: 8

Unit: The Anatomy of the Brain Theme: Fear

Topic: Analyzing Some of the Anatomical Parts of the Brain that Control Fear and Stress

Content Standards:

Standard 4: Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development in ideas in science.

Standard 2: Students will access, generate, process, and transfer information using appropriate technologies.

Literacy Standards (Grade Level 6-8):

**R1.** Cite specific textual evidence to support analysis of science and technical texts.

**R2.** Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

**R4.** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6– 8 texts and topics*.

**R7.** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

**R9.** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

**R10.** By the end of grade 8, read and comprehend science/technical texts in the grades 6–8 text complexity band independently and proficiently.

**W4.** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

**W6.** Use technology, including the Internet, to produce and publish writing and present the relationships between information and ideas clearly and efficiently.

**W7.** Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration.

**W8.** Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

**W9.** Draw evidence from informational texts to support analysis, reflection, and research.

**Theme Description/Relevance to 8th Graders:**

Everyone experiences fear. Fear of whatever or whoever it may be is expressed in many ways. This theme explores the different effects fear has on the body, both physically and psychologically. On a day-to-day basis we experience anxiety due to exposure to stressors.  Fear tends to lead to irrational thinking, or not being able to think or act at all as well as anxiety. At the end of this theme students will be expected to answer: How can we gain control over our fear(s)?

This particular lesson is designed to introduce the physical components of fear on the anatomical level. It is also intended specifically for Eighth graders because they are much more mature (both psychologically and physically) than their 6th and 7th grade counterparts. Most will go into high school after 8th grade, and they could be nervous or scared. Some also have already experienced or witnessed bullying, or are currently doing so.

By discussing fear and its expression in the brain, students will have a better understanding on why they feel scared at certain times or from certain things, people, or places. This will hopefully give them confidence and knowledge to tackle their fears and develop into stronger minded people and become fear*less* (yet cautious and inquisitive) of the world around them.

**This Lesson’s Connection with *Some* of the 21st Century Skills Middle Schoolers are Learning:**

* *Collaborate with others; use teamwork* 🡪 Students can bounce ideas off of each other during a possible class discussion. Disrespect towards others during class will not be tolerated. Students may also work together in answering the “Do-Now” and completing the worksheet.
* *Be technology* – *literate* 🡪 Use the Internet to research scientific articles.
* *Think critically* 🡪 Students will be developing critical thinking skills by reading scientific articles, as there may be many vocabulary words or phrases they will not understand. They will also be asked questions by the teacher during discussion.
* *Be autonomous* 🡪 Students will work independently on their summaries. It will be done outside of the classroom, at home and/or in the library. In addition, all work and notes taken in class must be recorded in their notebooks.
* *Ask questions (be inquisitive)* 🡪 Students will be encouraged to ask questions relevant to the material by participating in or initiating class discussions before, during, and after the direct instruction part of the lesson.
* *Become aware and informed of current events.* 🡪 The research article students will research must be up-to-date and as recent as being published within a year.
* *Collect research and information from credible sources to use in expository writing* 🡪 Students will cite evidence from the text (when writing their summaries). They will also use credible sources that will be addressed during the announcement of the assignment.

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| **Learning Experience Outcomes**  Students will:   * Define “fear” – personally. * Compare personal definition of fear to general definition. * Research and read a scientific article that discusses fear as a temporary state or condition in the human body (Must be physical). * Identify a diagram of the human brain’s parts that represent a role in expressing fear. Identify that role. * Compare at least two parts of the brain that control and/or express fear. * Relate a personal experience where fear was the emotion in control and how it was overcome to the knowledge gained in this lesson. Address how that situation or fear will be tackled in the future now that you know how fear works in the brain. (Exit Slip) * Students will define key vocabulary words. | | | **Learning Experience Assessments:**   * 2 – paged, double-spaced summary of a scientific article (the first page a summary of the article and the second page a personal response to the article) * While students are completing their worksheets, the teacher will walk around and assess student progress through observation. At this time, any confusion will be clarified. * Exit Slip will be assigned as the last task of the day and if not completed when class ends will be due as homework to be collected the following class. (Written on loose-leaf paper and to be done independently at the end of class.) | |
| **Differentiation:** | | | | |
| **Approaching**  For this lesson, all students will be sitting in arranged groups of four. Because of this, students approaching the level will have at least three other students that may help them, one of which is intentionally in the group because he or she is a higher-level student. | | **On-level**  Students that are already meeting the standards can supplement their learning with the use of the labeling worksheet as a study guide. They may also use colored pencils or crayons to color the specific parts to aid in memory of the parts and their functions. | | **Beyond**  Students beyond the expected level of learning are challenged by being able to stay ahead and on top of the work given. For example, students at this level will complete the exit slip question during class and not have to complete it for homework. |
| **Curriculum Integration**  Psychology, ELA, Technology | | | | |
| **Materials/Resources:** | **Procedures/Strategies** | | | |
| * Parts and Functions Worksheet * Powerpoint Slideshow * ChalkBoard | **Sponge Activity:**  As students are walking in the classroom, students will be told to quietly and independently answer the question written largely on the board that states:  “What does fear mean to you? Write down your personal definition.”  The class will engage in a brief discussion by sharing their answers and then finally be given a general definition of fear.  (Fear: An unpleasant emotion caused by the belief that someone or something is dangerous, likely to cause pain, or a threat.)  Next, students will compare their definition of fear with the general definition given above.  **Anticipatory Set:**  Possible Aims Elicited from Students to be Written at the Top of the Board:  *How do we trace fear back to the brain?*  *What role does the brain play when a person is scared?*  *How do our brains express fear?*  *How do we understand which parts of the brain control fear?*  **Activating Prior Knowledge:**  At this point, the students have already learned about the main parts of the anatomy of the brain, and reviewed the Nervous System. To connect this lesson with the material they have learned, they will be assigned this question:  *”Do Now: Name at least three parts of the brain and their functions.”*  This will allow the class to review the parts of the brain so that they may feel more comfortable in learning new parts and their functions.  **Direct Instruction:**  Fear: An unpleasant emotion caused by the belief that someone or something is dangerous, likely to cause pain, or a threat.  For the direct instruction, instead of writing notes on the board, the instructor will present a slideshow with information and pictures while asking the following questions for the corresponding slide. The slides before slide 8 should be review to the students. A brief outline of the slideshow’s main ideas will be listed on the board at the end of the slideshow.  Slide 9:  Q: If the limbic system has evolved from primitive times of the human being, infer what types of situations ancient humans may have been exposed to that determined the evolution of the brain to its state today.  A: Hunting and gathering for food, fear of predators, and harsh weather conditions as well as scarcity of food.  Q: Does fear contribute to survival? Why or why not?  A: Students should agree. Refer back to the struggles of ancient humans.  Slide 10:  Q: What are hormonal secretions?  A: Hormones are substances that are released (secreted) by various organs and cells in the body to stimulate other tissues or cells into a certain action.  Q: What is adrenaline?  A: A hormone that is released in response to stress.  Q: Compare fear and stress.  A: Fear is an emotion in response to danger or threat; stress is a mental state resulting from demanding circumstances.  Prior to Slide 12:  Q: List some observations you would notice if you were watching a scared person’s behavior.  A: In Slide 12.  Slide 13:  Alternative definition of fear.  Q: How does the amygdala allow a person to have a phobia?  A: It stores the memory of the object the person is scared of.  Slide 14:  Q: How does the hippocampus help someone learn?  A: The hippocampus is important in memory; without remembering information a person cannot use what they learned for future reference. A person cannot effectively use that information which makes learning useless.  Slide 16:  Q: Give examples of situations where a person will activate the “flight-or-fight” response.  A: Fight, fire, dangerous animal, etc.  Slide 18:  Q: What are YOU scared of?  A: Various answers if students choose to respond.  **Guided Practice:**  See Worksheet.  When students are done with the worksheet, they will be asked to compare the hippocampus and amygdala in a Venn diagram, then the amygdala and the hypothalamus in another Venn diagram. This should be done in their notebooks.  **Closure:**  On loose-leaf paper, students will be asked to recall a situation in their lives where they felt scared or nervous and relate it to what they learned during this lesson. In addition, they will also be asked to address how they would approach this situation if confronted with it in the future based on the information learned in this lesson.  **Independent Practice:**  Students will conduct a short research activity (outside of class) in which they will research a scientific article that discusses physical expression or evidence or fear in human beings. It must be two pages long and typed (double – spaced with 12 point font). The first page must be a summary of the article and the second must be a personal response to the article. It will be due the following week in class. Because of time limits, specifications will be addressed in brief details at the end of class. The article must also include the brain. | | | |