

Biology of Fear Exercise

Teacher introduction:

There are few emotions more universal than fear, however an analysis of HOW we experience fear biologically is something few students consider. In order to incorporate a more thorough approach to understanding fear, students have to delve into scientific and technical writing and this process is one that many students find daunting. In order to help students better understand scientific writing, this lesson serves to engage students through their own experiences of fear and then have them annotate and reflect upon how their experiences correlate with the description placed in the article. I have used an article from How Stuff Works on fear (<http://science.howstuffworks.com/life/inside-the-mind/emotions/fear.htm>) however teachers can pull from a wide variety of resources for the article.

Learning Goals:

Students will understand the necessary biological terms involved in fear and will show success through the fluent use and description of the terms in a correct and comprehensive way.

Materials Needed:

Highlighters of various colors or crayons, pens, pencils

Copies of chosen article on biology of fear

Projector (for differentiation or modeling of annotation)

Time Estimation:

This activity can take about three 45 minute class periods. Further differentiation (available through the use of a podcast on fear) could double that time period. Extension activities meant to have students experiment and analyze their own fear could add further time as well. These additional activities are up to teacher discretion.

Day One:

Teacher hook: Ask students the following questions either for class wide discussion, bell ringer, journal response, or combination of several types of engagement strategies.

- 1) What is fear?
- 2) How do you know you are afraid?
- 3) Is fear a mental response? a physical response? Both? Explain
- 4) Give me a biological description about what happened to you physically when you experienced fear.

Have students read the article on fear independently.

Day Two and Three

Teacher begins class by modeling the process of annotation. This can be done with a projected view of the chosen document or with simple discussion and description on the white board/chalk board/smart

board. The level of description is dependent upon student needs and differentiation can occur here or with individual students.

Have students discuss what about the article was difficult to understand and engage them in a discussion about the complexity of scientific writing. Divide your students into manageable groups. I find that this assignment works best in teacher selected pairs of weaker/stronger students, however this is completely up to teacher discretion. Each group will be given a biology term (listed on student sheet) that is vital to the understanding of the piece. Students are then given the student task handout and rubric. Students follow the annotation guidelines listed on the separate sheet to annotate the chosen article. This may take more than one class period depending upon the students and the time frame of class periods. Once they have worked with the annotation have them move to task two and create a list of all of the traits of the term and what it does biologically during the process of fear.

Day Four

Once they have annotated each article and created a list of the traits of their term, students work initially with like groups that have their same term to define and fully understand what their term does. They then present their annotation and describe the role of their chosen term in the process of fear. Teacher observes the groups "jigsawing" the process of fear to their fellow classmates and grades students on their annotation and presentation using the attached rubric. Return to the questions from the first day of instruction to evaluate as a whole what students now know about the biology of fear.

Extension Activities and Differentiation

Students who are more auditory learners may benefit from the review and note taking of the podcast "Stuff you should know", whose podcast on fear may reinforce their understanding of the subject. Links to that can be found here:

<http://www.stuffyoushouldknow.com/podcasts/how-fear-works/>

There are also video links on stuff you should know to visuals as well for visual learners, but they are up to teacher discretion.

Extension activities can include a follow up journal analyzing their experience of fear biologically using the terminology of the article. You could also pair this activity with literature related to the effects of fear upon the body such as Poe's "The Raven" or Shakespeare's "MacBeth".