**Name**

**10/25/2018**

**Period 3**

**Teacher**

**Science Fair Project: Research Plan**

**Research Question:**

What makes students learn science the best?

**Rationale:**

Science and technology are fast becoming the most widely used applications in society. As students enter the work field in the coming years, they must be prepared to think critically and solve problems that their teachers cannot teach them about. Methods to learn science include memorization, diagramming, and hands on. If teachers can determine the best way for students to learn science, then they will be better able to prepare their students for future careers.

**Hypothesis:**

If students are exposed to three types of learning styles in a science lesson, then they will learn the science content the best with hands-on activities because hands-on learning engages more parts of the brain and helps students make personal connections with the content knowledge.

**Research Methods:**

**Materials**

* 1 15-minute science lesson on Punnett squares, divided into 3 parts (flashcards, draw a diagram, experiment)
* 1 5-question quiz on Punnett squares
* 15 students
* Stopwatch/timer
* (IN A REAL RESEARCH PLAN, I WOULD ATTACH A COPY OF THE LESSON, LIST ANY AND ALL LESSON MATERIALS, LIKE INDEX CARDS, TEXTBOOKS, LAB MATERIALS, AND I WOULD ATTACH A COPY OF THE QUIZ)

**Procedure**

1. Randomly divide s­­­tudents into 3 groups (flash cards, diagrams, hands on)
2. Give each student a copy of the Punnett square lesson materials for their group.
3. Allow students 15 minutes to explore their lesson materials.
4. After 15 minutes, have students return their materials and give each a 5-question quiz on Punnett squares.
5. After students have finished their quiz, collect the quizzes and grade them for total number of questions correct.

**Safety Concerns**

This experiment does not pose any safety hazards to the experimenter or the test subjects. All materials are safe to be used without safety equipment.

**Anticipated Data Analysis**

Once the number of questions correct for each student has been obtained, I will enter the data into a data chart showing the test subject’s number, which group they were in, and how many questions they got correct. Once the data has been compiled into a chart, I will create a bar graph using the average number of questions correct for each group. By examining the average number of questions correct, I should be able to see which lesson type will give the best results with the highest average number of questions correct.

**Bibliography:**

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*Teaching Strategies.* July 25, 2014. Science Education Resource Center at Carleton College. Accessed November 15, 2014 <http://serc.carleton.edu/k12/teaching\_strategies.html>.

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