

## Lesson 1.4: Experiment- Music and Test Scores

Task	Page (s)	Learning Target
1	2	I can design an experiment that tests how _____ affects _____.
2	3	I can develop a clear and detailed procedure that describes how to test the effect of _____ on _____.
3	4	I can collect data by conducting an experiment that tests how _____ affects _____.
4	5	I can present data that illustrates how _____ affects _____.
5	6	I can analyze data in order to draw a conclusion about how _____ affects _____.

**Task 1 Learning Target:** I can design an experiment that tests how \_\_\_\_\_ affects \_\_\_\_\_.

1. Read and summarize the background text:

Researchers and college students have often wondered whether listening to music has negative or positive effects on student's schoolwork and whether listening to music is a "do" or "don't" while completing academic assignments.

In 1993 researchers at the University of California, Irvine, reported that college students performed better on an IQ test after listening to Mozart. The study captured tremendous attention in the news and was referred to by the media as "The Mozart Effect."

Today a number of Web sites sell Mozart-based programs that they claim will improve intelligence, memory, learning and even your ability to do mental math.

Of course, nowadays, many students are not actually listening to Mozart, but pop or other music, so the effect may not be the same. Does music really improve a student's ability to perform academic tasks?

2. Brainstorm: How can we use the materials (music, timer, tests) to test the question:

**Will listening to music while taking a test increase student test scores?**

3. Investigation Design Diagram:

Independent Variable:				
Levels of IV (How you will change it)				
Number of Trials (Number of times you will test IV)				

Dependent Variable: \_\_\_\_\_

Constants: \_\_\_\_\_

4. **Title:** \_\_\_\_\_

\*Hint: **The Effect of** (the IV) **on** (the DV)

5. **Question:** \_\_\_\_\_

\*Hint: **How will** (the IV) **affect** (the DV)?

6. **Hypothesis:**

\*Hint: **If** (change of the IV) **then** (change in the DV) **because** (use reasoning from prior knowledge and/or research).

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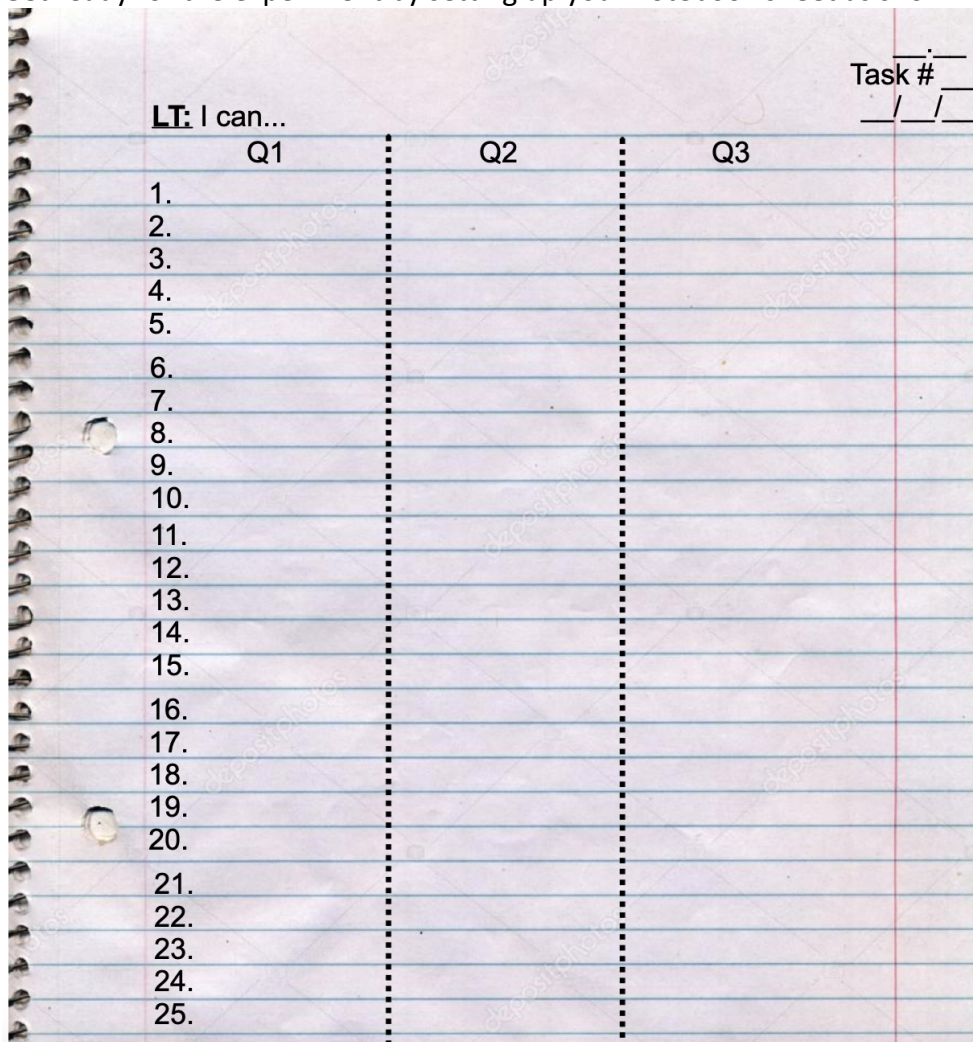
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**Task 2 Learning Target:** I can develop a clear and detailed procedure that describes how to test the effect of \_\_\_\_\_ on \_\_\_\_\_.

1. Why should a procedure be specific?
2. Watch the following video: (Amelia Cleans) <https://www.youtube.com/watch?v=Pfu5Qee9iI8>
3. How does Amelia's literal interpretation of things relate to procedural writing in science?
4. List **materials** and quantities for our science experiment.
5. Develop a **procedure**: As a team, create and order a MASTER procedure.

**Task 3 Learning Target:** I can collect data by conducting an experiment that tests how \_\_\_\_\_ affects \_\_\_\_\_.

1. Get ready for the experiment by setting up your notebook sheet as shown:



2. After completing the experiment, describe **possible sources of error**.

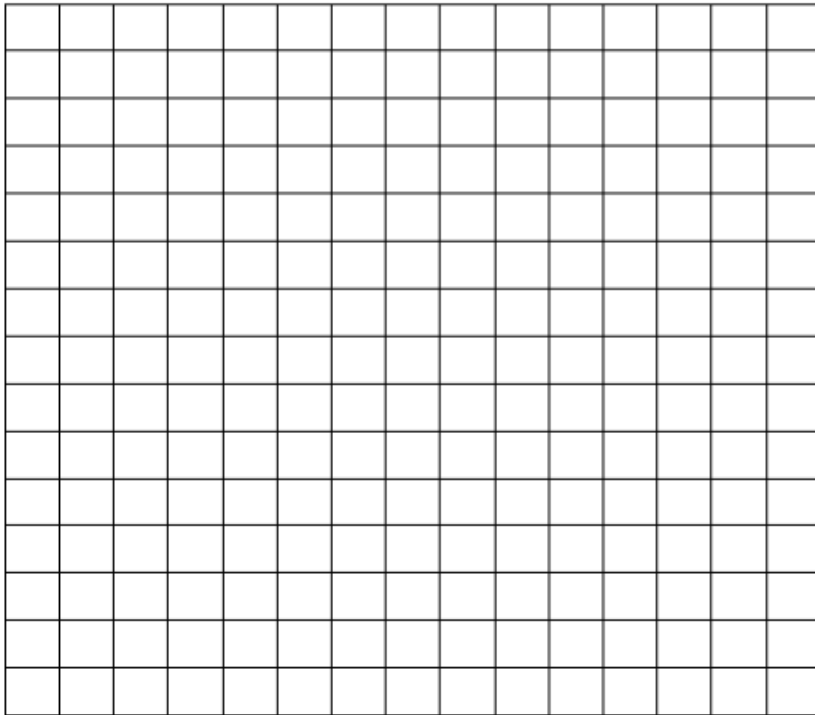
**Task 4 Learning Target:** I can present data that illustrates how \_\_\_\_\_ affects \_\_\_\_\_.

1. Create **Data Tables** that will organize your data.

Tables should show individual and larger sample data with:

- Title(s)
- Units of measure ( )
- Numbers (including averages) rounded to the nearest tenth

2. Make a **graph** that shows individual and larger sample averages.



- X axis Label
  - (Units of measure)
  - Constant scale
- Y axis Label
  - (Units of measure)
  - Constant scale
- Points connected with line **or** bar(s)
- Title (includes information from both axes labels)
- Key (or labels) identify all lines or bars

**Task 5 Learning Target:** I can analyze data in order to draw a conclusion about how \_\_\_\_\_ affects \_\_\_\_\_.

**A. Write a Scientific Conclusion:**

1. What was the purpose of the lab?	
2. What was your hypothesis?	3. Was your hypothesis supported?
4. Evidence: (What observations/data supports or disproves your hypothesis?) *Use <b>specific numbers</b> from individual and group data.	5. Scientific Reasoning: (Why do you think this happened based on prior knowledge and /or research?)

**B. Write a Scientific Analysis:**

1. How do you know that your data is reliable?
2. Why is it important to control variables? How did you do this?
3. What are some possible sources of error? Explain.
4. How could the data or ideas from this investigation be used in future investigations?
  - If you could redo this experiment, what would you do differently? Explain.
  - What is a similar experiment that you could do? Explain how and why you would do this?