

Name	
Class	

Expedition – Galaxies – Investigations of Galaxy Color

You are almost on your own now. You have added color to the Hubble tuning fork diagram and shared your results with others. You have observed some patterns and formed questions. Use this journal to record the essential elements of the research process as they relate to your investigation.

- 1 A Good Question
 - 1. Record your question.
 - 2. What observation(s) preceded that question?
 - 3. Evaluate and refine your question: Narrow the focus of your question if needed until you have a question that you think is answerable with the available data.

2 - Know Your Subject, Know Your Data

- 4. Record what you know about the following topics that are related to your investigation. You may need additional paper.
 - a. Color (as discussed in astronomy)

b. Galaxy shapes

5. List the data and/or measurements you need to answer your question. How do you access this information/data? What type of data is it, qualitative or quantitative?

Data I need	Location of the data	Qualitative or Quantitative?
A sample of (shape) galaxies	<i>Galaxy images from SDSS</i> <i>Navigator or Image List</i>	<i>I will be matching the galaxy shape to the Hubble Tuning fork. Qualitative</i>

3 – Write a Hypothesis and Identify Variables

6. List the variables in your investigation. Describe how you know they are variables.

7. Review your work so far and write a hypothesis for your research question. Be certain that it references both variables you identified.

4 – Describe Your Procedures

 List the steps you will take to gather your data, organize the information, and analyze the results. Think about the mathematical tools you have available to look for patterns in your results – graphs, averages, ranges, and more complex measures such as standard deviation and variance.

Name_____

9. Create a statement that describes how you will decide if your data support or do not support your original hypothesis.

6 – Conclusions – Interpret Your Results

- 10. Do any patterns appear in my data? What appears to be true when I review my work?
- 11. Do my two variables appear to be related? Describe the relationship as best you can with words or statistics.
- 12. Is my hypothesis supported by the data?

Name _____

7 – Discussion

13. Is there anything about your data or procedures that makes you less confident of your results?

14. Can you see any areas of your research design, data collection, or analysis you would modify the next time?

15. What new questions presented themselves as a result of your work?

8 – Report, Share Findings and Receive Feedback

16. What format will you be using to report our findings? List any resources you have available to assist you in understanding the requirements of this type of format.