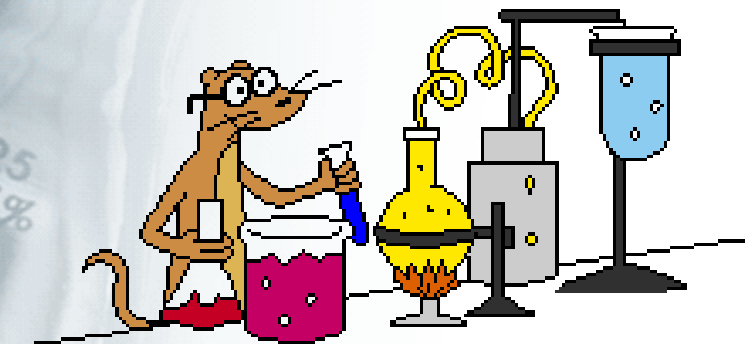




Science Fair Projects

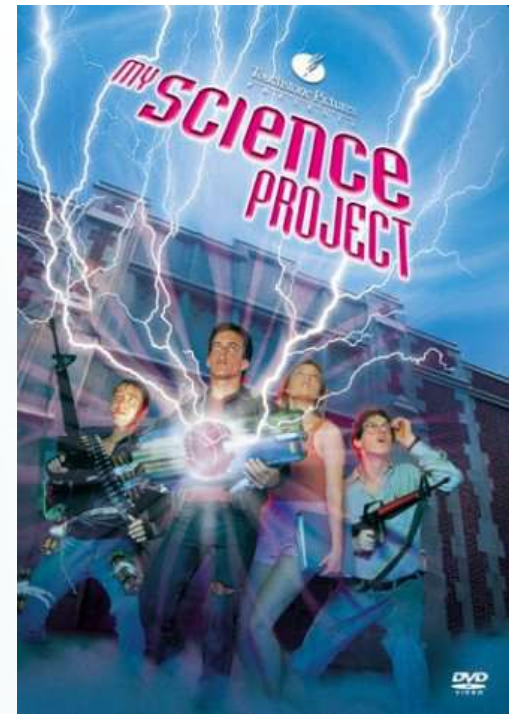
Pines Elementary

2015



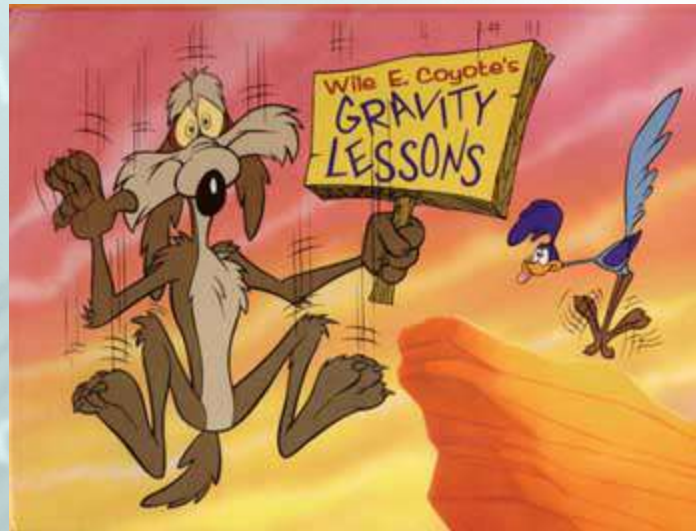
Concerns About Science Projects

- *“So what kind of a project is required?”*
 - **Allowable Projects**: Experimental type projects that use the scientific method with a testable question.
Ex. How Does aspirin affect the growth rate of roses?
 - **Projects Not Allowed**: Research projects (*What is a hurricane?*) or models (*a paper mache' volcano*). These do not involve testing.



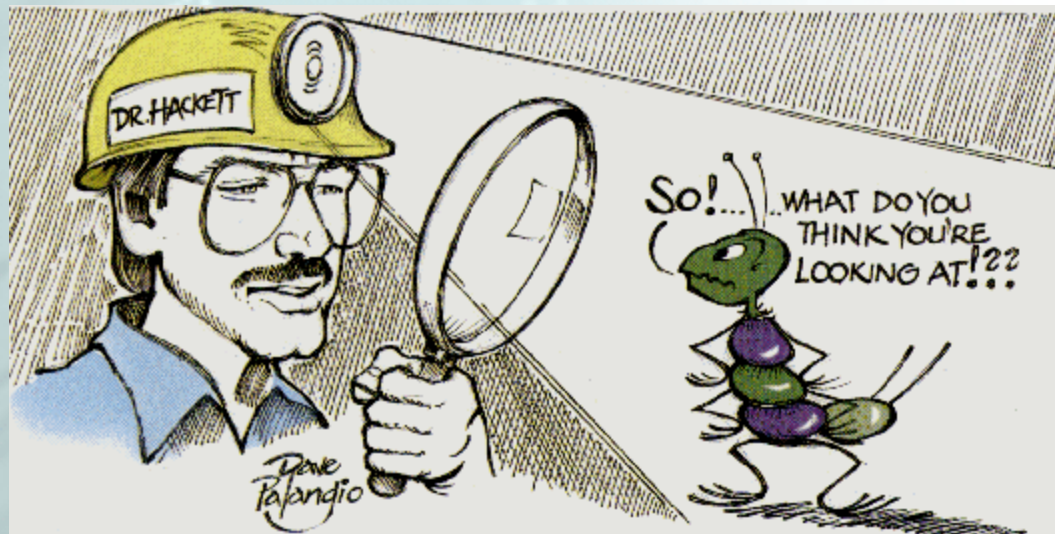
Science Project Categories

- **Physical**: Projects related to the physical sciences such as physics, chemistry and astronomy that deal primarily with non-living materials.



Science Project Categories

- **Biological**: Projects that deal with the vital processes of living organisms and how these processes are affected as a result of manipulating a variable. ***No animals may be harmed***.



Science Project Categories

- **Environmental**: Projects dealing with human's relationship with the earth and human's effect on the earth. The student should show *clearly* the connection between humans and their environment both in the written and oral presentation.



Project Overview

Variables

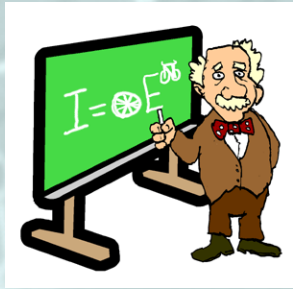
- ➔ **Independent Variable** The variable you are “messing with”.
- ➔ **Dependent Variable** The variable that you will record and measure. It’s changes “depend” on the independent variable.
- ➔ **Control Variable** All aspects of this variable must remain constant.

“How Does Aspirin Affect the Growth Rate of Roses?”

Ind.

Dep.

Cont.



“What is the Effect of Coke on the Decay of Teeth?”

Ind.

Dep.

Cont.

Project Overview

Hypothesis

→ A hypothesis is a statement about what you think will happen in the experiment. It is stated in a positive manner. Avoid statements like “**I think**” and “**I predict.**” The hypothesis should be in the form of “If ____, then ____.” Examples:

- ✓ **If** I measure the bouncing height of a new basketball with three different pressures, **then** the ball with the highest pressure will bounce 10% higher.
- ✓ **If** I feed my dog four different dog foods, **then** he will like Alpo the best.
- ✓ **If** I survey all students in my kindergarten class about their favorite color gummy bear, **then** most students will choose green.



Project Overview

Materials

⇒ The materials section is a detailed list of everything used in the experiment. Include what, how much, and what kind of things used. They are typically measured in metrics.



Non-Example

- Water
- Flower pots
- Seeds
- Dirt

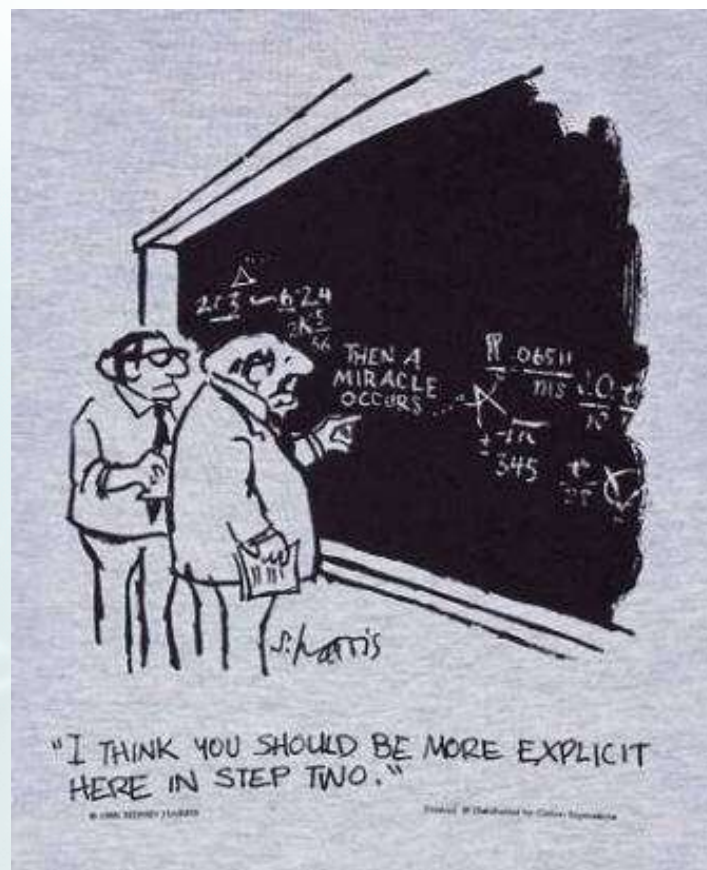
Example

- 5 liters of rain water
- Six 4 cm. clay pots
- 12 bush bean seeds
- 10 liters of potting soil

Project Overview

Procedure

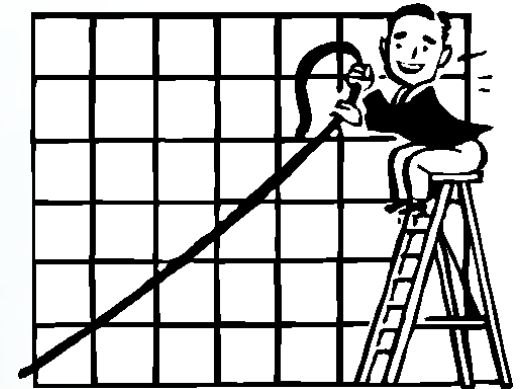
- ◆ The procedure is a listing of steps used in the experiment. It is very detailed, like a recipe. It makes it easy for someone to duplicate the experiment.



Project Overview

Analyzing the Results

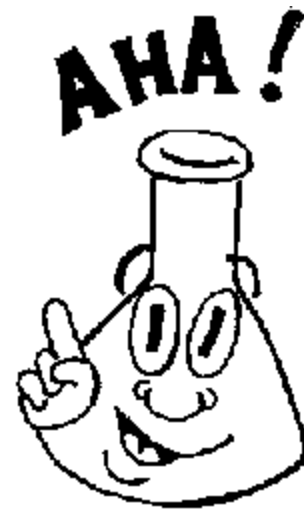
- ◆ Results include both **data** and **observations**.
 - ◆ Look at measurements recorded in the Daily Log.
 - ◆ Think about the data and observations and decide what those results mean.
 - ◆ Try to use mathematical calculations such as mean, median, mode, and range (be sure your students know these words before using them).
 - ◆ Construct graphs or tables that will show results clearly.



Project Overview

Writing the Conclusion

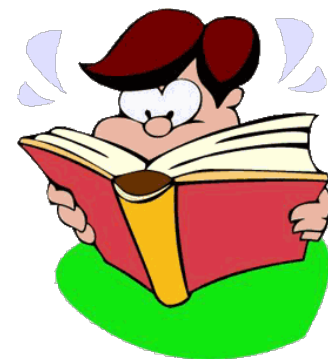
- ☑ Look at the data. The conclusion can be written in two paragraphs.
 - ① Did the data support the hypothesis? If not, why do you think it did not? What would be done differently the next time?
 - ② Do not worry about **negative results**, or results that come out differently than expected. Just explain why you think you got those results. If the results turned out as expected, **explain why** you think it turned out this way.



Project Overview

Writing the Summary

❖ The **summary** is a wrap-up of the entire project. It should be very comprehensive and complete. It can be written in 5 paragraphs. Here are some examples:

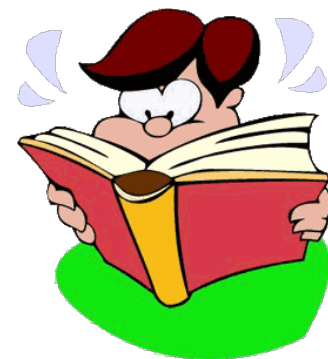


Project Overview

Writing the Summary

❖ **Paragraph 1:** *Tell what the question was and why you chose this topic.*

“My problem is _____? I decided on this project because _____. I started asking questions and found out that _____”

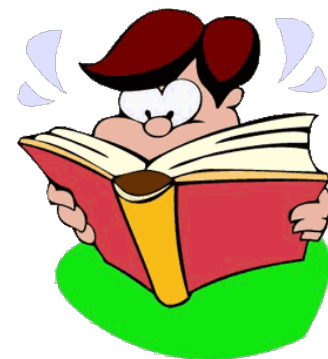


Project Overview

Writing the Summary

❖ **Paragraph 2:** *Tell the hypothesis and explain why you thought this would happen.*

“My hypothesis was _____ . I thought this would be true because _____ .”

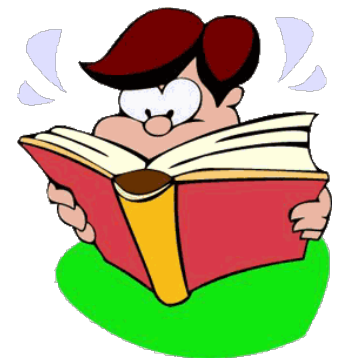


Project Overview

Writing the Summary

❖ **Paragraph 3:** *Tell how you tested the hypothesis. Do not tell the step-by-step procedures, just explain the experiment. Tell how many times you repeated the tests. Mention the variables you controlled to make sure the testing was fair. Describe the difference between the control group and experimental group.*

“I tested my hypothesis by _____ . To make sure the experiment was fair, I _____ .”

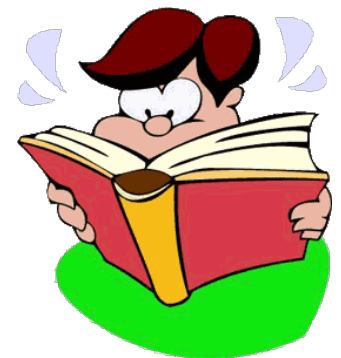


Project Overview

Writing the Summary

❖ **Paragraph 4:** *Tell about your results. Include some of the most important data such as totals and averages of measurements. You should also mention one or two of your most important or unusual observations.*

“While doing my science project, I observed that _____. Also _____. Another interesting thing that happened was _____.”

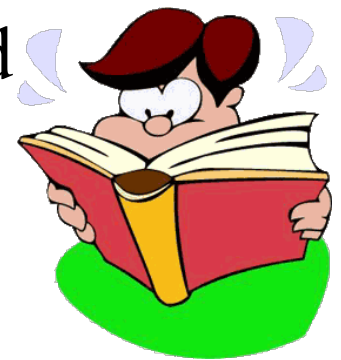


Project Overview

Writing the Summary

❖ **Paragraph 5:** *Tell about your conclusions. Say whether or not the data supported the evidence. Tell about the most important thing you learned. Tell how people in general (or scientists) might apply this information to everyday life. If you could do this project over again, what would you do different?.*

“My data (did or did not) support my hypothesis. The most important thing I learned was _____. My results show _____. This information can be used by _____. If I were to do this project over again, I would _____.”



Project Overview

Bibliography

■ This is an alphabetical listing of all books, articles, people, interviews, websites, etc. used as resources during the investigation.

■ Examples of how to write bibliographies can be found at the following website:

<http://www.bialik.netaxis.qc.ca/homework/stylesheet2.htm>

<http://www.noodletools.com>



Science Project Display Board

Hypothesis

Materials

- _____
- _____
- _____

Procedure

1. _____
2. _____
3. _____

Problem (Title)

The question that asks what you
want to find out

Research/Data

pictures, charts, graphs or
drawings

Variables

Control, dependent, and
independent

Results

Conclusion

I found out
that _____

References

- **DiscoverySchool.com**

<http://school.discovery.com/sciencefaircentral/>

Discovery Channel's guide to projects. Includes project ideas, questions & answers, tip sheets, and a "Parents-Get Involved" section.

- **All Science Fair Projects**

<http://www.all-science-fair-projects.com/>

Browse ideas by topic or grade level. You can also search if you know your topic. Be sure to look at the grade level of the project.

- **United States Department of Agriculture**

<http://www.ars.usda.gov/is/kids/fair/ideasframe.htm>

Agricultural project ideas dealing with Chemistry, Botany, Environmental Science, Nutrition, Microbiology, and Zoology.

References

- **Bug Info**

<http://www.si.edu/resource/faq/nmnh/buginfo/scifair.htm>

Projects related to insects.

- **Charts and Graphs**

<http://www.twingroves.district96.k12.il.us/ScienceInternet/ChartsGraphs.html>

Twin Groves Middle School in Buffalo Grove, Illinois has a great website that discusses different graphs that can be used to display data.

<http://nces.ed.gov/ncekids/graphing>

http://galenet.galegroup.com/servlet/SciRC?locID=fl_breva&bi=SU&bt=%2522Science+experiments%2522&ste=10&st=b

▶ You can always use a search engine with the topic “science projects”. Be sure to find an appropriate project, not one that is just copied off of the internet.



"That's all Folks!"