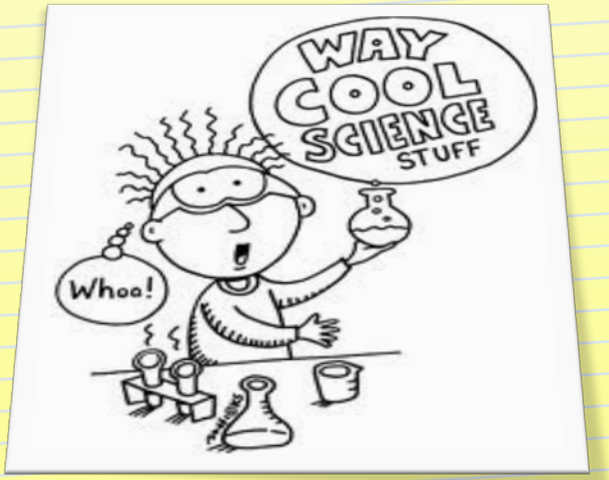
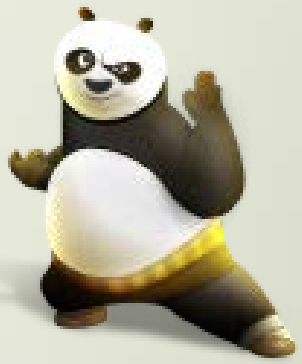

HOLIDAY
WELCOME BACK
BACK TO SCHOOL

Science Project

Everyone has a question.
What's yours?





SCIENCE PROJECT

Everyone has a question.
What's yours?

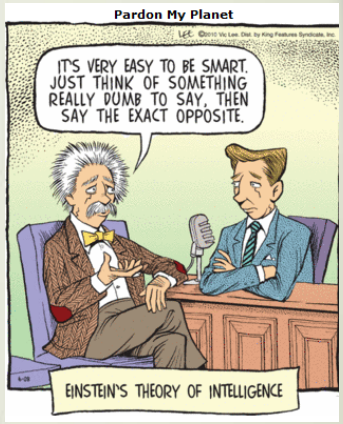
Key Objectives:

- To explore how science can be used as a tool to deal with real-life issues.
- To practice using the process of the Scientific Method.
- To develop scientific inquiry skills.

Science Project

Key Outcomes:

- You will use science creatively to propose solutions to real-life problems.
- You will experience using the Scientific Method.
- Engage with real issues; think about your own interests and passions to identify your question. Find a real-world problem you are personally curious about, and want to investigate, it will greatly enrich your learning experience.
- Collaborate – great teamwork and communication are important skills.
- Managing time – Deadlines are important, so plan your progress and work throughout.



Science Project

Everyone has a question.
What's yours?

Rules

- Groups of 2-3 students.
- Find a question that interests you and you don't know the answer.
- Use the **scientific method** to answer your question.
- Each group will present their project in the class.

SCIENCE PROJECT

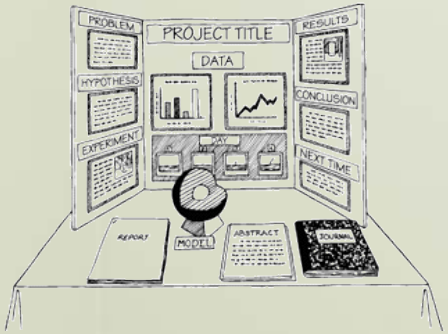
Everyone has a question.
What's yours?

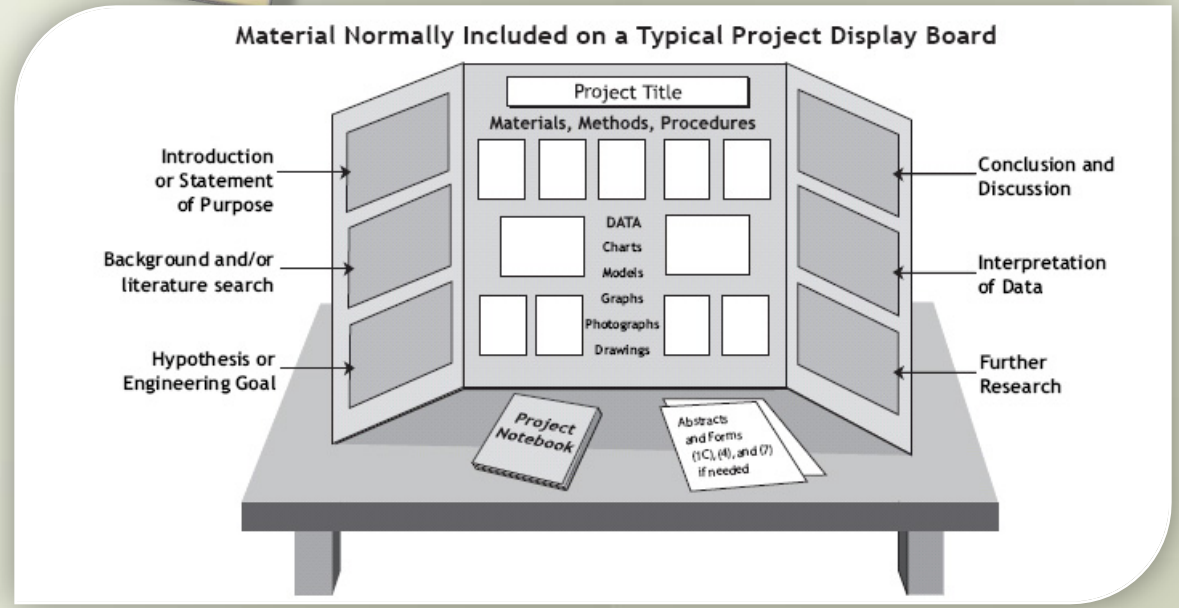
Rules

- You may use future board, video clip, demonstration, working model, etc.
- Presentation time: 5 to 10 minutes.

- **Don't wait to the last minute!!!**
  Start Today !!!

Science Project





Science Project

The Scientific Method

1. Identify the problem
2. Research about it
3. Make a hypothesis
4. Experiment
5. Collect data
6. Analyze the data
7. Conclusions

The Scientific Method is an organized way of figuring something out.

The Scientific Method at teacherrambo.com

THE SCIENTIFIC METHOD

SCIENCE PROJECT

1. Identify the problem (Ask a question)

what do you want to learn?

An example would be, "Is eLearning better than traditional classroom learning?" or "Do girls run faster than boys?"

The Scientific Method at teacherrambo.com

SCIENCE PROJECT

THE SCIENTIFIC METHOD

2. Research

Look for information in books, on the internet, and by talking with people to get the most information you can about the problem, before you start experimenting.

The Scientific Method at teacherrambo.com

SCIENCE PROJECT

THE SCIENTIFIC METHOD

3. Hypothesis

Try to predict the answer to the problem.
Also called 'educated guess'.

example, "If I study by eLearning I'll score better in the test".

The Scientific Method at teacherrambo.com

SCIENCE PROJECT

THE SCIENTIFIC METHOD

4. Experiment

Design a test or procedure to confirm or disprove your hypothesis.

In our example, compare between two groups of students, one group study by eLearning, the other group study in the class. Both groups study the same topic and both will get the same test at the end. See which group score higher.

Write down exactly what you did for your experiment step by step. What tools you used, where you did it, how many participants etc.

THE SCIENTIFIC METHOD

SCIENCE PROJECT

5. Observation and Data collection

Record what happened during the experiment.

Two types of data collection:

Qualitative (descriptive) observations.

Quantitative (measurements and values) observations.

Use visual representations (i.e. graphs, charts, photos).

Include environmental factors, errors that occur, and any other information that could have affected the results.

SCIENCE PROJECT

THE SCIENTIFIC METHOD

6. Analysis

Analyze the results of the observation and data collection.

The Scientific Method at teacherrambo.com

SCIENCE PROJECT

THE SCIENTIFIC METHOD

7. Conclusion

Review the data from the analysis and check if your hypothesis was correct.

If the eLearning group scored higher in the test, then you proved your hypothesis, if not, your hypothesis was wrong. It is not "bad" if your hypothesis was wrong, because you still learned something! And you proved a point.

The Scientific Method at teacherrambo.com

SCIENCE PROJECT

Everyone has a question.
What's yours?

Due Dates:

Getting into groups:
XX/XX/XX

Question submission:
XX/XX/XX

Presentation: up to the raffle (by the computer)

Science Project

Examples of questions:

- Is that a real smile...?
- Why cats purr?
- Which drink is most useful to cancel the burning of spicy food?
- What is the driving speed which saves fuel?

Asking the right question is very important!
Collaborate with your friends and find a question that interests everybody.
Then post your question to the wiki.

Attention:
After posting your question to the wiki, wait for A. Rambo's comments and approval of your project!!!

SCIENCE PROJECT

STARTING POINT

Get an Idea for the question

Recommended Websites:

www.sciencebuddies.org / science - fair - projects
www.education.com / science - fair
www.all - science - fair - projects.com
www.school.discoveryeducation.com
www.open2.net / scienceshack
www.scienceproject.com
www.energyquest.ca.gov

SCIENCE PROJECT

Everyone has a question.
What's yours?

Science Project Evaluation Rubric

TeacherRambo.com

SCIENCE PROJECT

How do experiments work?

1. Hypothesis
This is where you explain what your idea is. It also usually includes predictions of what you expect the results of the experiment to be.

2. Method
This describes how you're going to do the experiment. It includes a **control**, which is the 'normal' situation; and the experiment which is like the control but with one key difference. That way, if the results vary, you know it must be because of that one thing.

3. Results
These record the outcome of the experiment (including the control).

4. Conclusion
This is where you interpret the results. Did they support the hypothesis? Have you changed or rejected your hypothesis after seeing the results?

SCIENCE PROJECT

Here's an example of a simple scientific experiment:

1. Hypothesis
'Plants need water to live. Without water, a plant will die.'

2. Method
Take two plants, and label them A and B. Make sure they're the same kind of plant, get the same amount of light and all other conditions are the same. For two weeks, water plant A (the control, or normal situation), but don't water plant B.

3. Results
Plant A is healthy. Plant B has wilted and died.

4. Conclusion
The only difference between the plants was that one was watered, and one wasn't. So plant B probably died because it didn't have any water. This result supports the hypothesis.

SCIENCE PROJECT

Here's an example of a simple scientific experiment...

1. Hypothesis

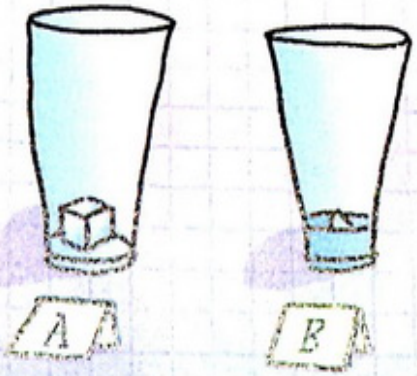
'Adding salt to ice makes it melt faster.'

2. Method

Place two ice cubes in separate glasses. Sprinkle a teaspoon of salt on ice cube B, but none on ice cube A. Time how long the ice cubes take to melt. Do they melt at the same speed, or does one melt faster than the other?

3. Results

Ice cube B melts faster than ice cube A (the control).

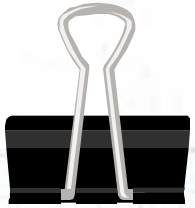


4. Conclusion

The only difference between the ice cubes was that one was exposed to salt and one wasn't. So ice cube B must have melted faster because of the added salt. This result supports the hypothesis.

SCIENCE PROJECT

Here's an example of a simple scientific experiment:

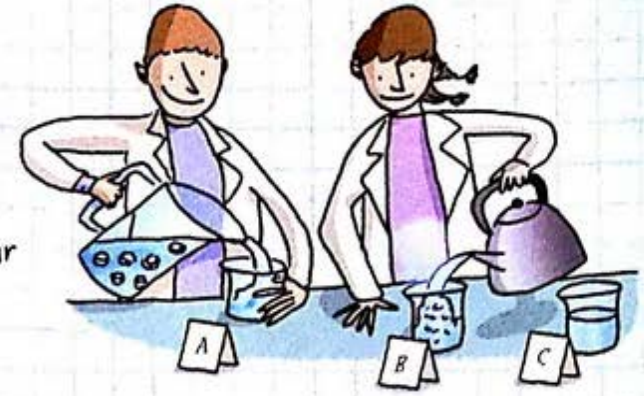


1. Hypothesis

'The hotter water is, the easier it is to dissolve sugar in it.'

2. Method

Take three beakers, and label them A, B and C. Pour 1 litre of ice-cold water into beaker A, 1 litre of hot water into beaker B, and 1 litre of room temperature water into beaker C. Beaker C is the control. Add 25g of sugar to beaker A and stir the water. Count how many times you need to stir it until the sugar dissolves. Then do the same with beaker B and beaker C.



3. Results

The sugar in beaker B takes the least stirring to dissolve, and the sugar in beaker A takes the most.

4. Conclusion

The only difference between the beakers was the water temperature. So we can conclude that the hotter the water is, the easier it is to dissolve sugar in it. This supports the hypothesis.

Science Project

Everyone has a question.
What's yours?

May the force be with you