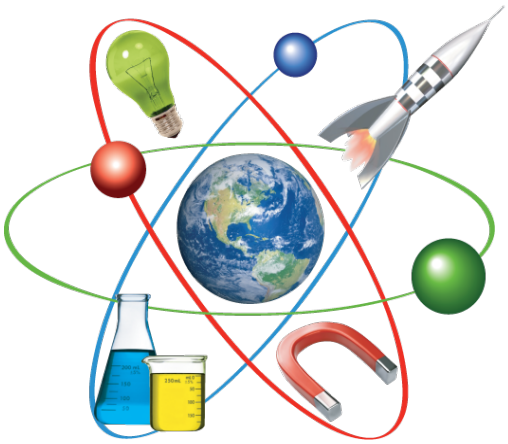
Joseph Moore Museum

Practicing the Scientific Method with Straw Rockets



Scientific Method:

Make observations
Ask questions
Research existing knowledge
Create your hypothesis
Develop and run your experiment
Record your data
Analyze your data
Share your results

Step 1: Make Observations

Make a straw rocket and practice launching it. You can also look up videos of straw rockets or other rockets being launched and learn how they work. Write your observations here.

Step 2: Ask Questions

Ask questions about what impacts straw rockets and the distance they fly. Questions include will the angle at which the rocket is launched, the weight of the rocket, or the presence or absence of fins impact the distance the rocket will fly. Write at least three questions below.

1)

2)

3)

Step 3: Research Existing Knowledge

Look to see if others have asked similar questions to yours and if those questions have been tested in previous studies. If you have a question about if the weight of a straw rocket will impact the distance traveled and you find information about that in your search write about it below.

Step 4: Create Your Hypothesis

Your hypothesis is what you predict will happen. For example, you may think that a heavier rocket will not fly as far as a lighter rocket. Therefore your hypothesis may be that a plane made with thicker paper will not fly as far as one made with thinner paper since the thicker paper is heavier. Write your hypothesis below.

Step 5: Develop and Run Your Experiment

In order to develop an experiment you need to identify your variables. You will identify an independent variable, a dependent variable, and control variables. Your independent variable is what you change (paper thickness). Your dependent variable is what you measure or observe (how far the different rockets fly). And your controlled variables are what you keep the same (length of the rockets, number of fins, shape of the nose, amount of tape used, same person flying both rockets, etc.). Write your variables in the sections below.

Independent Variable:

Dependent Variable:

Control Variables:

Under this step you will also develop your methods. Include how you will change your independent variable (using different weights of paper for two different rockets) and measure your dependent variable (measure how far they fly using a tape measure). Good science is also repeated to take any errors into account, so write down how many times you are going to repeat your experiment as well (launch each paper rocket 10 times).

Step 6: Record Your Data

Create a table and graph of your results. In addition to each individual result for the dependent variable (distance), include the average for each rocket in your table. See the accompanying video for an example of a table and graph.

Step 7: Analyze Your Data

Do your results support your hypothesis? What did you learn that you didn't know before this experiment? Remember, you didn't prove your hypothesis, you either supported it or didn't support it. We are always learning more in science and many people repeat experiments many times to see if they get the same results.

Step 8: Share Your Results

Sharing results is an important part of the scientific method. Write up your results and share them with us on social media!