PAPERING THE SKIES WITH THE SCIENTIFIC METHOD

PURPOSE: Create a lab to demonstrate the scientific method using a simple classic paper airplane.

HYPOTHESIS: When you have decided on a plan (procedure), make a prediction based on the procedure you have developed to use the paper airplane.

PROCEDURE: Materials : Notebook, ruler, paper, pen, paper airplane, set of instructions for constructing the paper airplane. Optional: colored pencils, markers

Use your creative talents to develop a plan that demonstrates the scientific method. Create a table and if possible a graph to record the data collected. Be sure to include at least 10 trials of whatever you decide to do.

DATA: Collected information in the form of a table and a graph. All graphs or tables should be labeled.

DISCUSSION: Write two paragraphs analyzing the data you collected; describe anything that happened during the process. Be sure to include how you could improve your plan. How were you creative in completing this project? What did you do out of the ordinary?

CONCLUSION: How does the outcome of your experiment support the hypothesis you developed? How did your procedure demonstrate the Scientific Method? What did you learn?

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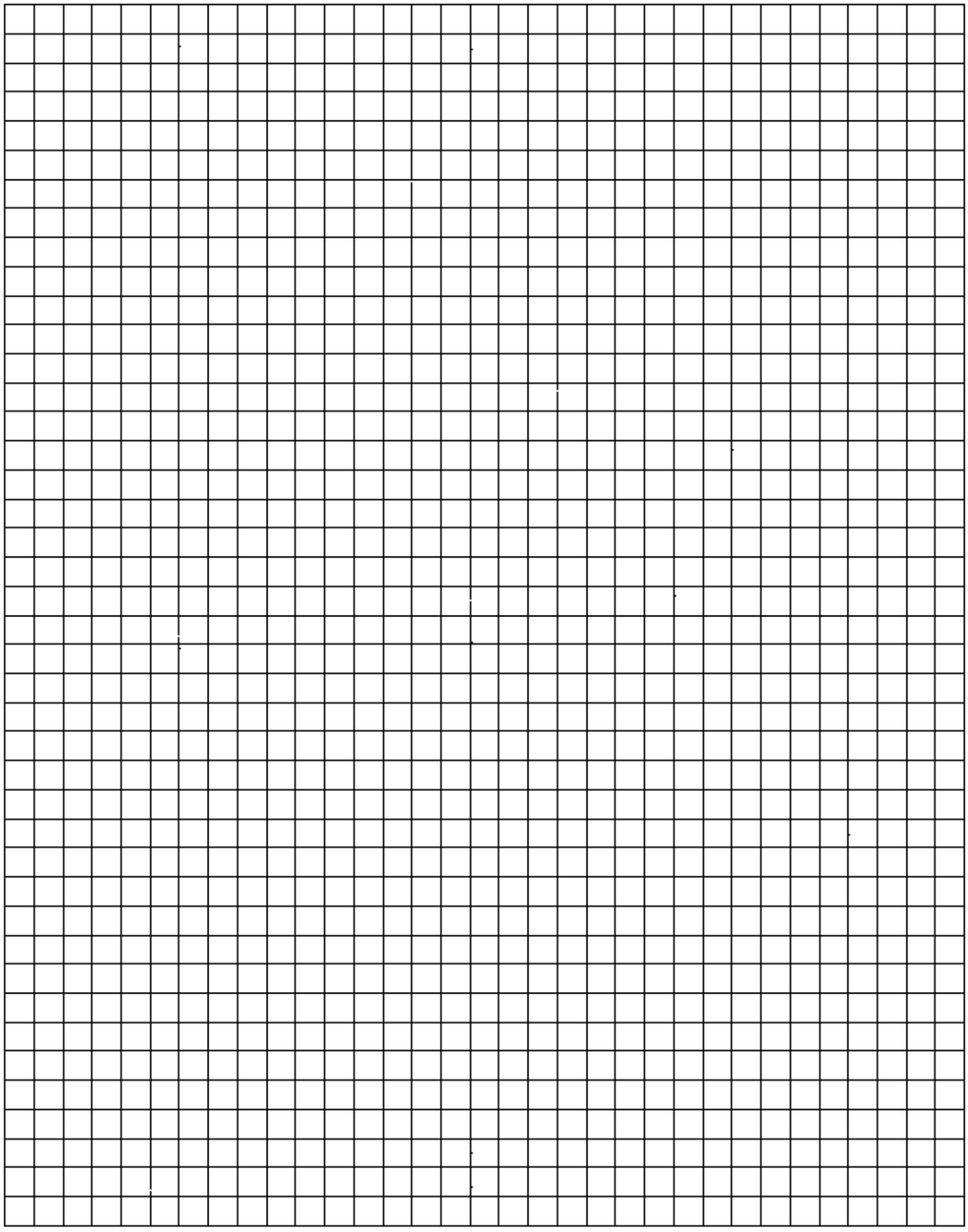

TEACHER NOTES

Objectives or Learner Outcomes.

1. Create an understanding of the scientific method by having students develop their own process to demonstrate steps in the scientific method.

2. Allow the students to use their creative talents to develop a plan that will fulfill the requirements of the assignment and at the same time give them a chance to express themselves in a manner that will help them expand their thinking to reach self-actualization. Tell them to make this an experience that has a uniqueness and personal ownership. Make it show part of themselves.

Suggestions

By not limiting the ways the students can demonstrate the scientific method , it is my hope that they will create a plan that is unique to themselves and gain ownership in a lesson in creativity as well as using the scientific process of solving a problem. This is establishing a non threatening press which I hope will result in self expression and creativity.

They are limited to using only the model paper airplane provided but they are not limited as to what they can do with it. An option here would be to have them find their own plane but limit the number of folds to 6.

Possible ideas that could be the outcome of this assignment

- decorating the plane to give it personal identity and give it a name
- developing a method of flying the plane that is different; different ways of throwing the plane, such as with your eyes open or closed, right or left hand, angle of throwing or at different distances above the ground. Testing the wind direction and throwing against or with the wind.

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- adding weight to the plane to determine the effect on the planes ability to fly. Paper clips would be a good addition. Staples
- Taping the plane together so that it has more rigid structure without much additional weight

This process can be expanded to allow students to research and find different models of paper planes. If you decide to allow students to pick their own models, I recommend that you try out some of the models. I put a lot of paper in the trash trying to fold some of the models. Some students will be frustrated by the process of folding and folding, others will accept the challenge and go with the flow. This lab or investigation allows for differences in students and gives them a tool to use as they develop own creativity solutions to complete the assignment.

Here are some websites for different models other than the one used in the original lab.
http://www.paperairplanes.co.uk

http://www.geocities.com/CapeCanaveral/Runway/6095/mainplan.html

http://www.zurqui.co.cr/crinfocus/paper/airplane.html

http://www.josephpalmer.com/planes/Airplane.shtml

http://www.onenorthpole.com/ToyShop/Paperairplanes.html

http://www.pchelp.net/planes.htm

http://teams.lacoe.edu/documentation/projects/math/airplane_sites.html

http://www.khs.com/aboutgpa.htm

http://www.wannalearn.com/Just_for_Fun/Making_Paper_Airplanes/

http://www.cbc4kids.cbc.ca/general/the-lab/flights-of-fancy/archive.html

http://home.inreach.com/jdcard/engl3007/airplane.htm#OperatingInstructions

RUBRIC FOR GRADING LAB

Complete in your quadrille. You will get it back ungraded if it is done on a piece of paper and not in your notebook.

All parts of the lab labeled and the part name underlined 5 points. (Example Hypothesis)

Hypothesis 5 points

Tables and Graphs 5 points each if properly labeled

Procedure 15 points

- All materials 5 points
- Your directions for the lab 10 points (Be creative in your method of doing the lab.)

Discussion and Conclusion (5 points each) 10 points

- Discuss and analyze the data collected and your conclusion must either support or disprove your hypothesis

Total of 45 points