

# **Flying Into the Digital Age**

Pleasant Street School

*click below to view the movie*

## Lesson Plan Variables

This unit was a supplement to the FOSS Variables Science Module. Those materials are copy-righted and can be accessed through [www.fossweb.com](http://www.fossweb.com) and Delta Education, Nashua, NH.

Purpose: To construct balsa wood airplanes, create a standard, and test one variable at a time.

Objective:

1. Students will observe and compare the behavior of a standard plane system to modified plane systems.\*
2. Conduct controlled experiments.\*
3. Organize data in a flight log.\*
4. Relate the effect of variables to the distance the plane travels.\*
5. Predict outcomes of plane flights.\*
6. Create a spreadsheet using data gathered.
7. Share information through the use of a class blog.
8. Create and fly a finished plane using information gathered through test flights.
9. Explore virtual museum to gather information on Leonardo Da Vinci.
10. Complete a obituary using the information.

Materials:

- Balsa wood planes purchased from AC Supply Company
- Competition rubber bands
- Bonder and Debonder
- 6 person winding station
- Rubber band lubricant (can use Armoral)
- Pylon
- Flight Log (bound lined paper)

Schedule:

Each lesson needed about one hour to complete. Building planes and test flights could be broken into two working periods of about 30 minutes each.

1. Build standard plane and review all variables involved.
2. Test flight with standard until 3 consistent recordings have been made.
3. Compare class results and graph on spreadsheet.

4. Review possible variables that could be tested.

We used: wing shape and position, winds, propeller size, type of rubber band, size of rubber band, and weight.

5. Group the students according to the variable they wish to test.

6. Groups create a recording sheet using excel specific to the variable being tested.

7. Create the test plane controlling all other variables. Have incremental pieces ready to use with planes during test flights.

8. Test variables during flight.

9. Share out information about the distance the plane traveled during flights by the different groups using discussion and communicating through a class blog ([www.classblogmeister.com](http://www.classblogmeister.com)).

10. Groups use information gathered to design their competition planes with the intent to have their plane travel the farthest while tethered to the pylon.

11. Make planes for competition, continuing to conduct test flights and blog about results.

12. Culminate the project by having a final plane flight competition.

13. We came up with our best plane and sent the design, description, and pictures to a cooperating school, who sent us their design. Both schools created the other's designs and had a virtual competition which was video taped. The tapes were posted on a Wiki for the students to view and a winner was awarded.

14. In conjunction we worked on a project in Media. Students went on a virtual field trip to the Boston Museum of Science and visited the BBC.

([www.mos.org/leonardo](http://www.mos.org/leonardo) [www.bbc.uk/science/leonardo](http://www.bbc.uk/science/leonardo)) and gathered information about Leonardo Da Vinci.

15. They used the information to complete an obituary that could have been written about the famous artist and inventor.

Assessments:

Through this unit we used the FOSS Variables response sheets for evaluation.

The Assessment Scoring Guide with a scale of 1-4 was used to evaluate the completed planes, information gathered from the websites, and the obituary.

\* From FOSS Variables Module, developed at Lawrence Hall of Science, University of California at Berkeley.

## Rubric

The rubric we used with this project is the student rubric found in the FOSS Variables Module. The students were used to using it and they understood the language.

4

The question or task is completed correctly and contains additional, unexpected, or outstanding features.

3

The question or task is completed correctly; there are no mistakes.

2

The answer or task is partly correct; it has no big mistakes.

1

The answer or task contains big mistakes, or does not answer the question that was asked, but gives information that is related.

0

The student does not do the question or task, or gives an answer that has nothing to do with what was asked.