Learning the Wright Way to Fly

This project conveys the importance of the Wright Brothers’ discovery and relates what is learned in school to the outside world.

Curriculum/State Standard
Constructing/Reflecting Science Standards for State of Michigan:
1. All students will ask questions that help them learn about the world.
2. Show how science and technology affect our society.

Overview
The project was based on 3 activities; Bernoulli’s Principle of Lift, modification of a foam glider to learn how an airplane moves (roll, pitch and yaw), and the construction of a Wright Glider model. Interdisciplinary materials from the Civil Air Patrol were given to each team to supplement the lessons.

Objectives
• The students will be able to construct a model of the Wright Glider.
• The students will be able to observe the flight of the purchased glider that was altered to show roll, pitch, and yaw.
• The students will be able to compare the Wright Glider with the present day glider.
• The students will be able to explain the accomplishments of the Wright Brothers.
• The students will be able to explain how the accomplishments of the Wright Brothers affected society then and currently.
• The students will be able to explain how an airplane flies.

Materials
Activity One: a strip of paper and lab guide to show Bernoulli’s Principle of Lift. Activity Two: foam gliders (1 per student), masking tape, scissors, and lab guide to show roll, pitch, and yaw of an airplane. Activity Three: 9”x12” white foam tray (1 per student), 2-3 boxes of round or squared toothpicks per classroom, scissors, glue, Wright Glider pattern, thin black markers, and a lot of patience for this project.

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“Learning the Wright Way to Fly”
project continued . . .

**Readiness Activity**
Each team was given interdisciplinary activities/lessons provided by the Civil Air Patrol to do with their students prior to the grant activities. Aside from the history lesson about the Wright Brothers, all other activities were selected by the teams to best fit the needs of their students and other curriculum being taught at the time.

Describe the strategies/activities in appropriate order, providing enough detail for the project to be replicated.

After the Civil Air Patrol lessons/activities, each team started with a lesson on Bernoulli’s Principle of Lift. Each student was given a paper strip and a lab guide to explain how an airplane obtains lift. For the second activity, each student was given a foam glider. A cut and bend in the tail of the plane form a rudder to control yaw. Cuts and bends were made in the front wings to make ailerons to control roll, and cuts in the tail wing were made to make elevators to control pitch. All cuts and bends were reinforced with tape. A lab guide was given to the students to change one variable at a time to show roll, pitch, and yaw of an airplane.

**Culminating Activity**
The final activity was the construction of a Wright Glider. Students were given a pattern to cut out of foam. Toothpicks and glue were used to put the pieces together. Fine tip black markers were used to add details to the wings to show the ribbing. This project is best done in small steps as a class, instead of allowing students to work at their own paces. It is also best to allow glue to dry completely before moving on to next step of construction. This project took me three 55-minute class periods to complete. Patience is also needed, but the results were worth the effort. After completion of the gliders, a comparison was made between the foam planes that represented models of planes today and the Wright Glider. Class discussion of the importance of the contribution of the discovery of flight on future technology was done at this time, too.

**Evaluation**
Students were evaluated by observation during activities, checking and discussion of lab guides, completion of projects, and student surveys about all of the activities.