

Dennis Chavez Elementary School
Belen, New Mexico
T. Travis Simpson, Teacher
Rita Martinez, Principal
"The Sky is the Limit" awarded \$2,700

1. Project Description

The Sky is the Limit will benefit our classroom by giving the students the opportunity to use required curriculum in a practical, hands on environment. The students will design, plan, and build one-eighth scale model remote control airplanes while learning the principles of flight and applying mathematical practices.

There is a large community of builders on the Internet that shares information and plans for remote control airplanes. We will use informational web sites and email to communicate with people around the world in order to receive input on our ideas. Our goal will be to build tough, pilot friendly models at a fraction of the cost of a traditional balsa wood model. The main building material we will use in our models is corrugated plastic similar to cardboard. Through my research, I have found planes that are made out of corrugated plastic are able to withstand many crashes that would destroy its balsa counterpart. This will allow more opportunities for our students to practice flying.

The Sky is the Limit project will start in the second six-week period and culminate at a Fun Fly day in May of 2005 where the students will get to fly their models with help from the modeling community. The Belen Area Radio Control Club has committed to provide the flying field and four certified instructors to train the students on how to successfully fly a model airplane. We will make observations of each flight to evaluate our designs and construction.

The students will begin the project by performing individual and group research utilizing technology to find information on flight, types of planes, construction, and design. As a class, we will discuss the principles of flight and how they will relate to our project. The groups will be required to choose a plan or design one of their own, create a list of required building materials, and then create a CAD generated drawing using the schools computer lab, from which they will build their model.

In an effort to utilize our classroom computers and begin gaining the skills for controlling a remote control airplane, I will set up three Remote Control flight simulators. The students will use this software to learn the basic inputs required for remote control flight and conduct simulated experiments to show the required combinations of variables to ensure a flyable aircraft.

The Sky is the Limit will provide an environment to enable learners to construct their own ideas through an exploration of relationships among theory and practice. Four groups or teams will learn and apply the principles of flight using computer technology and then apply those skills to successfully build and fly their own model airplanes. It is an amazing feeling to see something you have build take off and fly well and I hope my students can experience that feeling of pride and accomplishment. This project may encourage my students to continue into scientific based careers.

The Sky is the Limit will improve the teaching in my classroom by allowing me to incorporate the required curriculum into a project that is naturally motivating and diverse. This project will address a declining aptitude for students to apply mathematical and scientific knowledge. They will learn that they can apply what they learn and have fun doing it.

Through this influx of applicable knowledge, the students will gain self-esteem, and strengthen math, technology and science skills. They will improve their interpersonal skills by working as teams, learning from a flight mentor, presenting the project to the lower grades, and demonstrating their knowledge during parent nights and science fair.

The Sky is the Limit is geared to the sixth grade inclusion class. The Sky is the Limit project targets skills which are needed to succeed in middle and high school. It presents a high interest project to a population that faces adolescent issues which sometimes creates problems with self esteem and motivation.

2. Project Objectives

- Demonstrate the skills necessary to fly a model airplane
- Describe the principles of flight
- Describe variables that would prohibit flight
- Demonstrate how to create a CAD drawing of their model
- Demonstrate how to use flight simulator software
- Apply standard measurement using yards, feet, inches and fractions of an inch
- Present a portfolio on their group's experience

3. Project Evaluation

The Sky is the Limit classroom project will allow for authentic evaluation in that the students will need to understand the concepts we cover to successfully build and fly a model airplane. I will invite experts from the community to evaluate the class by observing their progress. We will periodically check portfolios and training logs and have self evaluations concerning participation and contribution to the project.

4. Community Awareness

Our class will present The Sky is the Limit to lower grades and the community through science fairs, family nights, area club fly-ins, and county air shows and we will communicate how PNM Foundation has supported our project. We will also use our computers to create decals that we will affix to our equipment and planes to give thanks to the 2004 PNM Classroom Innovation Grant Foundation. Our class will create bulletins to distribute with our school wide newsletters to inform the community about our special events and PNM as our sponsor.

5. Budget

Item	Quantity	Cost	Total
Combination field kits	4	\$120	\$480
Os .46AX engines	4	\$115	\$460
Glow fuel	4	\$15	\$60
Futaba radio system	4	\$150	\$600
Great Planes Real flight Simulator	3	\$200	\$600
Corrugated Plastic	10	\$12	\$120
Nose cones	4	\$8	\$32
CA Glue	4	\$12	\$48
Landing Gear Main and nose	4	\$17	\$68
2 1/4 Inch Wheels	6	\$5	\$30
Push Rods 48"	16	\$5.25	\$84
Fuel Tank	4	\$5	\$20
Yard Sticks	8	\$1	\$8
Utility Knives	4	\$4	\$16
Aluminum Squares	4	\$8	\$32
Glass Cleaner & Glue	8	\$5	\$40
Clamps	6	\$4	\$24
Habbico multi charger	1	\$40	\$40
Glow Plugs	8	\$4	\$32
Total Cost			\$2,794