The Rocket That Will Launch

Row 6 "Voyager"

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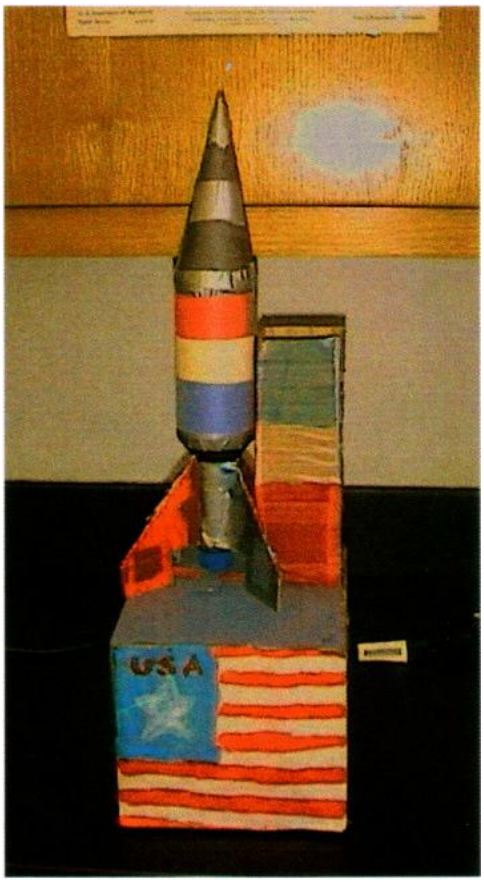
1st Period



We were assigned the task of building a rocket, which we hope will be able to launch and fly from junk. We were to collect this junk from home and bring to school to assemble into a rocket. We collected bottles, cans, fishing gear tops, cardboard, construction paper, duct tape, glue, and paint (ETC.). We were also told we would be building the rocket with other classes and would need to communicate with them as to how the rocket would be built.

We set out on our journey to build this rocket. The classes we were working with all agreed to have the rocket have as less of mass as possible and still launch as high as possible. The rocket was constructed of a water bottle as the body (fuselage), cardboard on the side for fins, and a paper cone for the top (less air resistance).

We started building our rocket and ran into some difficulty as we did not have enough materials. We took care of this problem on day two of our construction. We also encountered the communication barrier as we did not listen to our partners and they did not listen to us. This problem caused our rocket to be started and then the next group would take it apart. We needed to clear this problem or we were never going to finish the project. When we began to work as a team (team interest and not our own interest) the rocket was finished with less mass, the fins placed correctly, and the fuel tanks without leaks.

The communication with the other classes, once we worked the kinks out, also worked well. Teamwork, if used correctly, makes the job easier and more efficient. This teamwork helped by assigning tasks and providing better directions for each class on what needed to be completed for us to reach our goal.

We would like to see us have the chance to experiment with different fuels to power our rocket. We would like to investigate how these fuels are made and how well it will work.

Our goal of building a rocket to carry fuel and be able to launch is completed. We now need to see if it will fly. Our hypothesis is our rocket will take off without any problem!

The rocket we built for this project was made out of many different materials. To start with, we used a plastic pop bottle for the main part of the rocket. The opening of the bottle is where we will put fuel. We hope this will allow for a smooth filling of the fuel and release of thrust when the fuel is ignited. To help with the balance of the rocket, we added triangular shaped pieces of cardboard as fins on the side of the fuselage. We also hope these fins will help with a smooth flight of the rocket. To help with air resistance (air flow), we put a paper cone on top of the rocket. To wrap it up, we put construction paper around the bottle to make it look better. All together we used construction paper, tape, cardboard, and a bottle to construct our rocket.

Newton's Three Laws of Motion help us understand how much force is needed to make the rocket take off and travel. The first law states an object at rest will stay at rest and an object in motion will stay in motion unless acted upon by another force. This law is called the law of inertia. The rocket will sit on the launching pad until the fuel is ignited and then the rocket will move until gravity pulls it back to Earth. The second law of motion is the relationship between force, mass, and acceleration. The equation for the second law is F=ma, which means the force you apply to the rocket is determined by the rocket's mass and how it will travel. The force will be applied when the fuel is ignited by the Tesla Coil. We hope the mixture of hydrogen and oxygen is in the right amount to move the mass of our rocket off the pad. The third law states for every action there is an opposite and equal reaction. The thrust of the rocket's exhaust on the pad in one direction is equal to the force lifting the rocket off the pad and into space.

This project involved the matter and different states of matter. Everything existing is made of matter and matter is a solid, a liquid, or a gas. In the different states of matter atoms behave differently. In the fuel of hydrogen and oxygen, the atoms move very fast and the space between the atoms is further apart. The liquid residue left on the launching pad after lift-off will be in the form of a liquid. The atoms will have a little less space and move less than the gas state. The material we used to build our rocket were in the solid state. The atoms are even closer together and only vibrate back and forth. The atoms in each type of matter have sub-atomic parts. In the nucleus of an atom, you will find protons and neutrons. Protons have a positive charge and neutrons do not have a charge. Protons and neutrons have about the same mass. Electrons are found on the electron shells surrounding the nucleus. They have a negative charge and have less mass than the protons and neutrons. Elements are the simplest and purest forms found on Earth and in space. When we put elements together, we get molecules of various compounds used to make materials (fuels, rockets, etc.). These

different materials were formed when elements reacted with each other by transferring (ionic bonding) or sharing (covalent bonding) electrons. An atom would need to have an open place for the electron to occupy before two atoms could bond into a molecule. Bonding occurred in our fuel between hydrogen and oxygen when the residue was left on the pad and in the bottle of the rocket (after igniting). These types of bonding help scientists make the materials used to build our rocket (plastic bottle, construction paper, etc.). There are two types of changes involved in this project, physical changes and chemical changes. A physical change occurred when we took the materials and made them into the rocket. We did not change the substances, we changed what they looked like. The chemical change occurred with the fuel (hydrogen and oxygen); and when igniting it to launch the rocket, water a new substance was formed.

Science and technology are closely related topics. Science and technology are used to make products which are to make our lives more efficient and provide us with more leisure time. Technology (gadgets, tools, fuels, etc.) were developed and tested through Science. These items could range from a simple pulley to a complicated military super computer. Science and technology can be seen from the office where computers are used to type and keep track of records for the business. A farmer uses a tractor/planter/combine or irrigation system to grow, plant, and harvest their crops. Soil and water testing is done with the use of science and technology. Doctors use science and technology to diagnosis, treat, and hopefully cure many illness. Science and technology will continue to be a part of everyone's lives far into the future.

There are many ways to use science and technology, we should be using it to create more jobs and develop new fuels which are safe for the environment and efficient for our means of living (power for buildings and travel). Today our main source of power comes from fossil fuels, which are nonrenewable and not environmentally friendly. Alternative sources of power need to be developed and put into operation. Hydrogen and oxygen used to power our rocket meet both requirements, renewable and environmentally friendly. Our rocket launched successfully, we are now moving in the direction of solving our needs and helping to preserve and protect the environment. We had a successful launch and recovery of our rocket. NASA will be able to accomplish their future goals as they explore the universe and develop new techniques and devices to improve the quality of life on Earth. So let us travel to infinity and beyond!

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