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National Association of Rocketry Educator's Newsletter

October 2014

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In this issue

The ever beautiful October Sky

October is always one of my favorite months, not just because of the cool change of the seasons and the color of the falling leaves, but because it is my birthday. Granted it was more fun when I was young and not so much in the last few decades, but I was always happy to share my birthday with Sputnik. The launch of first man-made object to stay in orbit was a breakthrough and the beginning of a new era of technological accomplishment. The anniversary of that date in October happens to coincide with the anniversary of my arrival. I've always felt I had this cosmic connection to rocketry because of that as well as the allure of sending projectiles into the azure blue. This month is a good time to think about rockets; the weather is inviting, school is fully back in session, and TARC registration is open. Let the October Sky and Sputnik challenge you and your students to get out and launch rockets and have fun learning. Even if it's not your birthday.

Aim high!

Vince Huegele
NAR Education Chairman

2015 Team America Rocketry Challenge (TARC) Competition

Team America Rocketry Challenge (TARC) is an aerospace design and engineering event for teams of US secondary school students (7th through 12th grades) run by the NAR and the Aerospace Industries Association (AIA). Teams can be sponsored by schools or by non-profit youth organizations such as Scouts, 4-H, or Civil Air Patrol (but not the NAR or other rocketry organizations). The goal of TARC is to motivate students to pursue aerospace as an exciting career field, and it is co-sponsored by the American Association of Physics Teachers, Estes Industries, the Department of Defense, and NASA.

The first twelve Team America Rocketry Challenges, held in 2003 through 2014, were

the largest model rocket contests ever held. Co-sponsored by the NAR and the Aerospace Industries Association (AIA), the eight events together attracted 8,260 high-school teams made up of a total of over 65,000 students from all 50 states. These students had a serious interest in learning about aerospace design and engineering through model rocketry. The top 100 teams each year came to a final fly-off competition in mid May near Washington, DC, to compete for $60,000 in prizes and a free trip to either the Paris or the Farnborough air show in Europe. These teams were selected based on the scores reported from qualification flights that they conducted locally throughout the US.

2015 Team America Rocketry Challenge is now open for registration. Teams may register anytime between now and December 12, 2014. We have some cool things planned for the fall though, so register early and don't procrastinate!

The 2015 Challenge is as difficult as ever. Team rockets must carry a raw egg to 800 feet and back safely in 46-48 seconds. This year's challenge has a minimum length stipulation of 650 millimeters and requires rockets to return to Earth safely in two or more separate pieces. The portion with your egg and altimeter must use a single parachute, but the rest can return using any safe method. The top scoring teams in the first round of flights at the National Finals will face another challenge: new 775 foot and 45-47 second targets for a second round flight. The mission is challenging, but I know that you will once again rise to the occasion.

Another big change this year: no cap on the number of teams per school, but a maximum of the three best teams per school will be invited to the Finals. So, recruit all of your friends!

The top 100 teams from among all those who have entered will meet in a final fly-off competition on May 9, 2015 at Great Meadow, The Plains, VA. These top 100 teams will be selected based on the sum of duration and altitude scores reported from the two best of up to three local qualification flights that they conduct in front of an NAR Senior (adult) member observer at their choice of time up until the flight deadline of March 30, 2015.

All the rules, processes, and arrangements are in place to begin the thirteenth year of a highly successful outreach program dedicated to building the next generation of U.S. aerospace professionals and NAR leaders -- and is now firmly established in England, France, Japan, and Australia. I hope you will read the article about the TARC 2014 Finals appearing in the September-October issue of the NAR's "Sport Rocketry" magazine.

Trip Barber
NAR 4322
NAR TARC Manager

INSPIRING OTHERS

NASA

The Solar System Ambassadors Program

The Solar System Ambassadors Program is a public outreach program designed to work with motivated volunteers across the nation. These volunteers communicate the excitement of JPL's space exploration missions and information about recent discoveries to people in their local communities.

The Solar System Ambassadors Program builds on and expands the outstanding

efforts undertaken by the Galileo mission since 1997. Because of the success of the original Galileo Ambassadors program, JPL missions exploring Jupiter, Saturn, Mars, Asteroids, Comets, Earth, the Sun and the Universe now come together to expand the program's scope to the Solar System and beyond.

To arrange for a Solar System Ambassador event in your community, click on Meet the Ambassador, select your state or territory and review the entries. Ambassadors furnish short biographical statements for the purpose of detailing their areas of interest and expertise. Following the biography is a list of past events conducted by the Ambassador to further aid in decision making. Inquiries about an Ambassador's availability should be made by sending an email directly to the individual.

Check the "Calendar of Events" section as well to see if an Ambassador event will be occurring in your local community. For a listing of Solar System Ambassadors by name, visit the Directory of Ambassadors.

Exploration Design Challenge

Students from Kindergarten through 12th grade will have the opportunity to play a unique role in the future of human spaceflight through participation in NASA's Exploration Design Challenge, or EDC. NASA EDC invites students around the world to think and act like scientists in order to overcome one of the major hurdles of deep space long-duration exploration: the dangers associated with space radiation. Students taking part in the challenge will learn how to plan and design improved radiation shielding aboard the Orion Multi-Purpose Crew Vehicle. Currently being developed by NASA, Lockheed Martin and other partners to carry astronauts to space, the Orion will venture farther than humans have ever gone before.

Through a series of science, technology, engineering and mathematics (STEM) engagement activities, students in grades K-8 will analyze different materials that simulate space radiation shielding and recommend materials that best block radiation and protect astronauts. Students in grades 9-12 will perform engineering tasks as they apply what they learn to design shielding to protect a sensor on the Orion crew module from space radiation. After a review of the submitted design solutions, five finalist teams will be selected and matched with a mentor from NASA to test their designs in a virtual simulator. The winning team will then build a prototype radiation shield that will be analyzed and submitted to Lockheed Martin for flight certification on the inaugural flight of the Orion Exploration Flight Test, or EFT-1.

The five U.S. finalist teams from the grades 9-12 challenge will be invited to attend the EFT-1 launch, currently scheduled for November 2014. The names of all students, grades K-12, participating in the NASA EDC will fly aboard the spacecraft as honorary virtual crewmembers for Orion's first flight. The deadline to register students for the virtual crew is March 14, 2014.

For more information and to register online.
For more information about Orion, click here.
Email any questions about this opportunity to nasaedc@nianet.org.

Estes

Rockets and the Maker Movement

Have you heard of the Maker movement? If you haven't, just imagine a classroom where students learn by doing hands-on experimentation and design with trial and error, building and launching model rockets and creating miniature houses with

working electricity. Picture an environment where a kid's natural instinct to explore our world and solve problems is supported through invention and play.

The Maker movement was inspired by MAKE Magazine's annual Maker Faire. The Maker Faire is the "world's largest show and tell." Since the first Faire, this movement has spread through communities, businesses and into education. 10 high schools created "makerspaces" In a pilot program in California, offering students a chance to try welding, woodworking, machining, rockets and robotics among other Maker skills.

Is the Maker movement just another trend or is it here to stay? Is it just a fancy label for what teachers already know - that kids learn better through hands-on, self-directed learning? It's a fact that most teachers are already using some Maker elements in their classrooms when their students build models, rockets and volcanoes, or make puppets for putting on puppet shows. These types of activities have gone on for many years in schools, and the Maker movement is a perfect fit for these activities.

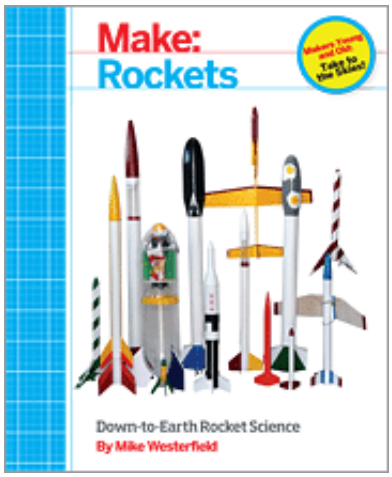
And here's another thought: by encouraging people to make things by hand, the Maker movement may be one of the most important ways to improve STEM education in the U.S. Why? Because it works outside of the realm of standardized testing and everything associated with it. The movement behind Maker Faires and MAKE Magazine should be one of the keys to helping kids discover science, technology, engineering and math in an exciting hands-on way.

How do model rockets fit into the Maker movement and STEM? Model rockets are a perfect fit, because you're building a model rocket (making it by hand with hands-on learning), launching it and conducting lots of experiments with it. Building, experimenting and playing are powerful ways to learn - and whether building and launching rockets are done at school or in youth groups, kids need lots more of this.

Favorite Maker resources:
Maker Faire Education Outreach: Learn how to start a Maker Faire at you school.
Makerspace: Explains how to set up a "makerspace" in your school.
DIY.org: Website where young Makers can share what they have created and meet other Makers.
MakeyMakey.com: An invention kit that lets students play video games with Play-Doh, make music with bananas and more.

New model rocket books coming out

Make: Rocketry by Mike Westerfield

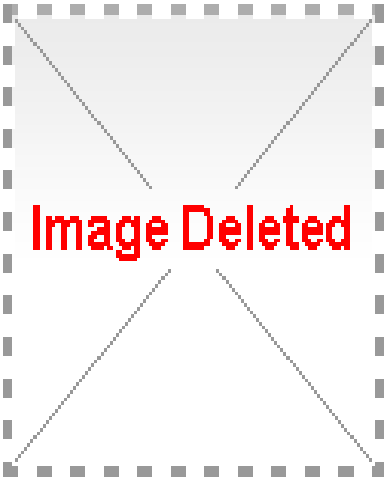


A new comprehensive discussion book on why rockets work and how to make them. It is much like Stine's Handbook of Model Rocketry but it has more detail and technical content. If you are looking to learn why and how rockets work, you will enjoy reading the very clear explanations of the physical concepts behind them. If you are the more hands on type, you can get right down to the business of building and seeing the action because it is all about making the rockets. Author Mike Westerfield says, "This is the rocket book I wished I had in high school," so teachers and students should take notice, there is a lot in it for

them. Order an e-copy or a print version!

Rocketry: Investigate the Science and Technology of Rockets and Ballistics with 25 Projects by Carla Mooney

Grade Level 4-6
Ages 9-12



There are many rocket books available but few are out as real primers geared toward the young reader or a total rocket newbie. Rocketry: Investigate the Science and Technology of Rockets and Ballistics introduces elementary level students to the fascinating world of rocketry and aerodynamics. Readers discover the history of rocket development, from the earliest fire arrows in China to modern-day space shuttles, as well as the main concepts of rocketry, including how rockets are launched, move through the atmosphere, and return to earth safely. Exploring the science behind rocket flight, kids learn how the forces of thrust, gravity, lift, and drag interact to determine a rocket's path. It all leads up to asking "what's next?" which would be NAR rocketry.

Combining hands-on activities with physics, chemistry, and mathematics, Rocketry brings fun to learning about the world of rocket science. Entertaining illustrations and fascinating sidebars illuminate the topic and bring it to life, while Words to Know highlighted and defined within the text reinforce new vocabulary. Projects include building a pneumatic rocket and launcher, determining the role of fins in rocket stability, and testing a rocket recovery system. Additional materials include a glossary, and a list of current reference works, websites, and Internet resources.

Sally Ride Online STEM Professional Development Program

To help educators effectively teach a STEM-based curriculum in the classroom, the Sally Ride Science Academy launched an online professional development training program.

The convenient, affordable online format provides elementary teachers of grades 3-8 and school counselors with online STEM training in background preparation, classroom activities, and teaching strategies, and lets them progress through the same key topics with discussions and project-based work moderated by course instructors at the traditional academy.

Based on the Canvas Learning Platform, the online training program includes real-time tools that allow users to interact with the instructor and to collaborate with other teachers. The program also features a notification tool to remind teachers about class discussions and assignments and an interface designed to provide easy access to online sessions that include videos, e-books, integrated media recordings, and virtual labs. The Canvas App Center offers a variety of smartphone apps for iOS and Android mobile devices.

"We know most students are engaged and curious about science and math in the early elementary grades," said Sally Ride Science CEO Sheryle Bolton. "But too many students -- particularly girls and under -- represented minorities -- lose interest in those disciplines by the end of middle school. Economists tell us that more than 80 percent of all jobs in the coming decades will require some kind of

STEM background, so it is essential for our nation's future that we help prepare students to seize this opportunity."

School districts in Alaska, Alabama, California, Illinois, Louisiana, Montana, Texas, Virginia and Washington, D.C. have access to this new program. Check with your district to see if it is available for you.

Foundation for Technology and Engineering Education Grant

The Foundation for Technology and Engineering Educators, in partnership with Pitsco/Hearlihy & Company, is accepting applications for technology and engineering education programs for all grade levels.

Through its Excellence in Teaching Technology and Engineering grant program, the foundation will award grants of $2,000 each to K-12 technology and engineering teachers to encourage the integration of a quality technology and engineering education program within their school's curriculum.

Applications must demonstrate evidence of an effective technology and engineering education program and show documented success in the integration of technology and engineering with other academic subjects. In addition, the application should include plans for professional development related to the anticipated grant.

To be eligible, applicants must be teachers (elementary or secondary) who are successfully integrating technology and engineering education within their school's curriculum. In addition, teachers must be ITEEA members and be registered for the ITEEA annual conference. Membership materials may be enclosed with the scholarship application.

See the Foundation for Technology and Engineering Educators Web site for eligibility and application guidelines

STEM Grants

Many companies offer grants to help provide the needed funds to bring core STEM curricula into the classroom. The Foundation for Rural Education and Development and the NEA foundation are two such companies. For a list of forty-eight other companies, please visit the Estes Educator "Find Funding" page.

National Coalition for Aviation and Space Education

Melbourne Air & Space Show Hosts First Aviation & Aerospace Career Day

Officials with the National Air, Sea & Space Foundation, organizers of the 2014 Melbourne Air & Space Show, today announced that the Foundation will host its inaugural Aerospace & Aviation Career Day on Oct. 3 at the Melbourne International Airport. This science, technology, engineering and math-based (STEM) initiative will take place just prior to the Melbourne Air & Space Show, which will be held Oct. 4-5. The show is sponsored by the Northrop Grumman Corporation.

Small Satellites for Secondary Students (S4)

In partnership with AeroPac and the Endeavour Institute, the Education and Public Outreach group at Sonoma State University (SSU) has just finished a week-long training at NASA Dryden's Aero Institute. Fourteen middle and high school teachers and four Girl Scout leaders learned how to solder, build, test and program small experimental payloads that can be launched on high-power rockets (HPRs) or flown on tethered weather balloons. This program, **Small Satellites**

for Secondary Students or S4, fills an important "missing link" in NASA's educational pipeline between Team America Rocketry Challenge (TARC) and sounding rocket flights usually conducted by graduate students at research universities.

The S4 program participants have created an educator's guide and associated videos, as well as a hardware, software and server platform for secondary students to create their own experiments, analyze, and share the data. Through S4, educators can build experimental payloads to fly on tethered weather balloons and/or rockets, enabling students to participate in the thrill of experimental design and implementation. The S4 program has created a hardware platform and software libraries are documented in an educator's guide and associated videos. This website also provides provides access to additional resources for the S4 community, including blog posts describing our progress on the project, links to software libraries, electrical schematics, and parts lists.

For more information about S4, please see: http://epo.sonoma.edu/s4
For a draft Educator package with software and circuit please see:http://s4.sonoma.edu/wp-content/uploads/2013/07/RocketEducatorGuide_062813.pdf

4-H

Rockets Away!

Study the science of rocketry through a variety of hands-on experiments for all ages. Members conclude this project by building and launching a model rocket from scratch or a kit.

National Science Youth Day

NAR partner, 4-H, is featuring aerospace for their National Science Youth Day this year October 8 and it will involve a special mission with a rocket. Called Rockets to the Rescue this activity is something any class can do to learn about simple ballistic motion. See what else NAR and 4-H are doing at http://www.nar.org/educational-resources/4-h-partnership/

As part of their partnership to get American youth engaged in science, technology, engineering and math (STEM) education, National 4-H Council and Lockheed Martin are launching the Teachers Bringing Science to Life contest that will provide resources and rewards for teachers who make STEM appealing to students. To enter, teachers must submit three photos of their students conducting the 4-H NYSD "Rockets to the Rescue" experiment and they will automatically be entered into a random drawing for a chance to win the grand prize--$1,000 and a STEM classroom makeover. You may also submit an optional 60-second video to receive a bonus entry.

Olympic Peninsula Rocketry 4-H

During a 3 Day event at Discovery Bay, Washington State, on 22-24 August, Olympic Peninsula Rocketry 4-H hosted their annual Pasture Blaster 5 & 10 Launch.

They celebrated their 6th Pasture Blaster and 11th anniversary as a 4 H club. The celebration included NAR competition events, Kids Crayon Parachute Duration Contest, and a Silent Auction with onsite food as well as rocket vendors. They had somewhere between 300 and 400 launches! If you missed it, start planning for next year now! What a grand time!!

RESOURCES

NAR Instructional Video

Several years ago the NAR and Aerospace Industries Association produced a one-hour instructional video "How to Build and Fly a Model Rocket" in support of student teams in the Team America Rocketry Challenge student rocket contest. Originally only available in DVD format, this useful resource is now available on YouTube at http://www.nar.org/educational-resources/.

TIP--Planning Considerations:

While model rocketry offers a rich set of learning experiences, teachers should keep a few items in mind as they plan and conduct lessons.

Construction Safety

Be aware that many children have never used an X-acto knife or equivalent. It is best to hold a separate learning session on knife safety rather than during a model building session. Another alternative for untrained youth is to completely eliminate the need for a hobby knife during the build or have an adult pre-cut parts needing a hobby knife before the session begins. If you do choose to have students use hobby knives, limit the number being used at any given time and closely supervise their use.

Launch Safety

Model rocketry was created in the late 1950's as a means by which non-professional individuals could build and fly their own rocket powered models. The hobby was structured to safely pursue an activity that has a potential for personal injury and property damage. The use of manufactured motors to minimize the mixing and handling of propellants was a major factor in model rocketry's safety success. Safety procedures for the construction and operation of the models, based on aerospace industry practices, were another factor in this excellent safety record.

The primary safety officers are the Range Safety Officer (RSO) and the safety check-in officer. The RSO is responsible for safe operation of the rocketry range. The safety check-in officer is responsible for verification of the vehicle flight-worthiness. He will inspect the vehicles for structural integrity, systems condition (e.g. recovery system, motor restraint), motor certification, and dynamic properties (e.g. center of gravity, center of pressure).

NAR Sections all over the country hold numerous sport launches each year, at which you are welcome to come fly. The Section takes care of providing the permits, field, launch equipment, and range organization and safety; just bring your rockets, motors, and flight supplies and join in the fun! With sport launches accounting for over twelve million rocket flights every year nationwide, the NAR offers a number of services for the sport modeler.

NAR offers Teachers and Youth Group Leaders Resources

The NAR offers Free Resource downloads produced by members who have

helped teachers and youth group leaders like yourself all over the United States.

Civil Air Patrol

Aerospace Education Library

If you enjoy learning about aviation and aircraft or launch vehicles and spacecraft as well as the science behind all of this, watch this awesome video then grab your favorite beverage and turn on some reading music. The Civil Air patrol has a great deal for you! Take a look at all the available educational resources on their site! Want more? Check this one out!!

National Coalition for Aviation and Space Education (NCASE)

NCASE Guide

Aviation and space study is a highly motivational subject area for children. The wonders of flight along with the exciting achievements being made challenge the imagination. Teachers who use aviation/space education in their classes can favorably influence large numbers of students over a long period of time. And enthusiastic young people tend to have a multiplier effect as they actively share their interest in aviation with family and friends. Aviation activities used in the classroom or for clubs or youth groups can serve as a catalyst to motivate young adults to seek careers in the industry. The teaching resource materials listed on the NCASE guide are offered directly by NCASE members.

Visit the NCASE guide for a complete interactive list of all member groups and the books, videos, and other resources they have available for you! For more information or to place an order, please contact the member listed.

Space History

7 November 1967--Surveyor 6 was the sixth lunar lander of the American unmanned Surveyor program to reach the surface of the Moon.

Launched November 7, 1967, it landed on November 10, 1967. Surveyor 6 landed on the Sinus Medii. Mass on landing: 299.6 kg (660.5 lb). A total of 30,027 images were transmitted to Earth.

This spacecraft was the fourth of the Surveyor series to successfully achieve a soft landing on the moon, obtain post landing television pictures, determine the abundance of the chemical elements in the lunar soil, obtain touchdown dynamics data, obtain thermal and radar reflectivity data, and conduct a Vernier engine erosion experiment. Virtually identical to Surveyor 5, this spacecraft carried a television camera, a small bar magnet attached to one footpad, and an alpha-scattering instrument as well as the necessary engineering equipment. It landed on November 10, 1967, in Sinus Medii, 0.49 degree in latitude and 1.40 degree w longitude (selenographic coordinates) - the center of the moon's visible hemisphere. This spacecraft accomplished all planned objectives. The successful completion of this mission satisfied the Surveyor program's obligation to the Apollo project. On November 24, 1967, the spacecraft was shut down for the 2 week lunar night. Contact was made on December 14, 1967, but no useful data were obtained.

Lunar soil surveys were completed using photographic and alpha particle backscattering methods. A similar instruments, the APXS, was used onboard several

Mars missions.

In a further test of space technology Surveyor 6's engines were restarted and burned for 2.5 seconds in the first Lunar liftoff on November 17 at 10:32 UTC. This created 150 lbf (700 N) of thrust and lifted the vehicle 12 feet (4 m) from the Lunar surface. After moving west 8 ft (2.5 m) the spacecraft was once again successfully soft landed. The spacecraft continued functioning as designed.

16 November 1973--Skylab 4 was the last Skylab mission.

Gerald Carr, William Pogue, and Edward Gibson arrived aboard Skylab to find that they had company - three figures dressed in flight suits. Upon closer inspection, they found their companions were three dummies, complete with Skylab 4 mission emblems and name tags which had been left there by Al Bean, Jack Lousma, and Owen Garriott at the end of Skylab 3.

The all-rookie astronaut crew had problems adjusting to the same workload level as their predecessors when activating the workshop. Things got off to a bad start after the crew attempted to hide one astronaut's early space sickness from flight surgeons, a fact discovered by mission controllers after downloading onboard voice recordings. The crew's initial task of unloading and stowing the thousands of items needed for their lengthy mission also proved to be overwhelming. The schedule for the activation sequence dictated lengthy work periods with a large variety of tasks to be performed, and the crew soon found themselves tired and behind schedule.

As the activation of Skylab progressed, the astronauts complained of being pushed too hard. Ground crews disagreed; they felt that the astronauts were not working long enough or hard enough. During the course of the mission, this culminated in a radio conference to air frustrations. Following this, the workload schedule was modified, and by the end of their mission the crew had completed even more work than had been planned before launch. The experiences of the crew and ground controllers provided important lessons in planning subsequent manned spaceflight work schedules.
On Thanksgiving Day, Gibson and Pogue accomplished a 6 and a half hour spacewalk. The first part of their spacewalk was spent replacing film in the solar observatory. The remainder of the time was used to repair a malfunctioning antenna.

The crew reported that the food was good, but slightly bland. The crew would have preferred to use more condiments to enhance the taste of the food. The amount of salt they could use was restricted for medical purposes. The quantity and type of food consumed was rigidly controlled because of their strict diet.

Seven days into their mission, a problem developed in the Skylab attitude control gyroscope system, which threatened to bring an early end to the mission. Skylab depended upon three large gyroscopes, sized so that any two of them could provide sufficient control and maneuver Skylab as desired. The third acted as a backup in the event of failure of one of the others. The gyroscope failure was attributed to insufficient lubrication. Later in the mission, a second gyroscope showed similar problems, but special temperature control and load reduction procedures kept the second one operating, and no further problems occurred.

The crew spent many hours studying the Earth. Carr and Pogue alternately manned controls, operating the sensing devices which measured and photographed selected features on the Earth's surface. The crew also made solar observations, recording about 75,000 new telescopic images of the Sun. Images were taken in the X-ray,

ultraviolet, and visible portions of the spectrum.

As the end of their mission drew closer, Gibson continued his watch of the solar surface. On January 21, 1974, an active region on the Sun's surface formed a bright spot which intensified and grew. Gibson quickly began filming the sequence as the bright spot erupted. This film was the first recording from space of the birth of a solar flare.

On December 13, the crew sighted Comet Kohoutek and trained the solar observatory and hand-held cameras on it. They gathered spectra on it using the Far Ultraviolet Camera /Spectrograph. They continued to photograph it as it approached the Sun. On December 30, as it swept out from behind the Sun, Carr and Gibson spotted it as they were performing a spacewalk.

The crew also photographed the Earth from orbit. Despite instructions not to do so, the crew (perhaps inadvertently) photographed Area 51, causing a minor dispute between various government agencies as to whether the photographs showing this secret facility should be released. In the end, the picture was published along with all others in NASA's Skylab image archive, but remained unnoticed for years.

Skylab 4 completed 1,214 Earth orbits and four EVAs totaling 22 hours, 13 minutes. They traveled 34.5 million miles (55,500,000 km) in 84 days, 1 hour and 16 minutes in space.

Manufacturers

Looking for a special rocket to highlight a particular aspect of your lesson plan? Take a look at the following companies for some unusual ideas:

Fliskits

Fliskits offers a wide variety of kits and services...From science fiction topics to a scale model of the worlds first successful liquid fueled rocket was designed, built and flown by Robert H. Goddard Fliskits has you covered...To include an educational section where you will find opportunities for lesson plans and discounts to educators.

Odd'l Rockets

Whether you are just beginning to integrate rocketry into your curriculum or have been utilizing it for years, Odd'l Rockets offers something new for everyone. From their latest renditions of the Little Green Man and Pigasus (pigs really do fly!) to the unique recovery of their Breakaway, Cyclone and Sputnik kits, you are sure to find something to stimulate learning.

Rocketarium

If you are looking for a special sport flier, military scale replicas, scale sounding rockets or even multi-stage and cluster rockets, Rocketarium is the place. You'll find a wide selection of model rockets, parts, and supplies; there's something for every lesson and every budget!

Aerospace Speciality Products

From competition kits to Scale replicas and educational kits, Aerospace Speciality Products will stir your imagination! Their two-stage WAC Corporal replica can be built in two versions to accommodate your recovery field. Looking for a small field scale option? Check out their 13mm motor replica kits like the Sandia Sandhawk!

Quick Links...

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Our Website
NAR Teacher Resources
Find a Local Club
Model Rocket Safety Code

Join Our Mailing List!

National Association of Rocketry | P. O. Box 407 | Marion | IA | 52302
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