

The Home Forum®

FOR STUDENT SCIENTISTS ACROSS THE US

The sky's no limit



YOU DON'T HAVE to be a rocket scientist to put an experiment into space. Students across the country have a chance every year to enter a contest sponsored by the National Aeronautics and Space Administration (NASA). Some winners help put their projects on a space

shuttle or rocket. Others receive scholarships to Space Camp in Huntsville, Ala. Every winner gets a special award presented by a NASA representative – sometimes by an astronaut.

Through the NASA Student Involvement Program (NSIP), six competitions are offered each year. (See list at left.) Students can compete as individuals, teams, or entire classes. Contests are open to students in kindergarten through high school.

Contests range from studying the land, air, and water in a small site on Earth, to planning a mission to Mars.

For some of the competitions, students design projects that may actually be launched into space. "Sometimes students have a better chance to put their experiments into space than scientists or engineers," says Farzad Mahootian, NSIP's director. Many scientists are waiting in line to get their projects onto a space shuttle. But the winners of the Space Flight Opportunities contest have a guaranteed slot and all the help they need from NASA.

You don't have to be a genius to win

Glenbrook North High School in Northbrook, Ill., has produced a number of winning teams in the past few years. Physics teacher Lynne Zielinski supervises the efforts and stresses that kids don't have to be geniuses to join in and even win. "Some of the experiments have been pretty sim-

ple," she says. "And even on a complex project, students get a lot of help from teachers and scientists." Seniors Stanley Von Medvey and Joel Senner are members of the Northbrook team that created an experiment called Environment 2.0. Last June, it was sent into space aboard a sub-orbital rocket. The experiment monitored the environment inside a rocket during flight. That's something even NASA experts want to learn more about.

"We measured acceleration, magnetic field, pressure, temperature, and radiation," Stanley says. "It was pretty exciting, watching the rocket go up and knowing your experiment was in there." Team members are still analyzing data from the sensors in the rocket. Joel is also working on putting the results to music.

"We're using the data from the different sensors to add different tonal qualities to 'Twinkle, Twinkle Little Star,'" he says. Ms. Zielinski explains that scientists have done this before, turning data into music to get a better understanding of results. (Glenbrook students' projects are on their site: gbn.glenbrook.k12.il.us/GADGET/home.htm.)

There are two categories for the contests that are sent into space. One involves placing projects on a space shuttle. The other is for projects that can be launched from a small rocket that flies above the atmosphere (called a "sounding rocket").

Each year, four projects are selected as flight-worthy for each category. The eight winning teams get a free trip to Wallops Flight Facility at Wallops Island, Va., during Student Flight Week in June. There, students with space-shuttle projects prepare their experiments for delivery to the Kennedy Space Center. Teams with projects that will ride on the sounding rocket prepare their projects and, if weather allows, watch the rocket launch.

'It made me want to work at NASA'

Anat Cohen worked on an "aeroponics" experiment at Glenbrook that was chosen for a shuttle launch. It studies how plants grow in space.

"It was really a great experience," she says of her trip to Wallops. "They were very good to us, very friendly. They showed us all around the facility, gave us coats with our names on them, and let us go through a launch sequence. It made me want to work at NASA." Her project is still waiting for its shuttle flight.

Some of the competitions are not designed for outer space, but can still be exciting. Two years ago, four native American seventh-graders from the Tuba City (Ariz.) Boarding School won a regional prize in the Aeronautics and Space Science Journalism category. They produced a video celebrating the 30th anniversary of the first lunar landing. It included historical data, interviews with astronauts and other space-program officials, and information on how astronauts trained at Meteor Crater, Ariz., near their school. Their award was presented by John Herrington, the first native American astronaut.



NASA

Flying high

(Front to back) Ravi Raghuram, Aditya Devalapalli, and Alex Hornstein from the North Carolina School of Science and Mathematics, a high school in Durham, N.C., celebrate the recovery of a rocket that carried their radiation experiment 35 miles high at NASA's Wallops Island, Va., facility, last June.

NASA competition categories

My Planet, Earth: Study the air, land, and water at a selected site in your neighborhood. Competitions for grades K-1 and 2-4.

Science & Technology Journalism: Develop a print or video news report about a specific topic in aviation and space exploration. Competitions for grades K-1, 2-4, 5-8, and 9-12.

Aerospace Technology Engineering Challenge: Build and test a structure that can withstand the forces of launch. For grades 5-8.

Design a Mission to Mars: Define a research question on an aspect of Mars and describe a mission to try to answer that question. For grades 5-8 and 9-12.

Watching Earth Change: Select a natural or human-induced change to the Earth and describe a research mission to study the change. For grades 5-8 and 9-12.

Space Flight Opportunities: Select a research topic and design an experiment for a rocket or space shuttle to explore it. Create a proposal describing the experiment. Winning experiments will be built by the students and launched by NASA. For grades 9-12.

Information, entry packets, and lists of previous winners are at:

www.nsip.net/index.cfm. Here you will also find suggestions on how to create a winning entry and instructions for entering. Entry deadlines are in January. For each category, eight regional winners and an overall national winner are selected.



NASA

TEEN POWER: Endeavor lifted off from Cape Canaveral, Fla., on Dec. 5, 2001. Among the experiments aboard was one to test whether fluids can vibrate three-dimensionally in space. It was built by students at Glenbrook North High School in Northbrook, Ill.

Sharon J. Huntington



WINNING TEAM: Physics teacher Lynne Zielinski (far left) with (l. to r.) Brian Wojeck, Anat Cohen, Andrew Glazer, and Vladimir Gutman, students at Glenbrook North High School in Northbrook, Ill. Their 'aerponics' experiment (shown) was chosen to fly aboard a space shuttle someday.

NASA

Persist and win, kids say

ONE of the most important things to remember, say students from Glenbrook North High School, is never to give up. They know: Their school has won several NASA student-involvement competitions.

Juniors Vladimir Gutman and Andrew Glazer are working on an aerponics experiment that eventually will be launched on the space shuttle. It explores how plants grow in space. They began working on the project as freshmen.

Their four-person team inherited the project from some graduating seniors. "The first year it was entered it didn't win," Andrew says. "So we redesigned it and resubmitted it, and it won."

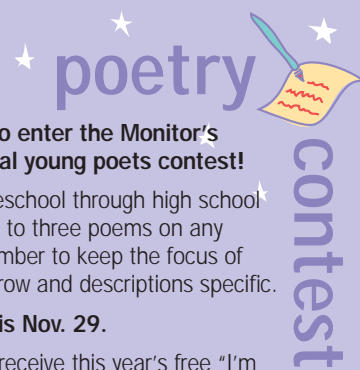
The team then built the experiment and took it to Student Launch Week at NASA's Wallops Flight Facility. It was tested in a machine that simulates the stress of launch. Their experiment failed the vibration test. So they fixed it. Now they're preparing to try again. It has taken a lot of time and work, but they all feel it was worth it. "We got to work with cool people and work on cool science," Vladimir says. "The NASA engineers helped us a lot."

"Everything that can go wrong, will," says Joel Senner. His experiment studying the environment inside a rocket was finally launched last June. "Things were going wrong right up to the day of the launch," he says, "but we just kept at it, re-designing and fixing, and getting everything to interface perfectly."

That ability to keep trying even when things keep going wrong is important in preparing and designing entries for the contest, says teacher Lynne Zielinski: "Students have to

start early and keep trying out their experiments, learning and redesigning as they go along." But, win or lose, students in the contest discover an amazing amount. They learn how to do real research, how to write scientific papers, how to build things. They practice art (to make drawings and electronic schematics), and they learn that science involves ingenuity, math, writing, and making presentations, as well as learning to work with teams, mentors, and professionals. They also learn that it's OK to fail. That's when a lot of the learning happens that finally results in success.

S.J.H.



Don't forget to enter the Monitor's seventh annual young poets contest!

Students in preschool through high school may submit up to three poems on any subject. Remember to keep the focus of your poem narrow and descriptions specific.

The deadline is Nov. 29.

If you'd like to receive this year's free "I'm a poet" button, enclose a self-addressed, stamped (49 cents) envelope with your entry. The winners will appear in December.

For entry forms, tips, winning poems from past years, and a contest poster that you can print out, go to csmonitor.com/youngpoets.

E-mail poems to:
homeforum@csmonitor.com
or mail them to:
The Home Forum
Young Poets Contest, P02-20
The Christian Science Monitor
One Norway Street
Boston, MA 02115

● ▲ TODAY'S ARTICLE ON CHRISTIAN SCIENCE ▲ ●

For kids

Music notes – and the one and only you

WHEN I FIRST START practicing a new piece on the piano, I usually have to go pretty slowly. I need to make sure that I'm playing each note correctly.

Some pieces are harder than others. Sometimes there are a bunch of notes in a row that you're supposed to play really fast. Other times, the piece might have a lot of what are called accidentals. These are notes that come as a surprise. Because they're a surprise, they can trip your fingers up pretty easily.

Even when I want to be able to play a piece of music as fast as it's supposed to be played, it often takes me a few times of going through it slowly before I really get the hang of it. I want to make sure I'm playing the right notes at the right times and not leaving any notes out. It's hard to believe, but the sound of a piece of music can change dramatically even if just one note is missed.

My piano playing has made me think a lot about the importance of every note. It's not just that the sound of one piece could change if a note were left out. If we lost a note for good – like middle C, for example – the whole of music would change. Every symphony ever written and every song ever sung would be missing something essential.

So every note is important. Each one matters and each one has value. Just because one person doesn't like middle C doesn't make middle C any less significant. One person's opinion can't change the value of middle C or affect its individual place on the musical scale.

These ideas helped me when I felt people didn't like me because of who I was. I didn't follow the crowd, and at first, I was OK with that. But after a while, it was harder to stand up for who I was because who I was was different. Some people didn't like that about me, and soon I didn't like that about myself.

As I prayed about this, it struck me that in the same way that every piece of music would be different if just one note were missing, God's creation would be totally different if one of His children, His ideas, were missing. This

was a neat thought. But was it actually true? At first I had a hard time believing that I mattered that much.

But there was something in the Bible, in the book of Genesis, that made me think again. It's a passage that says, "Thus the heavens and the earth were finished, and all the host of them" (Gen. 2:1). The word that made me stop and think was *finished*. That meant God's creation is complete. And *complete* means that no more is needed and no less is needed. But everything that God made – which the passage before tells us was "very good" – is needed.

This helped me a lot. It showed me that because I was God's idea, I was needed for the completeness of creation. "You're the only you there is," I realized at one point. That made me feel special – and valuable.

I realized that even if no one else thought so, I did have worth. My individuality mattered to God because He was the one who made me. And because God made me, I could stand strong in who I was. What other people thought couldn't change the fact that I was important to and loved by God.

The more I appreciated the special way I expressed God, the easier it was for me to love who I was. Soon, I met other people who also liked and appreciated me. In fact, many of them thought it was neat that I didn't follow the crowd. It was one of the reasons they liked me.

Like notes on a scale, each of us has a special place in God's creation – a place no one else can ever take. And just like a symphony needs middle C, so God needs each one of us. That means you matter. God needs your expression of Him.

The divine Mind maintains all identities, from a blade of grass to a star, as distinct and eternal.

Mary Baker Eddy
(founder of the Monitor)

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Soon I didn't like myself.

For inspirational articles, discussions, chats,
e-cards and more everyday, go to:

 **spirituality.com**
A site inspired by Science and Health