

ENERGY Education newsletter

November/December 2004



Congratulations, Teachers! FirstEnergy Announces the 2004-2005 Math, Science & Technology Education Grant Awards

Thirty-nine educators from Ohio, Pennsylvania and New Jersey have been awarded this year's FirstEnergy Math, Science & Technology Education Grants. The creative, student-centered programs developed by these teachers address a wide range of student needs and learning opportunities. We are pleased to offer this award program, which recognizes and supports innovative teaching in subject areas of great importance to our country's future.

Here are summaries of some of this year's award-winning projects:

Bringing Understanding Through Modern Media

Marcia Roth, of Catholic Central Jr./Sr. High School in Springfield, Ohio, has developed a program to help teachers use modern media. Drawing on a digital video collection, teachers will learn and then instruct their students in creating PowerPoint presentations featuring digital video clips to illustrate math and science concepts.

New Ways to Use Math Facts: Using Games to Help LD Students

Martha Bawn, an intervention specialist for the Mansfield, Ohio, City Schools, has created a program that uses special board games to help students with math-related learning disabilities. As they play the games, LD students will develop, demonstrate and track their growing knowledge of basic number facts and the four math operations.

Creating and Playing Tunes on Panpipes

Susan Pusbach is a vocal music teacher at Saegertown, Pennsylvania, Elementary School. Her students will research the history of the pentatonic panpipe, create their own instruments, and then perform tunes they have composed themselves. This project draws on skills in math, science, social studies, geography, technology, music and art.

Space Camp

Jeffrey Kuntz, a teacher at West End Elementary, and John Snyder, a teacher at Parkview Elementary, both in the Punxsutawney Pennsylvania Area School District, have created Space Camp, a three-week, hands-on unit for fifth-graders that focuses on the sun, moon, stars and space travel. Activities for the students include making their own telescopes, launching rockets and eating space food.

How Will You Handle Your Money?

Diana Kaiser and Ellen Blashkowski of GMB Middle School in Jamesburg, New Jersey, will take their eighth-graders on an "economic journey." The students will learn essential real-life skills through simulated activities that include opening and maintaining checking accounts, applying for loans, and maintaining a budget. Parents and local bankers will assist with this project.

www.durbanavenueweather.com

Patricia Bryce teaches fourth-grade math, science, English, reading and social studies at Durban Avenue School in Hopatcong, New Jersey. Her project, www.durbanavenueweather.com, helps students build skills in all of those subject areas – and horticulture as well. As they record and post observations of the weather, the students will determine the best time to begin Spring plantings.

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- 3 The Cutting Edge
- 4 Educational Resources

FirstEnergy Corp.
Community Initiatives Dept.
76 South Main Street
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Electric Operating Companies:

- Ohio Edison
- The Illuminating Company
- Toledo Edison
- Metropolitan Edison
- Pennsylvania Electric
- Penn Power
- Jersey Central Power & Light

2004-2005 FirstEnergy Mathematics, Science & Technology Education Grant Recipients

OHIO

Akron

Ellen Johnson
Ida B. Wells Community Academy
"A Comprehensive Math & Science Program"

Avon Lake

Pamela J. Geraci
Troy Intermediate School
"Lego Mindstorms/Robotics"

Boardman

Jeanne Riser
Boardman Center Middle School
"Catapulting the Math of Science – Mastering Metric Measurement"

Cleveland

Annemarie A. Rajnicek
Saint Patrick School West Park
"Headphones for Education"

Columbiana

Susan Kershner
Crestview Local School District
"Making the Connections: Science, Math, Literacy & Technology"

Madison

Mark Fickenscher
Madison High School
"Hydrogen Oxygen Fuel Cells"

Mansfield

Martha Bawn
Mansfield City Schools
"New Ways to Learn Math Facts: Using Games to Help LD Students"

Painesville

Roberta Ajdinovich
James H. Porter Center for Science & Math
"Current Events in Electricity"

Springfield

Marcia Roth
Catholic Central Jr/Sr High School
"Bringing Understanding Through New Media"

Toledo

Skott Herr
Aurora Academy
"Masters in Measurement"

Toledo

Eric S. Polesovsky
Glass City Academy
"The Electrifying Science Fair"

Twinsburg

Cara McPherson
Twinsburg High School
"Promoting Algebra Success for All Students"



Youngstown

Holly DeBernardo
Youngstown Early College High School
"Replicating Mendeleev"

Youngstown

Jennifer Mihok
Zion Christian School
"Calming the Storm"

PENNSYLVANIA

Altoona

Shelby Hite
Logan Elementary School
"Math-in-a-Bag"

Ebensburg

Teresa Soyka
Cambria Elementary School
"Wizards of Sparks"

Ebensburg

Cathleen Lykens
Holy Name Elementary School
"The Study of Electric Charge, Atoms & Electric Cells"

Hollidaysburg

Nancy Salguero
Hollidaysburg Catholic School
"Chill Out, Get Moving and Turn on the Lights to Graphing"

Punxsutawney

Jeffrey J. Kuntz & John P. Snyder
West End Elementary School
"Space Camp"

Reading

Karen Weinhold & Tracy Powell
Exeter Junior High School
"Shocking Science"

Reading

Paula Lovello
Riverside Elementary School
"Hard Math the Easy Way"

Saegertown

Susan L. Pusbach
Saegertown Elementary School
"Creating & Playing Original Tunes on Pentatonic Panpipes with Fourth Graders"



NEW JERSEY

Asbury Park

Casey Miles
Asbury Park Alternative Middle School
"School Pride"

Chatham

Stephanie Zavacki
Chatham High School
"Chatham We Have Liftoff – The Design & Science of Rocketry. It's a Blast!"

Clarksburg

Michelle Aquino
Millstone Township Middle School
"Exemplars Math Project"

Glen Gardner

Abby Makoski & Brian Palazzi
Voorhees High School
"Snapshot! Investigating Geometric Figures"

Hopatcong

Patricia A. Bryce
Durban Avenue School
"www.durbanavenueweather.com"

Hopatcong

Carmela Catizone
Durban Avenue School
"Electrified Houses"

Jamesburg

Diana Kaiser & Ellen Blashkowski
GMB Middle School
"How Will You Handle Your Money?"

Leonardo

Gayle Sheehan
Leonardo Grade School
"The Life Cycle of a Butterfly"

Monroe Township

Judy P. Leonard
Woodland School
"Birds of Woodland School"

Mt. Tabor

Gail Lingeran & Laura Nelson
Mt. Tabor Elementary School
"Bird and Butterfly Garden"

Sergeantsville

Laura Ninaltowski
Delaware Township School
"Children Saving Monarchs"

Toms River

Kenneth Hartzfeld
Toms River High School – South
"The Dynamics of Rockets"



Architect Floats an Idea

Marcin Panpuch, an architect working in London, England has designed a spherical floating house that he estimates will cost just \$45,000 and use less energy than a conventional home. The spherical shape reduces heat loss, since a sphere has 25 percent less surface area than a cube. Solar cells in the industrial-strength plastic shell provide power for the home. In addition, the 50-foot diameter structure offers panoramic views of the river where it is located.

www.popsi.com, October 11, 2004

Getting Down to Detail

Scientists at Oak Ridge National Laboratory in Tennessee have developed a microscope that provides high resolution at the atomic level. Microscopes that show individual atoms are nothing new, but this device – with a resolution of 0.6 angstroms or roughly one 400-millionth of an inch – offers greater clarity than physicists have had up to now. The microscope fires a narrow beam of electrons and tracks electrons that bounce off the nuclei of atoms, revealing three-dimensional structure at the atomic level.

The New York Times, October 5, 2004

Air Force Cadets Work on Space Elevator

Cadets at the U.S. Air Force Academy are researching the concept of an elevator that could lift payloads into space. Only recently has this idea been the subject of serious research. LiftPort Group, a Bremerton, Washington company that is working with the cadet researchers, proposes an elevator consisting of a carbon nanotube composite ribbon extending 62,000 miles from Earth to space. Anchored to a sea platform located in the Pacific Ocean near the equator, the elevator would stretch to a small counterweight in space. Mechanical lifters attached to the ribbon would carry satellites, solar power systems and even people into space and back to Earth.

Small Times, September 21, 2004

Mathematicians to Study Vibration

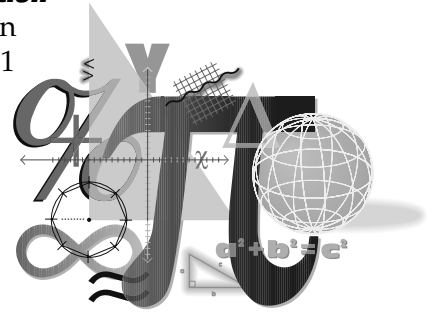
The National Science Foundation has awarded a grant of almost \$1 million to a team of five mathematicians studying vibration. Their investigations will focus on trying to determine how the shape of an object influences the frequency and geometry of its vibrations. Scientists in diverse fields are interested in the results of this study. In medicine, researchers are hoping that a better understanding of wave behavior will lead to new non-invasive imaging techniques, similar to MRI. Earthquake scientists are watching for developments that will help them use non-invasive imaging on a large scale to discern what happens beneath Earth's crust.

Mercury News, October 11, 2004

Toronto – a Cool City


The city of Toronto is one of the first to use Deep Lake Water Cooling (DLWC) technology to reduce its energy dependence. This summer nearly a dozen downtown office towers and bank buildings hooked into the city's new \$170-million cooling project. The project pumps water in a closed loop of pipes running from the bottom of Lake Ontario through the buildings. The cool water picks up heat from air conditioning systems and returns to the lake where it cools again. This process is expected to eventually reduce the city's annual power usage by more than 40 megawatts and cut greenhouse gas emissions by nearly 40,000 metric tons – the equivalent of taking 8,000 cars off the streets.


Scientific American, September 27, 2004





Visit our website at
www.firstenergycorp.com/education


Educational Resources Available


 The Energy Information Administration has **updated the kids' pages on its web site**. For their new energy facts, games and classroom activities, visit www.eia.doe.gov/kids.

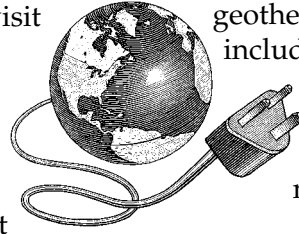
 Energy Hog Challenge **teacher and student guides are available free** from the National Energy Education Development Project (NEED). The guides suggest hands-on activities that address national science standards and are easily integrated into current curriculum. Order copies by contacting NEED at 1-800-875-5029 or energyhog@need.org.


 "Energy for Keeps: Electricity from Renewable Energy" is an **award-winning guidebook** from Educators for the Environment. To preview the book, download free copies or order print copies, go to www.energyforkeeps.org/preview.html.

 The Web site of Federal Resources for Educational Excellence (FREE) is designed to make it easy to **find teaching and learning resources** from a wide range of federal agencies and organizations. Visit www.ed.gov/free and browse by subject or search for a specific topic.


 Looking for **math brain teasers** for your students? Go to www.eduplace.com/math/brain for archived weekly puzzles for grades 3-4, 5-6 and 7-8.


 The Geothermal Education Office offers **grade-appropriate "Free Stuff"** packages of information on geothermal energy. Packages include posters, brochures, fact sheets and booklets. To request your package, visit geothermal.marlin.org/edmatl.html.

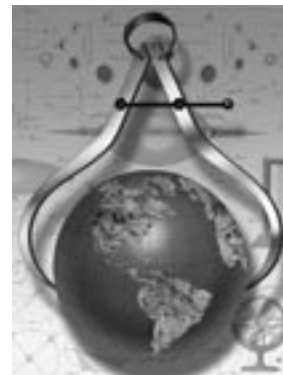


 Scientists at the Berkeley Lab **answer students' questions** on the "Did you ever wonder?" pages of their Web site at www.lbl.gov/wonder. Topics include "Why the digits of pi look random," and "How to carve with light."

 For an illustrated explanation of **how a fuel cell works**, visit the California Fuel Cell Partnership's Web site at www.drivingthefuture.org/fuel-vehl.html.

 The U.S. Mint offers **classroom activities** related to math, science and technology. Go to www.usmint.gov/kids/flashIndex.cfm for free lesson plans.

 2005 has been named **World Year of Physics**. For physics activities, including PhysicsQuest for middle school students and a high school Physics Talent Search, visit www.physics2005.org.



"We know what we are, but know not what we may be."

– Shakespeare