

Newsletter and Report

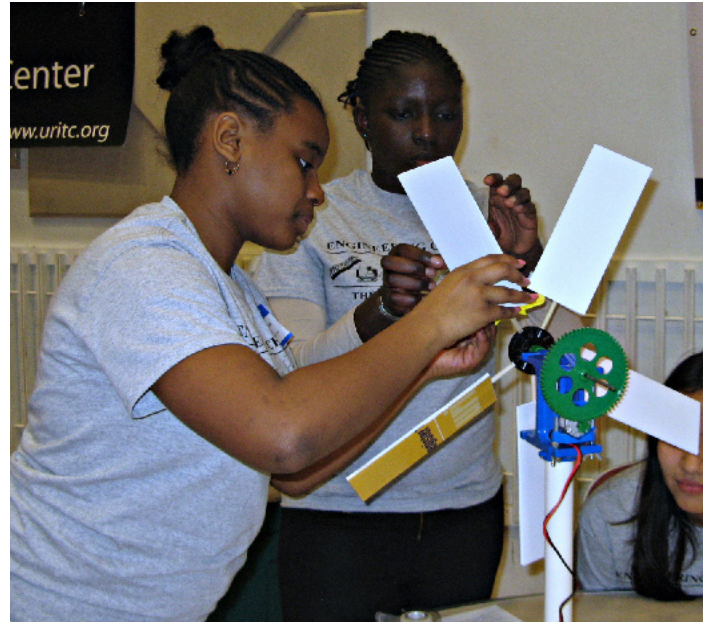
Volume 19 No. 2, April 2013

High School Engineering Challenge Weekend

Design, Build and Test Models of Solar Vehicles

SMILE students from seven high schools were given the challenge of constructing a vehicle that could be powered by a solar panel. Vehicles were then timed on a 12 meter track. SMILE students are bright and they are on a STEM (science, technology, engineering, and mathematics) track. We look to them to design our future transportation systems that will emerge in the 21st century. In the coming decades, transportation in the U.S. is expected to change radically in response to environmental constraints, fluctuating oil availability and economic factors.

The change in the transportation system will be defined largely by these students' choices, skills and imaginations. Current solar cars depend on photovoltaic



Middle School Engineering Challenge Weekend

Design, Build and Test Models of Wind Turbine Generator

SMILE students from Central Falls, North Kingstown, South Kingstown, West Warwick, and Woonsocket came onto the University of Rhode Island campus with knowledge of different wind turbine blade designs and gear ratios.

These students became engineers by applying prior knowledge to design blade shapes from new materials, building a nacelle, and testing the turbine's production of electrical energy. They learned to work with SMILE students from other clubs, and with college students in science, engineering, and other majors. They also ate meals in a dining hall, and enjoyed recreation at Tootell Gym. They learned a lot about student life on a college campus and the many activities at URI.



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Middle School Challenge Weekend

Students arrived early Friday morning at the URI Memorial Union Ballroom, were greeted by URI leadership students and organized into teams. Dr. Deborah Rosen, Director of the URI Transportation Center, welcomed the students to the University of Rhode Island. Mark DePasquale, CEO of Wind Energy Development LLC, showed students through a series of power point slides how a 1.5 megawatt wind turbine was constructed near his house in North Kingstown. Students were amazed at the 34 m blade lengths and 88 m tower. Students and teachers got a better understanding of what is involved in wind turbine development on land. Carol Englander, Director of the SMILE Program, presented the Challenge.

With their URI student mentors, students, in mixed teams from all 5 school districts, immediately got busy with team building activities which included division of labor, starting blade design, and the nacelle and tower construction.

The design and construction phase of the engineering project was definitely challenging. Construction equipment included KidWind nacelles and bases, corrugated plastic, cardboard, dowels, clear tape and scissors. After the construction of the tower and nacelle, students determine the size, number, shape, angle, distance to the hub, and materials, that the blades needed to maximize the production of energy. They systematically analyzed one variable at a time to find the best combination of variables.

Students ate lunch in the dining halls and returned to their project. Mid afternoon, student leadership mentors led groups of students in ice breaker activities. They returned to turbine blade design, building and testing, had dinner at the dining halls, and returned to their wind turbine testing and redesign. The results were impressive. All turbines generated electricity, the highest voltage produced was 14.58 v, followed by 13.14v and many in the 11v range. Students had the opportunity to do a “walk around” and see the different turbine blade designs and output values.

Saturday morning activities included tours of the URI campus led by Office of Admissions tour guides and interactive talks by URI students from Collegiate SMILE, NSBE, and Asian Students Association. A closing ceremony included congratulations to all our students from Director Carol Englander who recognized teams for their teamwork, technical precision, blade design, team names, and voltage output as well as students’ multi-year commitment to SMILE. SMILE teachers received URI frisbees for all their students and also took home a wind turbine and materials to do follow up design and testing experiments.



Dr. Deborah Rosen, Director of URI Transportation Center, welcomed the students to the Challenge



Mark DePasquale, CEO of Wind Energy Development LLC, presented a series of Power Point slides and explained how a 1.5 megawatt wind turbine was constructed near his house in North Kingstown.





Measuring blade angle with a protractor

*Teamwork
Problem solving
Innovation
Tenacity*



Testing stations.
Students measured
voltage, amps and
calculated the power.

Testing one variable at a
time, they were able to
make the necessary modi-
fications



One of the most important
parts of the Challenge
is meeting and working
with college students and
corporate sponsor mentors.



“THANK YOU”

*URI Transportation Center,
Schneider Electric Mentors,
Toray Plastics Mentors*

URI faculty

URI students

*National Society of
Black Engineers*

*URI Center for Students Leadership
Collegiate SMILE*

Wind Energy Development, LLC

*SMILE teachers and all the sponsors
who helped us make this Challenge
Weekend a wonderful experience.*



Challenging our students to discover creative and innovative solutions to real world engineering problems



(PV) cells to convert sunlight to electricity to drive the electric motors. Even the best solar cars today only collect limited power and energy over the area of the car's surface. Solar cars have limited cargo space and aren't as safe. In addition, PV cells are expensive (though decreasing), and they don't last for more than about 30 years. We have a long way to go to improve this technology. As our future scientists and engineers, SMILE students will develop new vehicle and fuel technologies, and as citizens, they will make decisions balancing mobility, environmental, and economic needs.

Judges looked at the following categories as students built and tested in mixed school teams of 3-4 students:

- Fastest vehicle
- Most Impressive Technical Precision
- Most Efficient & Creative Transmission Design
- Most Aerodynamic Design
- Most Unique/Creative Technical Design
- Most Clever & Efficient Placement of Soda Can
- Best Team Spirit (Most cooperative & enthusiastic team)
- Best Team Name

There were some unique and innovative designs. Steve Kerr, Mechanical Engineer at Toray Plastics America, opened up the weekend by telling the students about the solar field at Toray, which is comprised of 1,650 photovoltaic panels, and produce 625kWh annually. The panels are mounted on a single axis so that they are able to track the sun. Several groups used this idea in their own vehicle designs. The weekend was another success; students had a blast learning about solar energy, building and testing their vehicles, meeting new friends, learning about URI admissions, hearing from college and industry mentors, eating in the dining halls, touring campus, sleeping at a hotel, and swimming at the URI pool. Additionally, they got to hear from a SMILE alumnus and current Brown student in the Program for Liberal Medical Education, David Hernandez, who gave an inspiring speech to wrap up the weekend; in his own words, and words that he left with our current SMILE students, "As my Central Fall's teacher, Mr. Upegui, taught me, 'greatness is not something somebody can give you.' A warrior knows that once he stretches himself and realizes his potential, he will be able to achieve the unthinkable. Although I had the odds against me, I pushed myself beyond my limits and dared to dream big.

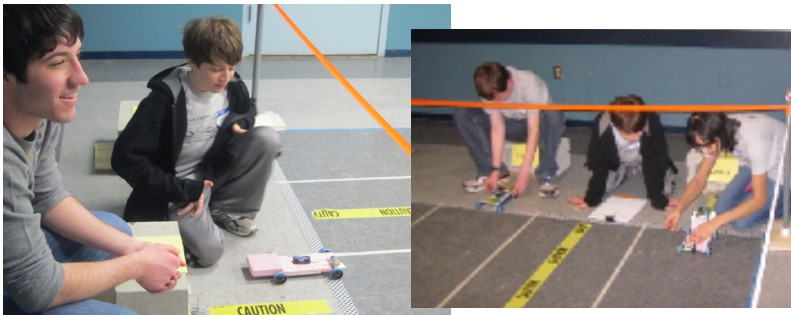
Interactive learning in a fun and friendly environment.



Steve Kerr, Mechanical Engineer at Toray Plastics America, opened up the weekend by telling the students about the solar field at Toray, which is comprised of 1,650 photovoltaic panels, and produces 625kWh annually.



Students understand the scientific and engineering principles which go into the design and construction of a solar vehicle.



Students tested the cars and made modifications as necessary.



Learning about engineering principles related to solar energy, photovoltaic cells and energy efficiency



On Saturday morning members, from the National Society of Black Engineers (NSBE) Amandine Gafali, Zaid Odufuye, Bisola Bruno, and Mike Regan presented Types of Engineering and hands on activities.

David Hernandez SMILE alumnus and current Brown student in the Program for Liberal Medical Education,

“As my Central Fall’s teacher, Mr. Upegui, taught me, ‘greatness is not something somebody can give you.

A warrior knows that once he stretches himself and realizes his potential, he will be able to achieve the unthinkable. Although I had the odds against me, I pushed myself beyond my limits and dared to dream big.”



West Warwick Elementary School

Amy Horne
Maria DePalma



We spent the beginning of the year exploring the state's largest watershed, the Pawtuxet River, which is right in our backyard. The Pawtuxet River passes through eleven communities including West Warwick. The students tested the water quality and examined the river bank plants and wild life. On a club visit, Mr. Gomes, SMILE Assistant Director, helped the students find several species that lived in the river and even three deer grazing along the side of the trail. Now that it is spring time, we hope to go back to the Pawtuxet River to explore changes in the area.

Over the winter, we have continued to investigate environmental factors that affect plant and animal habitats and populations. We played a game called Camoubugs that introduced the students to camouflage and mimicry. The students used colors and markings to camouflage their bugs to blend into the classroom environments. Then we formed two teams and tried to find each other's' bugs in two different classrooms. We also built food chain stackers, researched endangered animals, and the factors that contribute to them becoming endangered. The students can't wait to go camping to discover more about habitats and wildlife.

Last year's Elementary Outdoor Science Adventure at Alton Jones was so much fun!

The food was awesome! I can't wait to go back!"



"The Pawtuxet River passes through eleven communities including West Warwick. The students tested the water quality and examined the river bank plants and wildlife."



Citizens Memorial Elementary School Woonsocket

Melissa Moniz
Jodi Cifelli



We have been busy and there is a lot going on at Citizens' Memorial in Woonsocket, RI! Students completed their study of Cass Pond near our elementary school. We learned a ton about the water quality, plant life and animal life of the pond. Students are now working on habitats, creating an ecosystem and currently we are watching mealworms turn into Darkling beetles! It is all quite exciting! We are watching how mealworms live and survive in their own habitat and grow through changes.

SMILE club members also decided they wanted to raise some money for an end of year celebration and also help support a field trip for other students in our school. We came up with the idea of SMILE Spirit Fridays. Students brainstormed some fun ways to show school (and SMILE) spirit and raise money. Students could participate and not wear their uniform if they donated \$1.00. Some of the SMILE Spirit Fridays included: sports day, crazy hair day, hat day, favorite character day, funky sock day, backwards day and many more! So far SMILE club has earned almost \$500 for our school fundraising effort! Students pass envelopes out to teachers, Ms. Moniz or Ms. Cifelli collect the envelopes and then we count the money, total it and make a deposit. This has really helped us to learn how to set a realistic goal and work hard to see it achieved while doing something positive for our school!

We continue to learn and grow and learn more about one another and ourselves!

"I never thought I would get to see a meal worm turn into a beetle! Cool!"

"Science is soooo cool! I just trained a worm"

"I love being in SMILE and celebrating all of the science and math we learn together!"



Woonsocket Middle School

Paulette Metivier
Denise Fontaine



“...This program keeps me thinking about, preparing for, and looking forward to my future and my involvement in the ever-changing world.” -

LaceyAnne I. Canto

“What are the benefits of SMILE club? Well, when you join the SMILE after school program you receive a lot of fun and learning experiences from it. You can meet new people when you join. There are better chances for scholarships when you are older and want to apply for colleges. It provides us not only a better future, but fun learning experiences as well. In the Woonsocket SMILE program, we start off our meeting with a warm-up exercise. It’s usually a small activity or a paper we do. Next, we move on to our main activity for that day. As we work, we can also socialize with our partners and it gives us an opportunity to learn, but also have fun with what were doing! So, as you can see, SMILE is very beneficial to all students that join whether in elementary school or in middle school like me.”
- Katrina Kurowski

“I think the trip to URI was amazing! While you are there everyone tells you how wonderful it is at college. You also get to experience a little bit of what URI is like. Another thing about the trip to URI is that the food is excellent and the pool is awesome! All in the entire trip is not only fun, but also its also educational and amazing!” -Victoria Mayers

“I have been a part of the SMILE program for four years now. Even as a third-grader I wanted to be a part of it and a year later I happily was. I knew that I wanted to be a part of this because something about science just amazed me and even then I was thinking about my future. Today I am still a devoted member. I am committed to this club because I feel at home. This program keeps me thinking about, preparing for, and looking forward to my future and my involvement in the ever-changing world. I know that SMILE will help me get where I see myself to be in time and in this moment I am grateful that I will have the skills and knowledge to stay there.” -LaceyAnne I. Canto

“In SMILE we’ve taken multiple trips down to the Blackstone River. During these trips we’ve done things like taking water temperatures, observing wild life, and sometimes looking for pollution. These trips are both fun and educational to me and I’m always looking forward to the next one.”- James Simonini

Central Falls High School

David Upegui
Laura Stanish

You can always count on changes!

By Venetcia Ortiz and David Upegui

Everything is always changing, and just as I prepare myself for life after high school, I also saw the maturation of winter in our watershed investigations.

This past year in the Central Falls SMILE club we focused on two major endeavors: visiting and collecting data on our watershed and preparing for the engineering challenge weekend. Our watershed project took place in a newly renovated area of the Blackstone River next to the location



where last spring we planted a rain garden. Our rain garden is found where the Veterans Memorial was originally located on the corner of Roosevelt Ave. and Charles St. The rain garden consists of native plants of Rhode Island and these plants create a filtration system that allows runoff from the rain, which could be contaminated, to filter and safely enter the river. We visited this site several times and took pictures of the investigations we performed there (including dissolved oxygen levels and macro/micro fauna). From our investigation we concluded that the Blackstone River is growing in health and is supporting an increasing amount of life. We also had an opportunity to share with the younger members of the other SMILE clubs from our city during our "Family Science Night". This was one of the highlights of the year since we served as experts and were able to show the young students some of our aquatic life (captured and then released), and some of our favorite science demonstrations (we often use these during our meetings).

Our watershed project became an avenue to learn about many different topics and the grouping allowed those with prior knowledge (students that participated in Save the Bay) to share with students who were just introduced to the Blackstone and its habitats. Moreover, we had lots of fun seeing and document the change in the fauna/flora. For example, during Family Science Night, we prepared a

Prezi presentation which demonstrated the changing of the seasons (with its many colors and wonders) by having photographs taken from the same angle during each of our visits. After that our focus has been in the engineering challenge and we have been able to be creative with our thinking and construction of our solar vehicles. This recent project has afforded us the opportunity to learn about renewable energy as well as the engineering process.

As a senior in high school I have many expectations and dreams about the years to come but there is some sadness that I will leave behind some of the best people who have supported me and seen me grow as an individual and scholar. However, I am confident that just as the seasons continuously change, I too will continue to improve and thanks to the experiences in SMILE I can confidently step into the college classrooms in just a few months. Change – it happens!

Harris Elementary School Woonsocket

Heather Neil
Stephanie Roberts

There is a Lot to Smile
About in SMILE!



We like SMILE because there are a lot of nice friends at smile.

SMILE is fun because we do fun experiments.

SMILE is a great way to learn how to work together.

SMILE helps you get a better education.

Whenever we do an experiment everybody smiles.

We have great smile teachers

Every week we do something sciency

SMILE opens up new doors to new opportunities

SMILE is fun because you get to be Smiletists and go on adventures through Science.

SMILE is a good way to learn about our friends.

SMILE is fun because you have something to do after school.

SMILE is great because we learn while having fun.

SMILE is a good place to make new friends.

SMILE is a good way to build up a life.

COLLEGE CORNER

SENIOR YEAR

Work hard and keep your grades up! Colleges will look at your fall and spring semester grades. Check your transcripts to make sure you have all the credits. Have you submitted all the college admission applications? Consult your counselor about scholarships. Work on your applications and mail them according to deadlines. If you have been in SMILE for more than three years apply for a SMILE scholarship. Talk to your club teacher. Make sure your SAT/ACT test scores are being sent to the colleges to which you are applying.

JUNIOR YEAR

Keep your grades up! And make sure you are challenging yourself academically. Find out the AP, PSAT, SAT I & II, and ACT Tests schedules. Find out from your guidance counselor which one is best for you. Review your academic record and discuss with your counselor ways to improve them. Narrow your list of colleges to include a few

with requirements at your current GPA and test scores. Start a file for college catalogs and other admissions information. Keep an eye out for college nights at schools you may want to attend. Continue to talk to counselors, teachers, parents, and other adults about your plans after high school.

SOPHOMORE YEAR

Keep your grades up! Continue to talk to counselors, teachers, parents, and other adults about your plans after high school. Continue extracurricular activities, and consider getting a part time job or doing volunteer work. Remember, admissions officers look for well-rounded students who participate in activities outside the school day. If you plan to take the SAT, take the PSAT in October.

CENTRAL FALLS

Ella Risk Elementary School
Sheryl Wilson
Teri Glynn

Calcutt Middle School
Margarita Cruz
Sarah Peixoto

Central Falls High School
David Upegui
Laura Stanish

NORTH KINGSTOWN

N. Kingstown High School
Karen Finlan

PAWTUCKET

Shea High School
Ann Marie LaRoche

Tolman High School
Oluwaseun Anderson
Paula Wilenhain

Slater Junior High School
Michael Gavin
John Martinelli

SOUTH KINGSTOWN

West Kingston Elementary
Debi Vannoy
Cynthia MacNeil

Curtis Corner Middle School
Gina Haberlin
Jo Ann Basel

S.Kingstown High School
Brenda Dillmann
JoAnn Basel

WEST WARWICK

Horgan Elementary School
Maria DePalma
Amy Horne

Deering Middle School
Pam Kershaw
Geri Giroux

West Warwick High School
Eugene Gallo
Nelson DaSilva

WOONSOCKET

Harris Elementary School
Heather Neil
Stephanie Roberts

Coleman Elementary School
Jennifer Paolozzi
Anissa Hoard

Citizens Elementary School
Melissa Moniz
Jodi Cifelli

Woonsocket Middle School
Paulette Metivier
Denise Fontaine

Woonsocket High School
Claire Laquerre
Ethel Locke

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Amgen Foundation

Amgen International Network

Bruce Wallace Amgen

Connecting For
Children and Families

Constellation

Eaton Aerospace Foundation

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North Kingstown
21st Century
Community Learning Center

Pawtucket COZ-21 st
Century

Ramsey McCluskey Foundation

Schneider Electric

Toray Plastics, America, Inc

University of Rhode Island

URI Transportation Center

YMCA of Greater
Providence

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North Kingstown School
Department

South Kingstown School
Department

Pawtucket School
Department

West Warwick School
Department

Woonsocket School
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*SMILE Newsletter***Volume 19 No.2, April 2013**

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Maria-Gabriela Lizano, Publications Coordinator
Brian MacMurray, Printing Schneider Electric

SMILE (Science and Math Investigative Learning Experiences) is an enrichment program for educationally disadvantaged students in grades 4-12 in four Rhode Island communities. SMILE's goal is to provide group activities for these students in math, science and computers. Generous gifts by participating donors make this program possible. The SMILE newsletter is published four times a year. We encourage your comments and ideas. Please share this newsletter with others who might be interested in SMILE.

THE UNIVERSITY OF RHODE ISLAND

The SMILE Program
University of Rhode Island
50 Lower College Road, Suite 305
Kingston RI 02881

ONLINE



www.uri.edu/smile

19th Year of service

Calendar

Weekly SMILE Clubs Meetings
scientific and Career Exploration Field trips

Family Science Nights
November-December 2012

Special Annual Events

High School
Challenge Weekend
March 22-23, 2013
URI Kingston Campus

Middle School
Engineering Challenge Weekend
March 1-2, 2013
URI Kingston Campus

Elementary School
Outdoor Science Adventure
April 26-28, 2013
URI Alton Jones Campus

| May 10, 2013 | July 16-17-18, 2013 | December 6, 2013 |
|-----------------------------|-----------------------------|-----------------------------|
| University of Rhode Island | University of Rhode Island | University of Rhode Island |
| Math and science Curriculum | Math and science Curriculum | Math and science Curriculum |
| End of year evaluation | Planning for the year | Special Events Planning |

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