

Central Falls North Kingstown Pawtucket South Kingstown West Warkwick Woonsocket

Newsletter and Report volume 18 No. 2, March 2012

## HIGH SCHOOL ENGINEERING CHALLENGE WEEKEND Save the Lobsters

This year's engineering challenge for high school students involved a simulated salvage operation based on a real-life scenario. Each team of six students was tasked with building an underwater remotely operated vehicle (ROV) from scratch (called a SeaPerch) in order to identify (with an underwater camera) and retrieve "ghost lobster pots" (5-gallon buckets) from the bottom of the "ocean" (URI pool) that were of varying weights.

Ghost lobster pots are real. They are traps in oceans and bays that have been abandoned and unintentionally kill lobsters and other marine life, which is an environmental disaster and huge economic loss to the lobster industry.

Friday was spent building and pre-testing in preparation for the official testing on Saturday. Dr. Thomas Dougan, Vice President for Student Affairs, warmly welcomed the students to the college campus and encouraged them to picture themselves as students at URI. Matt Zimmerman, founder, director, and VP of Engineering of the company FarSounder and also a graduate of URI in Ocean Engineering, introduced the challenge to the students. Matt also talked about the bigger picture of the engineering field to show students that the skills learned throughout the weekend are transferable and that there are many opportunities in the field. Matt stressed the fact that engineers are a diverse group of people and they are also dynamic and interesting people, despite many peoples' perceptions to the contrary.





STUDENTS DESIGNED, CONSTRUCTED, TESTED, AND PILOTED REMOTELY OPERATED VEHICLES (ROVs) WITH UNDERWATER CAMERAS IN URI POOLS

Continued page 2

## HIGH SCHOOL CHALLENGE



Chris Hansen, engineer and technical director for SeaPerch, helped to guide students through some of the more difficult parts of the build.

Students built their ROVs with guidance from many mentors. They included students from URI from a variety of majors and industry mentors from FarSounder, NUWC (Naval Undersea Warfare Center), NOAA, Amgen, Eaton Aerospace, Toray Plastics, and Schneider Electric. Special thanks needs to be given to Chris Hansen, SeaPerch's Technical Director, John DiCecco, Research Engineer at NUWC and Adjunct Assistant Professor at URI in Electrical and Biomedical Engineering, and Ben Fain, electrical engineering senior at URI, for all of their support. As usual, all of the mentors made the weekend a success. Students not only learned about soldering, and other technical skills, but they were able to learn a little about the careers of the people who were there - what they do and how they got to where they are today. SMILE seniors got to ask SMILE alumni, who are now students at URI, and other students and mentors questions about college. Since college is right around the corner, these seniors were eager to ask their most pressing questions. For example, one student asked the mentors: "if you were in our shoes today, is there anything you would have done differently?" This is exactly the point – learn from others.

Freshmen, sophomores, and juniors were motivated with an admissions presentation by URI admissions officer Coral Maack. College is a clear message at the challenge weekend. SMILE students love eating in the dining halls. We did things a little differently this year by having a luncheon for URI student and industry mentors, which was funded by the Student Affairs



Diversity Fund. This gave mentors the opportunity to network with the common ground of helping high school students with their engineering projects. In addition to experiencing the dining halls, an integral part of being a college student, SMILE members also got to take part in recreation activities, whether swimming, playing volleyball or basketball, or just "chilling out."



All teams exhibited an incredible and impressive level of teamwork and problem solving. URI and corporate mentors were integral in this success.







# Engaging Students in STEM Education

Saturday's testing was such a success! Students drove those ROVs like they were experienced pilots. When they got their underwater cameras hooked up, you could see excitement in their faces. All teams lifted at least one bucket (or ghost lobster pot). Two teams actually salvaged all three buckets in the one and a half hours they were given. All that hard work paid off. Groups were incredibly impressive with the level of teamwork and problem solving they exhibited. Mentors were integral in this success.

Just as last year, members from the National Society of Black Engineers (NSBE) dedicated their Saturday morning to motivating SMILE high school students. They facilitated three interactive sessions – Getting to Know You, What is College, and Types of Engineering. Michael Fagbote, President of NSBE, also gave some words of encouragement to the SMILE students at the end of the event.

Of course, it's bittersweet to see our seniors move on from high school and SMILE to college; we are going to miss their enthusiasm but we're excited to hear about their many successes. We're also excited for the freshmen, sophomores, and juniors to return to SMILE next year to build on what they've learned and be excellent role models for the younger students.

All in all, it was another great event that gave students a unique and authentic experience. Coming to a college campus, interacting with college and industry mentors, accomplishing a truly challenging engineering task, and working with other motivated students from around the state are just a few of the major highlights that SMILE students get to experience to set them on a pathway to college and success.



**Buoyancy Pretest** 



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Adding additional buoyancy with 1/4" slices of flotation, the teams lifted 5 gallon buckets to the surface. All teams lifted at least one bucket (or ghost lobster pot)



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# MENTORS



A mentor can be defined as an influential supporter or teacher. That's exactly what so many of you have done for elementary, middle, and high school SMILE students for the last 18 years. The SMILE Program and its students thrive because of mentors. Mentors can be teachers, URI students, faculty, staff, SMILE alumni, or professionals from our partnering industries. This diversity of mentors reflects SMILE's diversity of students, from ethnic background to interests. Let's discuss what makes mentors such an integral part of SMILE.

- Mentors believe in students. Their interactions are based on the belief that students are capable of academic achievement.
- 2) Mentors help send the message that college enrollment and completion are clear goals for students.
- 3) Mentors help make science, technology, engineering, and math (STEM) fun, exciting, and in context.
- 4) Mentors guide students through problem-solving, which give them invaluable skills for the future success.
- 5) Mentors help demystify college, both the pathway to get there and the college experience. Students feel comfortable asking questions and appreciate the honest responses from mentors.
- 6) Mentors are advocates, encouragers, and supporters of SMILE students.

## All this is to say - THANK YOU!

SMILE depends on its mentors to positively impact our students. From you, students also learn to pay it forward!











## Central Falls Elementary School Club

Sheryl Wilson Rosanne Gargano



## WHY WE LOVE SMILE.....

### The Best Part of SMILE

...when we do science, because you get to use different tools for the experiments to see what will happen.

#### My Favorite Experiment Was...

... Using Your Noodle, when we had to make 3-D geometric shapes and the materials were spaghetti and marshmallows and we had to weigh pennies on our shape until the shape broke.

... Density In A Straw. I liked this experiment because we had to be in a group and get all the colors into the straw. It was really fun.

#### Favorite Field Trips Were...

... when we went to Kettle Pond, because we did the scavenger hunt, water testing, learned about glaciers and so much more.

... the Aurora because it was fun and I enjoyed what they had to say about the ocean.

### What I Have Learned So Far...

... the sky is blue because blue is the shortest wavelength and it scatters 10X's more than the other colors we get from the sun.

### I Am Looking Forward To...

... going camping with all of my friends and teachers to do lots of new things about science.

# **CLUB SPOTLIGHT**

## Woonsocket Elementary School Club



Heather Neil Stephanie Roberts

The SMILE experience is one that we will always remember. It is a place where we feel like family. SMILE is an exhilarating experience that we look forward to going to every week.

> We don't just learn Science, we DO Science. It is good because we do a lot of fun experiments. The teachers are so nice because they make us want to learn. We learn more things every time we come. It is a chance for kids to have fun with Science and Math.

They take us on really awesome field trips. So far this year we have been on explorations of Cold Spring Park and Kettle Pond. We can't wait to visit Alton Jones.

> We like SMILE because it is going to help us to go to college. SMILE helps to make my grades higher. SMILE is a place where you can come and be yourself. SMILE is a place where you can learn more in life!

This article was compiled from quotes from the SMILE students.

## Woonsocket High School Club

Claire Laquerre Ethel Locke

## THE WOONSOCKET HS SMILE CLUB HAS BEEN DOING SOME ELECTRIFYING STUFF!!

Did you know that if you run electricity through a pickle, it will glow and light up like a light bulb? The Pickle test was to get us interested in electricity and introduced us to different types of conductors, resisters, and circuits. Some conductors are copper, other metals, H2O, etc. Once we had an idea what conductors and resisters are we put the materials to the test using a series circuit. A series circuit is like a Christmas tree, when one light goes they all go out. We successfully built several in series and parallel circuits. A parallel circuit is a circuit when one light goes out the others stay on, like a bypass of electricity. An interesting activity done was when one of our instructors touched a machine that shocks you at a low voltage and passed the shock to another person and so on. As each person touched one of another there would be a transfer of a current following the shock. It was very stimulating!





Our latest challenge was to build a boat using a 12" by 6" piece of aluminum with using tape and scissors. Once the boat was complete the boat had to be massed and then floated in water. Next marbles were added into the boat to see how much the boat could hold. The winner from our smile club was Maziey, whose boat held 75 marbles before it sank. In second place was Victoria's group with a count of 56 marbles. Did you know that if you place a can of diet Coke and regular Coke in a tub of water, one will sink and the other will float. Diet Coke floats! Do you know why diet coke floated and regular coke sank? Well, it is because Diet Coke has no sugar, and regular coke has sugar, 35g to be exact. A question was brought up in the SMILE meeting which was how much is 35g of sugar? So, we measured 35g of sugar and everyone was wowed and could not believe how much sugar is in one can. Gaining experience with conductors and resisters. We built several series and parallel circuits.



Learning about buoyancy

# **CLUB SPOTLIGHT**

## West Warwick Middle School Club

Pam Kershaw Melissa Pare-Rogers

It's finally Tuesday and we are yearning for SMILE to begin. The best part is when the bell rings and we rush through the crowded halls to room 33A where all of the learning begins! Anyone who read the November newsletter knows how much fun all the middle school SMILE students had when they visited Alton Jones to learn about watersheds. Fast forward three months later, the Deering Middle School SMILE students are learning about maglev trains and cranes.

All aboard. Swoooosh..... Do you know what that sound is? That's the sound of a Maglev train stopping at a train platform. A maglev train is a train that is propelled by magnetic forces. The train hoovers over a set of magnets making it appear to be magically floating in the air. One of the fastest maglev trains can go more than 700 miles per hour. Our SMILE club will be learning more about maglev trains as we continue our journey through the program.

Fun Facts: Do you know why roller coasters reach their highest speed while traveling down the first hill? (Answer on the bottom of column). A rollercoaster's speed throughout the ride would not be limited if ran entirely with magnets.

A crane by any other name. During SMILE we are learning lots about different kinds of cranes- boom cranes, lattice boom, trolley booms, and many more to come. The crane our group focused on was the boom crane. One of our favorite activities was constructing one out of a milk carton, straws, string, binder clips, and paper clips. Rafael even commented, "When the boom's length or width is changed, more or less paperclips can be moved."

#### "The fun field trips and learning new things every Tuesday is what SMILE is all about!"

#### "I wonder what challenges and fun activities the URI challenge weekend will bring."

When it's Tuesday you can't wait until SMILE Take off your backpack and stay a while We'll talk about plants and maglev trains Maybe we'll even throw in a bit about cranes When you're in SMILE, life is a blast You even play games after work gets done fast So come on and meet lots of new friends When you're in SMILE, the fun never ends!

Fun Fact Answer: The second the rollercoaster begins to roll down that first hill, the stored energy (potential energy) is being used as kinetic energy.

## Annual Events and Curriculum Enhancement December 9, 2011

SMILE leaders from across Rhode Island came to the University of Rhode Island to attend the annual Winter Teachers' Workshop on December 9<sup>th</sup>. It was packed with learning and planning as teachers prepared for the Elementary Outdoor Science Adventure, the Middle School Engineering Challenge, and the High School Engineering Challenge.

The Elementary School Club Session theme was presented by SMILE EOSA coordinator and Assistant Director, Gus Gomes, and focused on how biotic and abiotic factors comprise an ecological community. The elementary teachers investigated biochemistry concepts, such as pH and the water, nitrogen, and oxygen-carbon cycles, climate science, and population ecology. Gus engaged teachers in hands-on activities that they could do in their clubs with SMILE students. The teachers became involved in their own explorations, learning by doing. They returned to their clubs with a wealth of curriculum materials and activity ideas to share with their students.



Lt. Brent J. Pounds, NOAA Navigation Manager, Northeast region, Office of Coast Survey, presented on the history, accomplishments, and technology used by the NOAA Coastal Surveyors. He also presented a hands-on activity through which teachers learned how GPS units "find" their location.

Middle School teachers learned about crane building, leverage, and magnetically levitated (MagLev) trains while doing hands-on activities led by SMILE Director, Carol Englander. Teachers used computers at the Memorial Union where they used the ParkWorld Plot website to understand forces, and other sites to identify different types of cranes and their uses, and learn about MagLev trains in Europe, China, and Japan. Their SMILE students will use the websites to learn about the major types of cranes in order to select one to make a model of to bring to Challenge Weekend. High School teachers participated in a series of handson activities led by Lacey Feeley, Assistant Director of Programs. They focused on factors that will affect the building and maneuvering of SeaPerch ROVs (remotely operated under water vehicles) including buoyancy, motors, circuits, and vectors. This will help prepare teachers and their students for a SMILE high school engineering challenge involving building and testing a SeaPerch ROV equipped with a camera and retrieval device in a simulation of finding "ghost lobster pots."



John DiCecco, Research Engineer at NUWC and Adjunct Assistant Professor at URI in Electrical and Biomedical Engineering, presented teachers with a hands-on electrical engineering activity. Dr. DiCecco is also involved with the SeaPerch program at NUWC, so he was able to share some new prototypes and a sensor suite that he developed, which can be attached to a SeaPerch to collect temperature, conductivity, depth, light, etc. Teachers enjoyed learning from Dr. DiCecco and his clear explanations.

The SMILE family has grown to include Slater Middle School in Pawtucket and Coleman Elementary School in Woonsocket. Our 31 SMILE teachers from six school districts have a wonderful level of enthusiasm and knowledge that generates good ideas, creativity, and exciting projects among their SMILE students. The collaborative efforts of the hard working, dedicated SMILE teachers is a source of strength of The SMILE Program.

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### SMILE STAFF

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Larry Englander CELS-Plant Sciences.

MATHEMATICS Orlando Merino

**PHARMACY** Clinton Chichester

EDUCATION Betty Young

### FRESHMAN YEAR

- Keep up the good work and continue to improve your study skills.
- Create a file of report cards, lists of awards and honors, school and community activities, and volunteer work. This will be very important when you start to fill out college applications.
- Find out about the college entrance requirements for the schools you are interested in.
- You will have an idea about the grades you need to maintain and the classes you should take.
- Take the ACT EXPLORE test.

## 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.

## 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.

## 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.

### **CENTRAL FALLS**

Ella Risk Elementary School Sheryl Wilson Rosanne Gargano

Calcutt Middle School Katie Vespia Karen Fiore

Central Falls High School Susana Arenas David Upegui

#### NORTH KINGSTOWN

N. Kingstown High School Karen Finlan

PAWTUCKET

SHEA High School Ann Marie LaRoche Meg Battersby

SLATER Junior High School Michael Gavin John Martinelli

### SOUTH KINGSTOWN

West Kingston Elementary Debbie Vannoy Cynthia MacNeil

Curtis Corner Middle School Gina Haberlin Melissa Dushi

S.Kingstown High School Brenda Dillmann JoAnn Basel

### WEST WARWICK

Horgan Elementary School Geraldine Giroux Amy Horne

Deering Middle School Pam Kershaw Melissa A. Pare-Rogers

West Warwick High School Eugene Gallo Nelson DaSilva

### WOONSOCKET

Harris Elementary School Heather Neil Stephanie Roberts

Coleman Elementary School Jenniffer Paolozzi

Woonsocket Middle School Geraldine Burgess Tara Anderson

Woonsocket High School Claire Laquerre Ethel Locke

## AMICA

Amgen Foundation

Amgen International Network

Bruce Wallace Amgen

**Dominion Foundation** 

Eaton Aerospace Foundation

**General Dynamics** 

**Graphic Expressions** 

Holiday Inn South Kingstown

Jewish Community Fund

MetLife

North Kingstown 21st Century Community Learning Center,

## SMILE Corporate Mentors Program

The SMILE Program is proud of its corporate mentors for helping students to gain leadership skills, achieve their educational goals and increase their confidence.

# SMILE Newsletter

University of Rhode Island 305 Memorial Union Kingston, RI 02881 Volume 18 No.2, March 2012

Carol Englander, Editor Lacey Schlachter,Editor María-Gabriela Lizano, Publications Coordinator Nick Blacklock, 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.

## PARTNERHIPS



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





www.uri.edu/smile



# Calendar

Weekly SMILE Clubs Meetings

Scientific and Career Exploration Field trips

## **Special Annual Events**

High School Challenge Weekend March 2-3, 2012 URI Kingston Campus

Middle School Engineering Challenge Weekend March 30-31, 2012 URI Kingston Campus

Elementary School Outdoor Science Adventure April 27-29, 2012 URI Alton Jones Campus

### Teachers' Professional Development Workshops

December 9, 2011	May 11, 2012	July 17-19, 2012
University of Rhode Island	University of Rhode Island	University of Rhode Island
Math and Science	Math and Science	Math and science
Special events planning	End of year evaluation	Planning for the year

Printing donated by Schneider Electric