

Newsletter

volume 21 No.2, March 2015

Middle School Engineering Challenge Weekend



Despite lots of snow on the ground, approximately 100 SMILE students arrived early Friday morning at the University of Rhode Island (URI). They came from Central Falls, Pawtucket, South Kingstown, West Warwick, and Woonsocket.

These students became engineers in several ways. They learned to work in teams with students from other schools, with new materials and tools, and with industry mentors and 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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High School Engineering Challenge Weekend



On Friday March 27th, 92 SMILE high school students from Central Falls, Pawtucket, South Kingstown, West Warwick, and Woonsocket arrived at the University of Rhode Island (URI) to participate in the 2015 SMILE High School Engineering Challenge.

During the two-day overnight event, SMILE students from across the state got a real taste of college life. They took a tour of the URI campus, which focused on science, math, and engineering colleges; met with university students from multiple departments and Admissions and Talent Development staff; ate in a dining hall; and visited the Keaney Gym and Tootell Aquatic Center for some recreation time. The college experience, coupled with a stimulating engineering challenge, made for a memorable event for all involved.

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MIDDLE SCHOOL CHALLENGE WEEKEND

“SMILE opened my mind to new things and taught me things that I thought I would never know.”... “My favorite part of SMILE is the ‘hands-on experience and feeling like you can be a college student.’”

-SMILE Middleschool Students, 2015



Students were greeted by URI leadership students early Friday morning at the URI Memorial Union Ballroom and organized into teams. URI Associate Dean of Business Administration and Director of the URI Transportation Center, Dr. Deborah Rosen welcomed the students to URI. Our keynote speaker was Andrew Koziol, Supervising Planner in the Intermodal Planning section for the Rhode Island Department of Transportation (RIDOT). He showed pictures of MagLev trains in other countries and explained to the middle school students how commuter rail service in RI and the northeast corridor is expanding. Koziol is promoting intermodal connections in RI and told students about the exciting career opportunities associated with it. Carol Englander, SMILE Director, explained the Challenge details to design, build, and test model cranes and MagLev trains. The design and construction phase of the engineering project was definitely challenging. Construction equipment included wood, wire, dowels, paper clips, nails, string, Styrofoam, magnetic strips, tape, drills, and other assorted tools.

After URI leadership students led mixed school team ice-breakers, the students started in on their work, inventorying their supplies, dividing into subgroups and beginning the work phase. After lunch in Roosevelt Hall, students returned to work “full steam” on their projects. In the afternoon, teachers took their clubs outside for a break which included taking a group photo. SMILE students stayed focused throughout the day and displayed great teamwork skills in their groups. After dinner at the Rams Den, the students returned to finish and test their cranes and trains. Once the models were built, testing began. Students brought their cranes to the MagLev track, attached the train, and timed how long it took to raise the train, swivel to place it on the track, release it from the boom and let it move down the track by gravity and magnetic repulsion. Many teams redesigned and rebuilt their crane or MagLev

train to gain speed. At the end of the Challenge, teams tested their completed cranes and maglev trains on the testing table/track for all to see. All teams completed the Challenge. Final results include: The fastest overall time was 6.55 seconds, by Team 1. Team 12 had the fastest maglev car at 1.6 sec. Team 16 had the most effective swivel device, Teams 4 and 12 had the most effective cable winding devices, Teams 1 and 6 had the most overall efficient cranes, Teams 10 and 5 had the most effective hydraulic systems, Teams 4 and 12 had the most innovative car designs, and Teams 4, 6, 8, and 16 were selected for best teamwork.

After a long day of engineering, students headed to the Holiday Inn of South Kingstown. On Saturday morning SMILE students on a tour of the URI campus led by URI tour guides and attended an “introduction to college” talk by URI Admissions officer Coral Maack. Finally, a closing ceremony was held and included congratulations to all our students from Director Englander who recognized over 80% of students’ multi year commitment to SMILE. SMILE teachers received crane and mag lev models to bring back to their clubs. “THANK YOU” to all our teachers, URI faculty and student mentors, and sponsors who helped make this Challenge a wonderful experience.

MIDDLE SCHOOL CHALLENGE WEEKEND



Left: SMILE students work in teams to design and construct the tower, boom, cable and hydraulic system of their very own functioning cranes.

Right: A SMILE student shapes the styrofoam of his team's MagLev car.



THE TESTING BEGINS!



Testing the MagLev train for levitation on the track



Industry and URI student mentors provide encouragement and support throughout the Engineering Challenge. Here John Menoche from Schneider Electric assists a group of students with the drill press.

CLUB UPDATES

TOLMAN HIGH SCHOOL

Kevin Collard, Jason Rushton
By Edelinda Baptista and Tolu Ademola

Edelinda Baptista

As one of the students attending the SMILE Program, there are many things that we have learned that fall into the categories of biology, chemistry, and environmental science; subjects that cover information about the environment and the Earth. A section of that information includes estuaries and how they benefit us by providing multiple types of resources. The Save the Bay field trip helped demonstrate how water quality is important, that's why we volunteered to clean up around the Bay and take part in preserving its surroundings.



Another activity we experienced as SMILE students was Family Science Night. We constructed boards and posters, displaying what we've been learning throughout the program to our family members. During Family Science Night, we were able to meet fellow SMILE students from other schools, and since it was a potluck, we walked around looking at the other students' work as we ate dinner and treats. I really enjoy SMILE!

Tolu Ademola

Being a part of SMILE is like being a part of a community because together as a group we look at problems in our environment and try to find a solution to make it better. In the past month, students in the program discussed the importance of estuaries and how to treat the estuaries around us so that they will be around for a very long time. Also, we have watched several videos on the function of estuaries and how one single problem relating to the estuaries can cause a whole lot of damage to surrounding coastline-estuaries which serve as buffers. In addition, as Tolman High School students, we participated in hands-on activities relating to estuary education. During the program we utilized material such as clay, mooches, water, soft sponges and foil bin to create our own 3D-looking estuaries.

We also looked into ways to make water clean, using dirt/sand, an empty bottle of soda, coal, paper, etc. For this project, students had to design a filtration system using only three materials. The objective of this task was to make the dirty water clean and flow as fast as possible through the materials we designed into the filter system. Everyone, including my group experienced a little bit of success with this project, and learned much about our environment and the important services estuaries provide - clean water and clean air.



SMILE has been an interesting program to participate in not only because of the hands on project but also the fun field trips we've been on. In addition to Save the Bay, our SMILE club took a field trip to The Aperion Institute For Sustainable Living. This field trip was fun because SMILE students and teachers got to learn about the many different ways of sustainable living that is friendly to the environment and conserves energy. The place also had its own garden house. The roof is not like many other houses-it is made of glass and uses the sun's energy to provide heat and warmth. Inside the plant house, we had the opportunity to ask questions and learn about the history of sustainable living.

Overall the SMILE program is a great way to get involved with other students our own age, further our education, prepare for our future, and interact with the environment. It is also a good way to learn and take notice of new things happening in our world today. SMILE is a hands-on program for those students who take interest in the math or sciences. It's a great program for everyone and you will find yourself liking it more and more every day.

SOUTH KINGSTOWN MIDDLE SCHOOL

Jo Ann Basel, Christina Dubei

This year has been very exciting! We started off the year with our club partaking in the International Beach Clean-up at Narragansett Beach. During the first half of the year, we focused on wetlands. We learned what a wetland is by creating a model of a wetland from sponges, clay and a plastic container. With the model we were able to simulate environmental concerns around the wetlands as well as brainstorm ways to protect them. This activity also showed us how important wetlands are in preventing pollution as well as providing valuable habitat for so many plants and animals. As part of our study, we took a field trip to the Blackstone River. Here with teachers from Mystic Aquarium, we conducted a variety of tests on the river to test for water quality. Using binoculars we also were able to appreciate the diverse bird population that inhabits the shoreline.

Our Family Science Night was a great success. Parents and family members were able to walk around the many exhibits learning about watersheds, seeing our duck houses which were part of last year's stewardship project and participating in one of our engineering challenges.

Despite over 100 inches of snow this winter, it was not able to damper the fun we had at our Engineering Challenge Weekend in early March. With students from all over the state, we used our background on levers and magnets to create a pivoting crane that would lift a maglev train 12 inches off the ground onto a track. In the spring we are looking forward to completing our Stewardship Project on Prudence Island.



DEERING MIDDLE SCHOOL

Eugene Gallo, Christopher Baccei, Joyelle Beyer

By Kate Alvarez

This year in the SMILE program, things have been pretty fun as usual. We started the year off learning about estuaries and preparing for Family Science Night. This year's Family Science Night was a bit different than past nights. Unlike past years, we interacted more with the families this time. Science night was not just about us talking to a group of parents in front of a poster board. We created interactive activities so that the parents would not be bored. Some activities included bingo, predicting the direction of a golf ball when dish soap is added to salt water, a bottle experiment, making a paper bridge and seeing how many pennies it could hold.



After Family Science Night, we dove straight into cranes. We watched videos of failed cranes and then analyzed where the construction went wrong. We did an online interactive unit where we learned about different forces. We conducted activities focusing on certain parts of the crane, testing the crane, and then redesigning. All of this led up to Challenge Weekend. This year's challenge was a difficult one. A hydraulic system was introduced to the challenge and we needed to figure out how it was supposed to contribute to the crane. With the help of teammates, groups were able to overcome this problem. We always enjoy the Challenge Weekends. We get to meet new people and learn a lot about engineering.

We all wish we could keep doing the Middle School Challenge Weekend, but as eighth graders we're moving up to the high school next. We're sure that the new middle school SMILE students will enjoy next year's challenge!

HIGH SCHOOL CHALLENGE WEEKEND

A special thanks to all of our URI and Industry Mentors for their help and support during the Challenge Weekend and to the Amgen Foundation and Nordson Corporation Foundation for their support in making the 2015 SMILE High School Engineering Challenge possible.



SMILE students work in mixed-school teams at the Challenge Weekend event and have the opportunity to meet and work with other students interested in STEM.



A SMILE student focusing on soldering for her team's ROV

After students received their t-shirts and team assignments, they had the pleasure of hearing guest speaker and URI alumnus Matt Zimmerman, engineer and owner of a local ocean engineering company FarSounder, discuss the different facets of engineering and explain this year's underwater obstacle challenge. Matt stayed for half the day to lend his expertise as teams worked hard on the build session. During the challenge, university mentors encouraged students and provided technical support to the building teams.

Other professional mentors included several invaluable SeaPerch experts from the Naval Undersea Warfare Center's (NUWC) outreach program who spent the entire day Friday assisting students solder and wire control boxes, cut and drill PVC pipes, and construct the ROV's motors. There were more industry mentors who assisted throughout the day from other local companies including Schneider Electric and Toray Plastics.

Soon after students learned what the challenge was, they spent some time getting to know their new multi-school teams and started right in on the construction process. This year's challenge was to build a SeaPerch ROV throughout the day on Friday and then complete a series of tasks within an obstacle course on Saturday. This year's fo-

cus was to perform maintenance on a deep sea oil pipe and well head in order to prevent another catastrophic oil spill.

After lunch in the Atrium, students took a break from the challenge and took a tour of the URI campus and met with Talent Development and URI Admissions staff before returning to their SeaPerch ROV construction. During the rest of the day students tirelessly worked on soldering wires to a control board for the control box, and creating an arm to pick up diving rings off the obstacle course and devising a method to attach an underwater video camera to their finished ROV.

Teams tested their completed SeaPerch in a 500-gallon pool outside to adjust their neutral buoyancy. Students enjoyed dinner at one of the newest dining halls on campus, Mainfare Dining. After dinner teams finished making adjustments to their ROV's buoyancy and headed down to Tootell Aquatic Center with their ROV's to practice piloting them in the large competition pool. Once the long day of engineering was complete, SMILE students enjoyed some much deserved downtime in the pool and on the Keaney basketball courts before heading to the Holiday Inn in South Kingstown.

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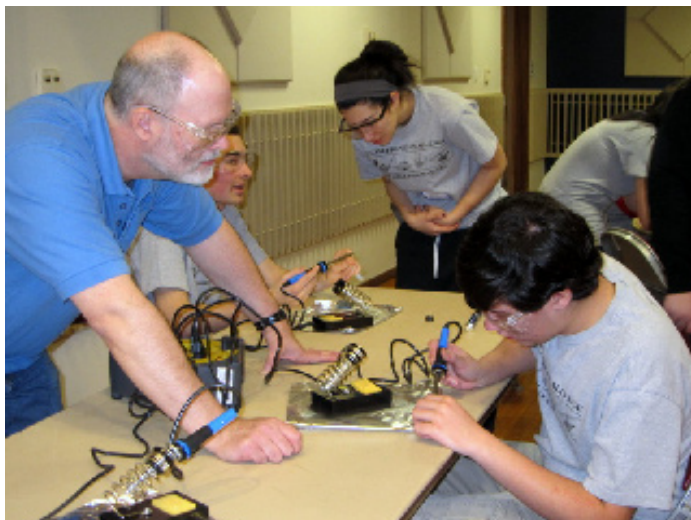
HIGH SCHOOL CHALLENGE WEEKEND



SMILE students work together in teams to build all components of their ROV's including the frame, thrusters, and control box.

Right: SMILE students test their ROV's for buoyancy in a 500 gallon pool before Saturday's competition.

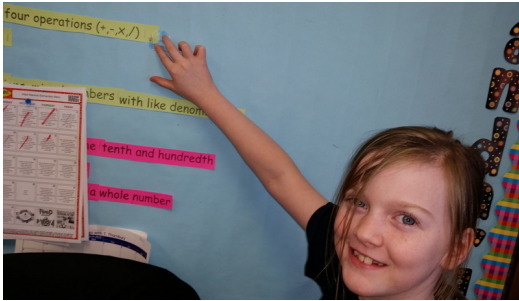
Below: Industry mentors Robert Drake and Mike DeSousa from the Newport Naval Undersea Warfare Center assist SMILE students at the soldering and drilling stations.



CLUB UPDATES

HORGAN ELEMENTARY SCHOOL

Maria DePalma, Amy Horne
By Horgan SMILE Club



Horgan SMILE students make
"Camoubugs"

This has been a great year in SMILE! We learned all about estuaries and taught our families and friends all we'd learned at our wonderful Family Science Night. Our many exhibits and hands-on activities demonstrated the great knowledge and remarkable teaching skills of our members. Not to mention, the food was awesome, as usual!

More recently, we've observed the important characteristics of camouflaged animals and how they use adaptations to stay alive in their environments. We watched a presentation called, Can You See Me?, which showed different animals camouflaged in their natural environment, then we had to try to find the animals in the pictures. This led to a discussion on how animals disguise or camouflage themselves as a form of protection. We also did an activity called Disguise, Disguise. In this activity, we had to predict how many colored squares we could pick up from similarly colored background paper in a five-second timeframe. We learned that the similarly colored squares were less easy to spot and pick up than those of contrasting colors.

We also played a game of Hide and Seek with a "camoubug" pattern. Each team had to color camoubugs to blend in with the surroundings of the classroom environment. We hid the camouflaged paper bugs in plain sight, and then attempted to find the other team's bugs. Many well camouflaged bugs went undetected--a great source of pride for their creators!

ELLA RISK ELEMENTARY SCHOOL

Sheryl Wilson, Peggy Boyer
By Ella Risk SMILE Club

We love SMILE because... of well everything. We do fun activities, field trips, and learn new things and all of that other stuff! We have done a lot of fun experiments and we play games to learn about habitats. We played Oh Deer, Carrying Capacity, and Marsh Munchers. These games were a blast and we learned so much about the things found in all animals' habitats like food, water, shelter, space, and air.

We joined the SMILE program because... we love science a lot, and it's always good to learn something new every day. We have also seen and done things we would have never been able to do or see before. At the Boston Museum of Science we learned about New England Habitats. We saw an electricity demonstration and played on the engineering and science playground.

One favorite experiments were the homemade water filter we made by putting dirt, rocks, pebbles and dirty water to build a filter and then waited for the water to filter out clean. We also loved Soak It Up when we used a sponge to soak up water from a hill, a river, and a pond. We could see how the estuaries worked.

We are most looking forward to the camping field trip, the boat trip and the URI elementary field trip.

So that's why we signed up for The SMILE Program.

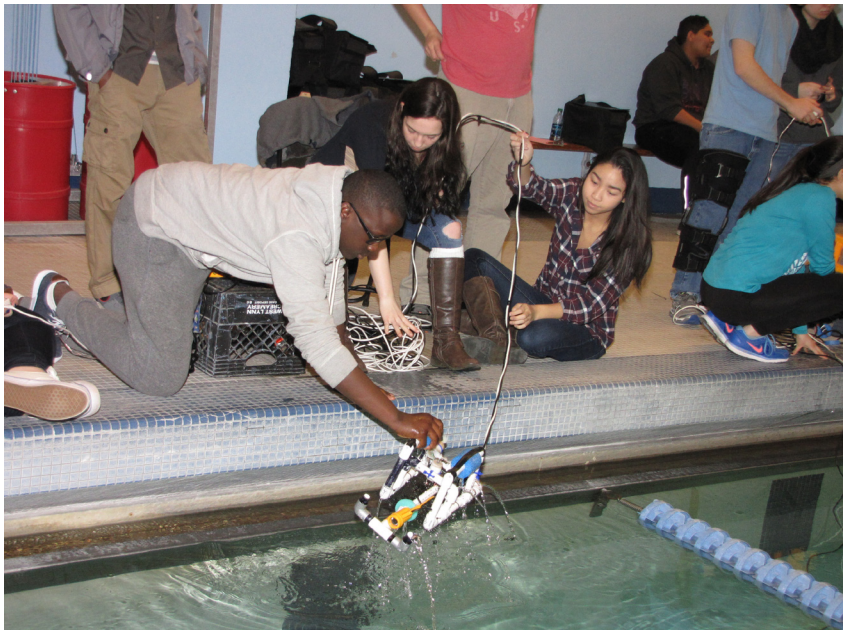


Ella Risk Elementary School visits the Boston Museum of Science to learn about habitat types of New England.

HIGH SCHOOL CHALLENGE WEEKEND

From page 6

On Saturday morning after a welcome and introduction, the true competition began. Each team had to pilot their ROV's through a series of activities including basic maneuverability and more refined maintenance tasks. Students had to pilot the ROV's accurately in order to retrieve and relocate diving rings from multiple locations on the underwater obstacle course (deep sea oil pipeline) using a uniquely attached arm designed by the students. Every team was able to earn some points, but some truly shined with their piloting and control skills. One team came out on top, was able to complete the entire task and earned the maximum points. They even had time to start over again and try other techniques. After the competition was complete, there was a brief closing ceremony to recap the weekend and announce the much anticipated team score results. SMILE staff thanked all the club teachers, industry mentors, URI faculty and student mentors, and sponsors who, through their tireless help and efforts, made this year's Challenge Weekend a true success.



Above: Students put their ROV's to the test at Tootell Aquatic Center.

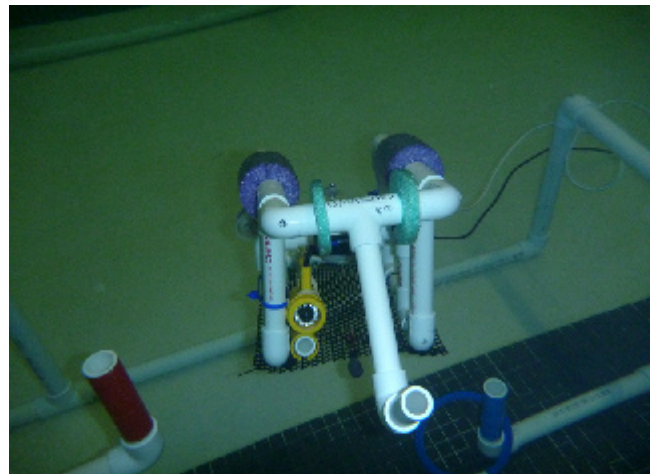
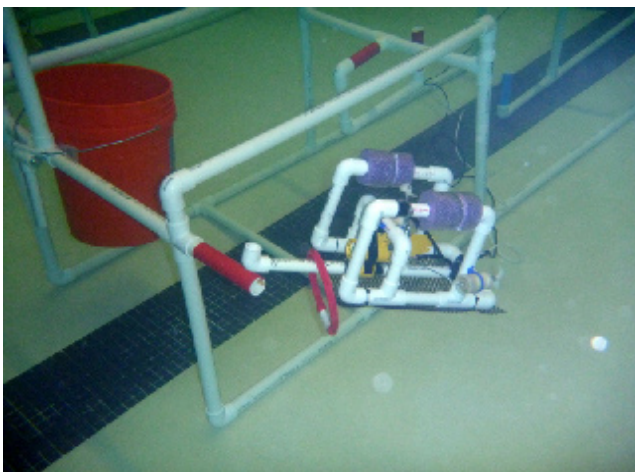
Below: An underwater camera captures the ROV's in action as students control them above water through an obstacle course.



On testing day, SMILE students take turns piloting and testing their ROVs. Using the remote control takes skill in maneuvering their ROV's underwater.

"This years challenge was amazing. We got to build, create, and explore."

*-SMILE High school Student,
2015*



CLUB UPDATES

WOONSOCKET HIGH SCHOOL

Julia Grassini, Ethel Locke



We had a wonderful introduction of the fun ahead of us when we went to Prudence Island and spent a day of many adventures. We went on a ferry to get there, saw shells that we could not see on the main land, snuck up on seals off shore, learned how to collect live samples correctly so they would not be injured so we could release them back into their environment, and collected nonliving samples to show visitors during Family Science Night.

As our SMILE club completed the activities and gained knowledge and skills to prepare for the Challenge Weekend, everyone acquired appreciation for why this URI weekend challenge is so important. After seeing raisins dance to show buoyancy; making a Cartesian Diver using a straw, clay, and a pen cap; making boats with foil; and a submarine with soda bottles we all realized that many things float on water. We then investigated ROVs and learned that aeronomics can also be related to

underwater maneuvers. We learned how to make arms move with hydraulics. We used tennis balls to learn techniques in inquiry that relates to sonar mapping and we even learned about tool safety.

All of the SMILE club members have a great time and enjoy learning something new on a weekly basis. We gain an extra sense of knowledge while also meeting other students who are interested in having a tremendous amount of fun using STEM activities. We also look forward to documenting and discussing our weekly experiences in our journals. The SMILE club meetings allow us to become closer to our fellow peers. The SMILE Club Challenge and field trips allows us to meet new people and collaborate with students from our school and other schools. The results allow us to open our minds, use what we learned, ask relevant questions, modify models, and have fun gaining knowledge.

GOFF MIDDLE SCHOOL

Ann Marie LaRoche, Jennifer Blanchard

By Jasmine Roque and Jessica Nassif

“I am glad that my sister and I signed up for the SMILE club. I just love everything that we do in the club. I also love when we stay after school every Friday; the school is all empty and we are the only ones in the building. Ultimately, those are some things that we enjoy about the SMILE club.”

-Jessica Nassif



“The things that I liked about SMILE are the hands on activities and field trips. We get to do science and math together. Also we get to do pretty great things, like the wetland in a pan and the levitation activities with magnets. Now a challenge?! I can’t wait I’m going to have fun!”

-Jasmine Roque



CENTRAL FALLS

Ella Risk Elementary School
Sheryl Wilson
Peggy Boyer

Calcutt 5th grade
Karen Cardoza
Peggy Boyer

Calcutt Middle School
Karen Cardoza

Central Falls High School
David Upegui
Laura Stanish

PAWTUCKET

Shea High School
Ann Marie LaRoche
Jennifer Blanchard

Tolman High School
Kevin Collard
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Sharon Pyne

Curtis Corner Middle School
Christina Dubei
Jo Ann Basel

S.Kingstown High School
JoAnn Basel
Jeffrey Johnson

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Maria DePalma
Amy Home

Deering Middle School
Eugene Gallo
Christopher Baccei
Joyelle Beyer

West Warwick High School
Eugene Gallo
Nelson DaSilva

WOONSOCKET

Harris Elementary School
Heather Neil
Mark Lebrun

Coleman Elementary School
Jennifer Paolozzi
Anissa Hoard

Citizens Elementary School
Patricia Degnan
Jodi Cifelli

Woonsocket Middle School (2 clubs)
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Denise Fontaine
Lisa Desante
Rania Aghia

Woonsocket High School
Julia Grassini
Ethel Locke

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We would also like to thank our Individual Supporters, who are vital in allowing The SMILE Program to continue its mission

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Orlando Merino

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

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Calendar

Weekly SMILE Club Meetings
Scientific and Career Exploration Field Trips

Family Science Nights

November-December 2014

Special Annual Events

High School
Challenge Weekend
March 27-28, 2015
URI Kingston Campus

Middle School
Engineering Challenge Weekend
March 6-7, 2015
URI Kingston Campus

August 11-13, 2014	Dec 5, 2014	May 27, 2015
University of Rhode Island Math and Science Curriculum Planning for the year	University of Rhode Island Math and Science Curriculum Special Events Planning	University of Rhode Island Program Evaluations

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