

WORKFORCE DEVELOPMENT

BUILDING TOMORROW'S TRANSPORTATION WORKFORCE

Workforce development encompasses recruiting, retraining and retention activities. The programs sponsored by the URITC are designed to recruit the transportation workforce of tomorrow by introducing career options to middle school and high school students.

We know from the career choice literature that the top factor influencing career choice is the people around you. Since not every young person has a transportation professional in their circle of family and friends, providing early exposure to transportation careers is important for these options to become a part of the choice set.

Our programs utilize experiential learning techniques to introduce transportation careers through existing after school enrichment activities and URITC summer camps. Students are given the opportunity to learn from engineers, business leaders, department of transportation officials, university faculty and college students.

Having partners from industry taking an active role in these activities provides role models to influence career choice. The support of the Rhode Island Department of Transportation (RIDOT), the Federal Highway Administration (FHWA) and the Rhode Island Consulting Engineers (RICE) has been crucial to the success of the URITC's programs.

MAKING SURE TEENAGERS DON'T FALL THROUGH THE GAP

More than 20 years ago, the University of Rhode Island realized that inner city students were knocking on its admission door without the required courses for entry.



Phil Kydd, assistant director of RIDOT, hands a certificate of completion to a student.

As a result, the Guaranteed Admissions Program (GAP) was developed as a way for URI to recruit students of color and students from disadvantaged backgrounds.

The students sign a contract, agreeing to take college preparatory courses, maintain a B- average, participate in GAP summer programs and after school workshops, take college tours, and meet all URI admission requirements.



R.I. CONSTRUCTION CAREER DAY

Since 2001, the URITC has sponsored a Construction Career Day event, at which high school students have an opportunity to learn about careers in the construction industry. Under the guidance of industry professionals, students get hands-on experience with the equipment that is commonly used in construction.

The URITC is also the home of the National Construction Career Day Center, which serves as a valuable resource for groups planning a Construction Career Day event and for students wanting to learn more about the construction industry.

In return, URI promises them a place in its freshmen class following high school graduation.

Besides the participating student, the dean of URI Admission, the student's high school principal and the student's parent or guardian also sign the contract.

After funding for GAP stalled several years ago, the number of participants dipped sharply. That number rebounded since URI's Talent Development Program took it under its wing in 2004. Now there are more than 500 students in the program.

Since 2006, URITC and RIDOT have supported the GAP/TD program to encourage students to pursue an education, and eventually a career, in engineering or another transportation-related field. Engineers and other professionals from RIDOT have worked closely with the students to share their knowledge and experience. We know from exit surveys that transportation careers are now on the students' dashboards.

URITC WORKFORCE DEVELOPMENT

MIDDLE SCHOOL ROBOTICS CHALLENGE

Every May, more than a dozen teams from Rhode Island middle schools compete in the annual Robotics Challenge at URI, sponsored by the R.I. Department of Transportation (RIDOT), the Federal Highway Administration and the URITC.

Robots built by the student teams must complete a challenge course consisting of commuting-themed transportation missions, such as moving disabled vehicles to a garage, delivering food to an airplane and picking up passengers at a bus stop. Teams are also required to enter a poster contest, in which they depict transportation-related careers.

"Competitions such as these are great for getting young minds thinking about math, science and engineering," RIDOT Director Michael Lewis said. "These children represent our future and opportunities for hands-on learning are extremely valuable."

Students are required to belong to an after-school robotics club. They use robotic kits based on Lego building bricks.

The enthusiasm level has grown each year that this event has been held. More schools participate and the number of students involved has broadened the audience for our transportation career message.



A team of middle school students watch their robot perform the transportation-related tasks.

SMILE MIDDLE SCHOOL ENGINEERING CHALLENGE



Students proudly show off the bridge that they built at the Challenge.

Middle school students involved in the Science and Math Investigative Learning Experiences (SMILE) program come to the URI campus once a year to compete in SMILE's Engineering Challenge.

Each challenge requires the building of either a model, a route or a solution that is then tested and compared among participating teams.

The objective for one of the challenges was for the middle school

students to work with college students in science and engineering and other majors to construct the strongest and most efficient model bridge possible.

The students were taught how to use the appropriate software and techniques to complete the challenge. Given a budget and cost of materials, students determined the expense to execute their design and if necessary, made modifications to their design to meet specifications.

The students kept track of expenditures for supplies and their returns on the inventory list. An account of expenses is handed in at the end of each Challenge.

SMILE is a science and math academic enrichment after-school program in partnership between the University of Rhode Island and Rhode Island school districts. The purpose of the program is to increase the number of underrepresented minority and educationally disadvantaged students who graduate from high school qualified to go on to higher education and pursue a career in science, math, engineering and health professions.

URITC WORKFORCE DEVELOPMENT

ENGINEERING CAREER DAY

The goal of the URI Engineering Career Day is to introduce high school freshmen and sophomores to the many occupations related to transportation engineering while they still have the time to include necessary pre-requisites in their course selection.

Hosted by the University of Rhode Island's College of Engineering, the students listen to presentations and participate in hands-on activities conducted by URI professors and industry professionals.

Engineering Career Day consists of four learning labs:

- bridge and geotechnical engineering;
- highway and traffic engineering;
- surveys and geographic information systems (GIS); and
- storm water management, hazardous materials and environmental planning.

Engineering Career Day is sponsored by the URITC, the R.I. Department of Transportation (RIDOT), the R.I. Consulting Engineers (RICE), University of Rhode Island, College of Engineering and the Federal Highway Administration (FHWA).



Above: Students at Engineering Career Day learn how to use GPS surveying equipment.

MIDDLE SCHOOL ACADEMY

Middle school students interact with transportation professionals via classroom instruction, guest speakers, field trips and hands-on projects.

Activities include:

- introduction to bridges by a R.I. Department of Transportation bridge engineer
- introduction to engineering careers by a City of Providence and a RIDOT engineer
- computer bridge building contest
- balsa wood bridge building contest
- safety sessions at the Historic Kingston Railway Station
- writing in daily journals
- work zone safety sessions
- tour of T.F. Green Airfield
- tour of Narragansett Bay

Some of our graduates have gone on to college and enrolled in engineering programs.

Right: Student uses a glue gun to hold together the pieces of balsa wood for her model bridge.



URITC WORKFORCE DEVELOPMENT

ENGINEERING ACADEMY

High school freshmen, sophomores and juniors learn about:

- highway design
- bridge design
- traffic engineering
- water resources
- environmental engineering
- geographic information systems
- geotechnical engineering
- reading a scale
- blueprint reading
- preparing an estimate
- surveying and layout

CONSTRUCTION ACADEMY

The curriculum for high school juniors and seniors includes:

- OSHA 10-hour certification
- flag person certification
- work zone safety
- hands-on activities at the Operating Engineers Center
- blueprint reading
- estimating
- construction math
- surveying and layout

BUSINESS ACADEMY

High school freshmen, sophomores and juniors get a taste of managing a company's supply chain, including planning, purchasing, production, transportation, storage and distribution and customer service. Site visits to local ports and distribution facilities allow students to interact with professionals and get first-hand exposure to the world of transportation.



Construction Academy students become certified flaggers.



Engineering Academy students examine how well water drains through different materials.

GOALS OF THE SUMMER ACADEMIES

These initiatives are designed to:

- give students first-hand knowledge of transportation work
- provide many opportunities for mentoring by industry role models
- spread the message that the transportation sector offers many rewarding career options
- make students aware of necessary courses early enough in their education to be prepared to move on to a career or college with the right tool kit
- increase diversity in the transportation workforce

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