



# TRANSPORTATION

Building Jobs through  
Transportation

# FOCUS

WINTER  
2004

News and Information from the Rahall Transportation Institute



### Contents:

- News....p. 1, 3,
- Plymale's Perspective.....p.2
- Research.....p.4,5,8
- Education.....p.9
- Technology Transfer....p.9-10
- Pre-K-12 Outreach.p.6-7,11
- Survey & Upcoming Events.....p.12

### Partner Schools:



## Terry Retires after 40+ Years Service to Transportation Industry

by Brandon Totten

The Appalachian Regional Commission (ARC) will lose a valued member of its team January 2004 when Senior Transportation Advisor Ed Terry retires after more than 40 years of service in the transportation industry.

The ARC is a federal-state partnership that

works with the people of Appalachia to create opportunities for self-sustaining economic development and improved quality of life.

The Nick J. Rahall, II Appalachian Transportation Institute (RTI) has worked with the ARC and Terry on several transpor

Continued on 3: TERRY



Above: Ed Terry retires after more than 40 years of service to the transportation industry.

## James E. Clyburn UTC Reps Visit RTI

by Brandon Totten

Members of the James E. Clyburn University Transportation Center (JECUTC) at South Carolina State University visited RTI October 21, 2003, to tour headquarters and RTI labs located at Marshall University's Huntington campus.

JECUTC is in the preliminary stages of planning a university transportation center headquarters at the campus of South

Continued on 3: USC VISIT



Above: left to right - David Cartwright, RTI Research Associate; Bob Plymale, RTI Director; John Bowman, SCSU Campus Developer; Elbert R. Malone, SCSU Director of Sponsored Programs; Dr. Clarence Hill, Director, James E. Clyburn UTC, SCSU; Harvey Ezekiel, Architect; Jim Merrim, Architect.





## Plymale's Perspective: *The Director's Report*

# "Partnerships: Bringing Together Resources for Economic Development, Education and Safety in Appalachia"

At RTI, we believe that only by working together as an integrated team, with one hand helping the other, can we achieve our goal of "Building Jobs through Transportation."

This idea, that by working together, we can improve the quality of life for Appalachians through education, training, economic development and safety preparation, is at the heart of the partnerships RTI has created since its foundation.

Education is just one of the keys through which the door to economic development can be opened.

Through our partnerships with colleges and universities throughout West Virginia, RTI has been able to extend the educational reach of transportation-related courses and seminars to students across the state.

From Marshall University to Bluefield State College. From West Virginia University Institute of Technology to Southern West Virginia Community and Technical

College to Mountain State University. The partnerships with these schools are imperative to the success of economic development.

*This idea, that by working together, we can improve the quality of life for Appalachians through education, training, economic development and safety preparation, is the heart of the partnerships RTI has created since its foundation.*

In addition to our partner universities in education, RTI has also established partnerships with key agencies and organizations that are enhancing the safety and welfare of the people of Appalachia.

Together, the West Virginia Statewide Addressing Mapping Board and RTI have combined resources to develop a 911 data warehouse that can ensure the same quick, accurate emergency services to rural areas as urban areas. This 911 data warehouse will allow ambulance drivers, firefighters, police officers and other emergency personnel to lo-

cate homes in rural areas much more rapidly than ever before.

RTI and Operation Lifesaver hosted the West Virginia Operation Lifesaver Rail Camp, whose primary focus is to keep civilians and non-railroad employees from being injured by railroad equipment. Thirty-two

students, from ages 12 to 17, from five states attended the camp. Soon, with the help of RTI, WVOL will convert a school bus into a mobile presentation center that will travel the state instructing residents about railroad safety.

We alone cannot change the course that has been set before us, but by bringing together all of our resources, all of our knowledge and all of our expertise, we will benefit all the people of Appalachia.

*Sincerely,*  
**Bob Plymale, RTI Director**





Continued on 3: TERRY

tation-related projects.

“Ed has been an integral element in the growth of RTI,” Bob Plymale, RTI director, said. “Also, he has been a continuous champion in recognizing the benefits for different agencies such as the ARC and DOT.”

Terry joined the ARC in January 1999 after 37 years with the Federal Highway Administration. Before working for the FHWA, he began his career in 1958 with the Alabama Highway Department after graduating from Auburn University with a civil engineering degree.

“RTI would not be where it is today if not for the contributions and assistance from Terry and the ARC,” Richard Begley, RTI associate director, said.

The ARC was instrumental in assisting RTI in the development of the geographic information systems (GIS) mapping of West Virginia, which will allow researchers to improve data analysis of highway corridors, travel advisories and maintenance functions for state departments of transportation.

“It has been a real honor to get the opportunity to work with Ed Terry,” Sean Litteral, research associate for RTI, said. “His intricate knowledge of transportation has played a major role in RTI’s success.

“He has also provided a role model in strength



*Above: Terry (front table, second from left) participates in a transportation research breakout session at the Radisson Hotel in Huntington, W.Va.*

of character to our students interested in transportation as a career, which helps us to further fulfill our mission of molding transportation professionals,” Litteral said.

Terry will take over as the full-time pastor of Mt. Paran Presbyterian Church in Baltimore, Md. in January 2004 after his retirement from the ARC.

“Ed’s presence, his ideals and enthusiasm for the welfare of Appalachia will be missed at RTI; however, the benefits to RTI as well as the Appalachian region will be felt for many years to come,” Plymale said.

From page 1: USC VISIT

Carolina State University. The group toured RTI’s facilities to develop ideas about constructing different components for their own UTC.

“Basically, their UTC and our UTC are very similar in administration and hierarchy, and both express an interest in rural transportation,” David Cartwright, research associate for RTI, said. “We can use our similarities to work together, a relationship has started that will benefit both UTCs.”

Dr. Clarence Hill, center director for JECUTC, and John Bowman from universities facilities management, along with the architect who won the bid to build the center, examined the types of spaces and facilities RTI uses in order to get an idea about how to utilize space in their UTC.

“It was an honor to assist and guide others in the development of a university transportation center headquarters,” Bob Plymale, RTI director, said.





**Faculty & Student Spotlight:**  
 Dr. Raymond Busbee, Brandi Compton  
 by Brandon Totten

**Name:** Raymond L. Busbee, Ph.D.

**Hometown:** Macon, Georgia

**Education:** B.S. Forestry/Wildlife Management, M.S. Fisheries Biology, Ph.D. Fisheries Biology/Forest Recreation Planning, University of Georgia.



**Current Position:** Professor of Parks and Recreation (part-time), Assistant Director, Program Development and Management (RTI).

**Contributions to RTI:** TRP 99-11: *Economic Impact Study of the Greenbrier River Trail in Southern West Virginia*; TRP 99-29: *Development of a Plan for a Non-Motorized Transportation Corridor in Southern WV – Case Study for Alternate Sources of Transportation between Huntington and Charleston*; creation of off-highway vehicle courses and a minor in OHV management at Marshall University.

**Email:** Busbee@marshall.edu



**Name:** Brandi Dawn Compton

**Education:** B.S. Park Resources and Leisure Services, Marshall University; pursuing a Master of Arts in Teaching at Marshall University Graduate College.

**Title:** Graduate Assistant.

**Contributions to RTI:** Assisting in the development of a new curriculum for three Off-Highway Vehicle courses.

**E-Mail:** Brandic24@charter.net

*Faculty and Student Spotlights will highlight a faculty or staff member and a student in each issue of Transportation Focus. If you would like to be considered for the next newsletter contact Errin Jewell at (304) 696-7165 or jewell4@marshall.edu.*

**Principal Investigator Present  
 FRA Track Stability Research**  
 by Brian Dowler

Representatives from RTI participated in the American Railway Engineering Maintenance of Way Association (AREMA) 2003 Conference and Exposition Oct. 5-7, 2003 in Chicago.

Principal investigator Tony Szwilski and Research Associate Pete Dailey gave a presentation centered on Federal Railroad Administration research and railroad track inspection systems.

Richard Begley, Mark Burton, John Ball, Peter Dailey, Keith Kaiser and ZhiBin Sheng, all of RTI, attended sessions.

**Researchers Discuss RTI's Role  
 in the Transportation Workforce  
 at NAISTD Conference**  
 by Brian Dowler

John Ball, senior research associate, and LeAndria Reed, graduate research assistant, participated in the National Association of Industry Specific Training Directors (NAISTD) conference Sept. 21-24 in Charleston, W.Va.

Forty representatives from 23 states attended the conference, which addressed issues in the transportation, wood, chemical and printing industries.

Ball and Reed made a presentation to the targeted industry program panel about the transportation workforce and training needs of the transportation industry for the 21st century. Industry-specific training directors and members of workforce development agencies from throughout the nation comprised the audience.

“Conferences like this allow us to demonstrate how RTI activities are meeting the needs of transportation professionals,” Ball said.





## Researchers Examine Vertical Rock Slope Crack along U.S. 52

by John Ball

At the request of Norfolk Southern Railroad (NS), a team of RTI researchers recently examined a fracture in a vertical rock slope near Crum, W.Va.

The stability of the nearly vertical rock face and the extent to which a fracture extends into the rock are at issue. What complicates the situation is the slope is adjacent to the double-track mainline of the NS railroad and at the top is U.S. 52, the principal highway in southeastern West Virginia.

The horizontal distance between the two roadways approaches 40 feet, and the concern is that if the rock slope fails or if attempts are performed to bring down the unstable rock, U.S. 52 and the rail-

road will be affected.

RTI's initial plan was to use several remote sensing technologies to determine the elevation and quantity of the unstable rock mass, the extent to which the rock fracture extends into the slope and if failure of



*Above: Researchers examine a vertical rock slope near Crum, W.Va.*

removal would effect U.S. 52.

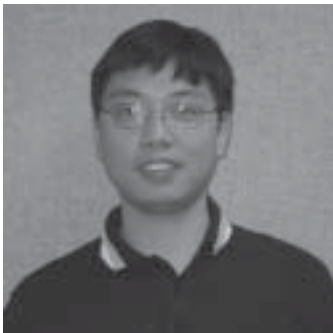
There are no traditional non-invasive technologies to accurately determine this. By using advanced GPS instruments coupled with electromagnetic scanning (EM) equipment and ground penetrating radar (GPR), however, RTI hoped to determine these parameters. However, inclement weather and difficult topography prevented researchers from using the EM or GPR equipment upon the visit.

The team plans to return with NS to complete the survey and hopes the information given by this technology will allow NS to make a better informal decision on resource allocation and ultimately adaptation of the technology by major railroads.

## ZhiBin Becomes RTI's Newest Research Associate

by Errin Jewell

ZhiBin Sheng became RTI's newest research associate December 2003 after completing a Master of Science in Information Systems from Marshall University Graduate College.



He brings nearly ten years of experience in web application and web service development; GIS development; database administration; and systems testing and design to the Appalachian region.

Sheng worked as a graduate research assistant at RTI since January 2002. During this time, he led information technologists on a Federal Railway Administration funded research project; integrated a collection of GPS and electromagnetic inductance instrumentation data into a database and data stream analyzed in a real-time survey of rail and rail bed; and was responsible for the setup, operation, and management of a Microsoft Portal Server knowledge management system.

He is an alumnus of Beijing University of Astronautics and Aeronautics, where he earned a Bachelor of Science in Electronic Engineering in 1994. Before coming to RTI, he was employed as a web developer with ACER Guanzhou Branch (South China Business) and as an avionics engineer at Guanzhou Aircraft Maintenance Engineering Co.





Above: Brendan Dailey, a seventh grade student at Charleston Catholic Middle School in Charleston, W.Va., donated LEGO equipment to a school in South America.

"We're very pleased that after participating in a pre-K-12 Outreach activity, Brendan made a generous donation to help one of our graduate research assistants equip his former school in Colombia with materials to create an intelligent LEGO robotics city."

RTI Director Bob Plymale.



## Pre-K-12 Outreach Activities Expand, Include School in Colombia

by Errin Jewell



Above: Graduate research assistant Juan Bueno guides a student in tele-operating a LEGO robotic vehicle at the State Fair of West Virginia. Bueno and Brendan Dailey are working to create an intelligent LEGO robotics city in Colombia.

Students who attend Colegio Colombo Britanico in Cali, Colombia, are now equipped to tele-operate intelligent LEGO vehicles and city components and to communicate with RTI Pre-K-12 Outreach participants throughout the world.

The international partnership was made possible through the efforts of graduate research assistant Juan Bueno, Pre-K-12 Outreach instructor Linda Hamilton, and middle school student Brendan Dailey.

In August 2003, Brendan Dailey, the 12-year-old son of research associate Pete Dailey, tele-operated LEGO vehicles with Bueno at RTI's booth at the State Fair of West Virginia. Hamilton informed the seventh grade student at Charleston Catholic Middle School in Charleston, W.Va., and his father about her activities with the South American school. She said Bueno, who is an alumnus of the school, received a Red Rover site license from The Planetary Society and LEGO. Although the license allows the school to operate a continuous LEGO Robotics City, the school still needed a LEGO RCX microcomputer, sensors, motors and bricks to create an intelligent city and vehicles.

"I had spoken briefly to Linda about her needs for additional LEGO gear for this project," Dailey said. "I discussed her need with my son, and he suggested donating his LEGO gear."

Continued on 6: COLOMBIA





## RTI Trains, Funds 24-Station Lab at Culloden Elementary

by Errin Jewell

A rural West Virginia elementary school is now equipped with a 24-station LEGO Intelligent Robotics laboratory after receiving training and technical support from RTI and funding from Communities in Schools of Cabell County (CIS) and Culloden Elementary Parent/Teachers' Organization.



Above: Students at Culloden Elementary send science questions and Mars Red Rover challenges to students at Davis Creek Elementary via the Internet using LEGO Mars Red Rover software.

"We support the continuation of this project by RTI to train students in building and programming intelligent vehicles using LEGO Robotics and tele-operation in this rural school."

*J. Grant McGuire, Chairperson, Director's Committee*

Eighteen fourth grade students from Culloden Elementary and their teacher received training by graduate research assistants Damon Ward, James Green and Clinton Burch.

Two fifth grade classrooms also benefit from training by RTI's Linda Hamilton as well as a contribution from CIS, which was matched by its parent organization, the Cabell County Family Resource Network (CCFRN). This organization's mission is to inspire local young people to learn and stay in school and prepare for success in life.

"We support the continuation of this project by RTI to train students in building and programming intelligent vehicles using LEGO Robotics and tele-operation in this rural school," J. Grant McGuire, Chairperson, Director's Committee, CCFRN, said.

RTI and seven other organizations were also recognized as Community Champion Partners for 2002-03 by Cabell County Schools because of their efforts "to connect local children to needed resources."

From page 6: COLOMBIA

"Brendan was excited by working with 'the LEGO lady' during the fair and trips to the office with his dad, and he wanted to donate his LEGOs to make them available to a larger group of kids around the world. He heard there was an effort to set up another remote access site. He hoped he could make a contribution."

Brendan donated more than \$600 in equipment, including a complete LEGO Robotic System, several vehicle kits, a USB camera and storage shelving.

Hamilton said the Colombian LEGO City will be similar to cities she set up at RTI headquarters at Marshall University and Davis Creek Elementary in Barboursville, W.Va. The West Virginia students and other students from around the world will be able to communicate with the Colombian school via the Internet and tele-operate vehicles and city components.

RTI director Bob Plymale said, "We're very pleased that after learning to tele-operate LEGOs during a Pre-K-12 Outreach activity, Brendan generously donated materials to help one of our graduate research assistants equip his former school in Colombia with an intelligent LEGO robotics city."

"The Davis Creek students have had 'e-pals' in Australia," Hamilton said. "Mrs. Simon, their teacher, connected them with a school there. Kids from both schools send each other science questions and Mars First LEGO League challenges and then respond with answers and results."

"We will be able to have such a rich learning experience in South America because of Juan and Brendan."





## FRA AWARDS FUNDING TO CONTINUE RR RESEARCH

by Errin Jewell

Principal investigators Dr. Anthony Szwilski and Richard Begley recently received funding from the Federal Railroad Association to continue research efforts on projects related to railroad track stability.

The funding will be used on projects including the continuation of TRPs 00-05 *Integrated Track Stability Assessment and Monitoring System (ITSAMS) Phase III*.

The FRA awarded approximately \$694,500 in this grant.

The objective of the research is to continue the development of a remote sensing technology that will rapidly assess the integrity of various track structure and substructure layers, such as the ballast, sub ballast and subgrade, and to locate, identify and quantify weak track segments.

Researchers will also continue the development of a new technology for the real-time measurement of vertical track deflection, based on the use of the laser interferometer.

## RAILROAD TRACK STABILITY RESEARCH PUBLISHED

by Brandon Totten

Pete Dailey, research associate, reached a milestone as a graduate research assistant by being the first at RTI to co-author papers accepted for publication at peer-reviewed conferences.

Dailey, who recently joined RTI as a full-time staff member, worked on the "Integrated Railroad Track Stability Assessment and Monitoring System Project." The paper, which describes part of the results of his field work, was accepted for publication at the 2003 Symposium on the Application of Geophysics to Engineering and Environmental Problems in San Antonio, Texas.

The paper was also accepted for publication at the 2003 American Railway Engineering and Maintenance of Way Association meeting in Chicago.



*Left: Research associates from RTI prepare to examine the geological stability of a rockface located adjacent to a railroad track in rural Cabell County, W.Va.*

Dailey's paper, titled *Application of Geophysical Methods to Evaluate Rail-Track Subsurface*, presented in San Antonio generated participant interest in using geophysics to study this sort of infrastructure.

"This paper described our use of high accuracy GPS surveying techniques as a part of the Integrated Track Stability Assessment and Monitoring System," he said.

Dailey works under Dr. Anthony Szwilski in the Remote Sensing Laboratory on Marshall University's campus,

where he and other RTI researchers continue to refine their ability to map railways and share that information through Technology Transfer initiatives.

"RTI is able to show the research effort has practical applications," Dailey said. "Applications that are likely to become mainstream industry operating practices."





## Second Course in OHV Minor Offered Spring 2004

by Brandon Totten

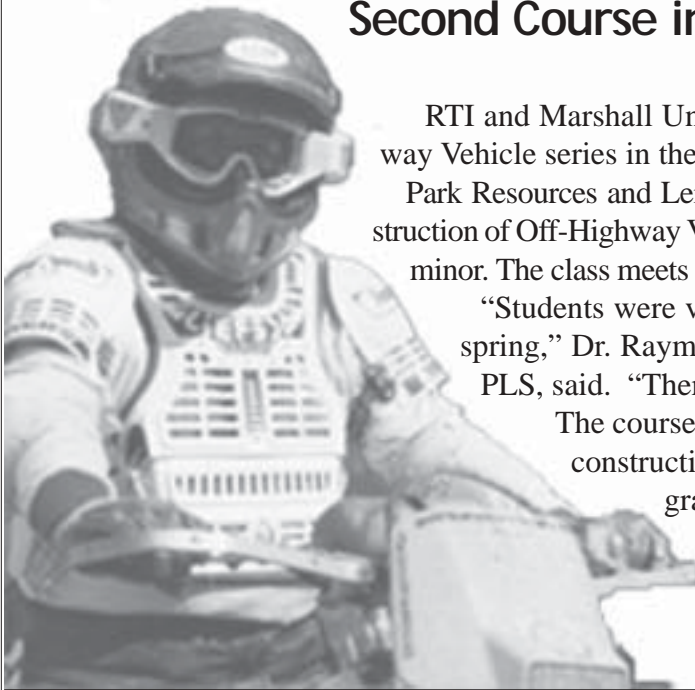
RTI and Marshall University are offering the second course in the Off-Highway Vehicle series in the Spring Semester 2004.

Park Resources and Leisure Services (PLS) 481/581- Planning, Design and Construction of Off-Highway Vehicle (OHV) Trail Systems is the second class in the OHV minor. The class meets Wednesdays from 1-3:30 p.m. beginning Jan. 14, 2004.

“Students were very enthusiastic about the first OHV course offered last spring,” Dr. Raymond Busbee, RTI principal investigator and professor of PLS, said. “There were 17 students enrolled in the first class.”

The course will include state-of-the-art techniques for planning and constructing OHV trails such as laboratory exercises including geographic information systems (GIS) and observation of trail systems currently under construction.

For more information about MU’s OHV courses, contact Dr. Raymond Busbee at (304) 696-2922 or Busbee@marshall.edu.



## Senior Citizens Encouraged to Use Trails, Exercise to Stay Active

by Brian Dowler

Greater Huntington Parks and Recreation Commission, in cooperation with RTI, City National Bank and Huntington Bank One, hosted more than 130 senior citizens Nov. 7, 2003 during the Senior Extravaganza at the Veterans Memorial Fieldhouse in Huntington, W.Va.

The purpose of the event was “to promote physical activity and a healthful lifestyle for our senior citizens,” Dr. Sandra Parker, professor of exercise, sport, science and recreation at Marshall University, said. Parker and RTI Principal Investigator Raymond Busbee have worked together to encourage senior citizens

and other individuals to utilize parks for exercise. Activities included walking a designated path throughout the fieldhouse, stretching exercises, aerobics, Yoga, Tai-Chi, massages, volleyball and line dancing.

“We tried to show the senior citizens of the area alternate forms of exercise. Walking and other exercises we tried in the break-out sessions can be wonderful ways for them to exercise without straining or over-exertion,” Parker said.

*Left: A group of senior citizens participate in a volleyball match during the Senior Extravaganza at the Veterans Memorial Field House in Huntington, W.Va.*





## Volunteers Trained, Certified to Present WVOL Courses

by Brian Dowler



Seven RTI employees and two police officers from West Virginia were trained and certified as volunteer presenters for the West Virginia Operation Lifesaver (WVOL) program at RTI headquarters Oct. 1, 2003.

The primary focus of the project is to keep civilians, or non-railroad employees, from being injured by railroad apparatus.

Mark Burton, John Ball, Kim Baker, LeAndria Reed, Keith Kaiser, Pete Dailey and David Cartwright, all from RTI, were certified to present after completing the day long training session. The certification allows them to travel throughout the state teaching safety and respect for the railroad. Police officers from Nitro and Parkersburg were also certified to instruct WVOL courses.

“Each year injuries and fatalities occur at railway crossings that could have been avoided. Statistics show that safe rail-crossing habits are most easily learned at an early age. That’s what we hope to instill in the children throughout the state,” Burton said.

## Robertson Represents RTI at 2003 National Waterways Conference

by Errin Jewell

Dana Robertson, director of the Inland Waterways Academy, Marshall Community and Technical College, represented RTI at the 2003 National Waterways Conference Sept. 24-26, 2003, in Houston, Texas.

Conference training sessions related to all aspects of the inland marine industry and focused on the importance of the nation’s navigation and flood control infrastructure and on making sure others understand its importance.

Jeffrey N. Shane, under secretary for policy, US Department of Transportation, was the key-

note speaker. Briefings by the Corps of Engineers and industry leaders highlighted the environmental and fiscal challenges faced by the nation’s ports and waterways.

The National Waterways Conference was founded in 1960 to ensure adequate waterways investment and management and to encourage a sensible approach to user taxes and fees. By promoting a greater understanding of the public value of the nation’s waterways, the Conference garners support for fair and even-handed Federal waterways policies.



*Transportation Focus* is a quarterly newsletter published by the Nick J. Rahall, II Appalachian Transportation Institute.

Managing Editor, Design and Layout: Errin Jewell; Writers and Copy Editors: Brian Dowler, Pam Hamilton, Errin Jewell, Brandon Totten; Contributors: Kim Baker, Richard Begley, John Ball, Pete Dailey, Robert Plymale.

Read *Transportation Focus* online at [www.marshall.edu/ati/news/newsletter.htmlx](http://www.marshall.edu/ati/news/newsletter.htmlx)



## Early Education Center Students Learn Modern Mapping, Robotics during Visit



Above: Students from Marshall University's Early Education Center visit RTI to learn about LEGO Robotics, mapping technologies and transportation careers.

by **Errin Jewell**

Pre-kindergarten students from the Marshall University Early Education Center (MUEEC) learned the basics of creating and reading maps, assembling and operating LEGO robotics and transportation professions Thursday, Nov. 6, 2003 at RTI headquarters in Huntington, W.Va.

Research associate Sean Litteral explained traditional ways of making maps, which is based on surveyor markers and measurements, and modern methods of map-making, which use satellites and global positioning.



Students also operated intelligent robotic vehicles in AppaLEGO City and were introduced to transportation professions by research associate David Cartwright.

various types of vehicles and city structures through AppaLEGO City, they discover how city planners, automotive professionals and others apply the same concepts to real life situations."

"We recognize the importance of integrating basic technology skills, such as those reinforced by LEGO robotic activities, to students at an early age," RTI director Bob Plymale said. "As they learn to read maps and operate

## Hamilton, Bueno Instruct Educators at West Virginia Science Teachers' Association

by **Errin Jewell**

Linda Hamilton, pre-K-12 outreach instructor, and Juan Bueno, graduate research assistant, provided hands-on LEGO Robotics training to teachers and administrators at the West Virginia Science Teachers' Association's annual conference at Snowshoe, W.Va., Oct. 10-12, 2003.

Hamilton said approximately 600 educators from West Virginia schools attended the conference. She and Bueno guided them through creating intelligent LEGO robotic vehicles and programming RCX microcomputers. Participants also accomplished several First LEGO League Mars challenges.

She said training the educators received will be used to teach pre-K-college-age students simple computer, science and technology skills.



Above: Hamilton and Bueno guided participants at the West Virginia Science Teachers' Association conference in constructing intelligent LEGO vehicles.





## We welcome your questions and input!

RTI wants your input on future research topics and activities including:

- Intermodal Transportation
- Transportation Professional Development Courses
- Transportation and Economic Development
- College Degree Programs or Courses

To submit your feedback, please call us at (304) 696-7098 or click the "Contact Us" link at [www.marshall.edu/rti](http://www.marshall.edu/rti).

### *Conferences*

#### **January 11-14, 2004**

Transportation Research Board Annual Conference; Washington, D.C.

#### **TBA 2004**

Endangered Species Training, Brian Yanchik, Instructor; Marshall University, Huntington Campus.

### *Transportation Seminar Series*

#### **March 9-10, 2004**

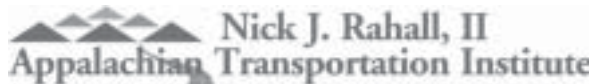
Railroad and Highway Traffic Safety and Operations Seminar; Wingate Inn, Helena, MT.

### *Transportation Seminar Series*

#### **August 5, 2004**

Geohazards in Transportation in the Appalachian Region; Columbus, OH.

Register online at [www.marshall.edu/rti](http://www.marshall.edu/rti) or call Sandra Jones at (304) 696-7098.



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