Nick J. Rahall, II Appalachian Transportation Institute at Marshall University

RTI TRANSPORTATION Building Jobs through Transportation FOCUS

Spring 2004

News and Information from the Rahall Transportation Institute

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High Tech Corridors to Link Mountains to Jobs

by Errin Jewell

A new partnership between the Nick J. Rahall, II High Technology Corridors Program and the Center for Appalachian Network Access (CANA) at Carnegie Mellon University has made the link between high tech jobs and Southern West Virginia a step closer.

The intention of the partnership, which was driven by U.S. Rep. Nick Rahall, is to create jobs that will link our high tech corridor to the information superhighway and move Southern West Virginia closer to a technology-based economy. Residents and businesses can use broad band Internet networks to expand their access to

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National Maritime Funding Increased

by Brian Dowler

As much as $1,000,000 in funds designated for maritime safety job training has been allocated to RTI. RTI was designated as a National Maritime Enhancement Institute (NMEI) in 2002.

"Our ports can be the targets of those who wish to bring disaster to our great nation. This money can help train those that we need to ensure our ports are safe and our lives are safe as well," U.S. Rep. Nick J. Rahall, II (D-WV) said.

In accordance with Rahall's request, the U.S. Congress instructed the Maritime Administration of the U.S. Department of Transportation to make possible professional maritime security training in coordination with RTI.

NMEIs are authorized by the U.S. Transportation Secretary to undertake a variety of activities

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

"Economic Development is vital for Future Generations in Appalachia"

The time has come for Appalachia to grasp the threads of opportunity and ensure a future in which all Appalachians can benefit from the continuing efforts of economic development. At RTI, economic development has been at the forefront of goals and initiatives that RTI has been establishing since its foundation in 1998.

Through the efforts of a dedicated staff and principal investigators, RTI has heralded the efforts of economic development in research projects, technology transfer initiatives and the education of future transportation professionals, which will guide the transportation industry throughout the 21st century.

RTI, the only UTC contained solely within Appalachia, will help foster a more diverse and drivable economy for rural and mountainous areas by creating opportunities for economic growth instead of waiting for opportunity to come to Appalachia.

Whether through the partnership with Marshall Community and Technical College in training railroad conductors for careers in the railroad industry, or teaching transportation professionals the benefits of integrating surveys and map base information with GIS, RTI is at the forefront of developing economic opportunities.

"RTI...will help foster a more diverse and drivable economy for rural and mountainous areas by creating opportunities for economic growth instead of waiting for opportunity to come to Appalachia."

Whether introducing children to LEGO Robotics and concepts in engineering or partnering to challenge high school students with activities during the "Exploring Engineering Academy of Excellence," RTI is creating opportunities for every educational level.

RTI's goal, "Building Jobs through Transportation," serves as the guiding force of the Institute in creating opportunities to encourage workforce and economic development, to raise the bar in education from elementary school to graduate level studies and to provide research results through technology transfer, in which information is relayed to transportation professionals, who can then utilize that information for the benefit of all Appalachians.

RTI is a unique mixture of opportunities for the economic development of Appalachia. While researching transportation-related issues, RTI brings together different components to create economic opportunities for students, educators and most importantly, the Appalachian Region.

Sincerely,
Bob Plymale, RTI Director

Summer Engineering Workshop Allows High School Juniors to Explore Careers

by Brandon Totten

High school students from the tri-state region who are entering their junior year are invited to apply for the "Exploring Engineering: Academy of Excellence 2004" June 20-25 at Marshall University.

The Academy is designed to encourage high school students to explore career options in engineering by participating in hands-on engineering activities, touring engineering-related facilities and interacting with engineering professionals.

RTI, Society of American Military Engineers Huntington Post, Marshall University's College of Information Technology and Engineering, other organizations and individual engineers sponsor the event.

Approximately 32 students are selected based on academic transcripts and letters of recommendation. Students must be enrolled in a college preparatory curriculum.

Applications are available online at www.marshall.edu/eeae. For more information, contact the EEAE Committee at eeae@marshall.edu or (304) 746-2042 or (304) 696-5453.

St. Joseph Elementary Students Learn Railroad Safety

Left: Mark Burton and Kim Baker address first grade students at St. Joe's Elementary School after presenting the Operation Lifesaver video "Skylock Fox and Birdie." Burton and Baker made presentations to 138 students in grades K-6, Feb. 6, 2004.

by Brian Dowler

"Mr. Burton told us all to stay away from train tracks because the rail cars have straps on them and can come loose and hit you," a kindergartener at St. Joseph Elementary School, said.

This is one of the six safety points that Mark Burton and Kim Baker of RTI stressed on Feb. 6, 2004 to the students at this Huntington, W.Va., elementary school about safety near railroads.

The two volunteered their time as part of the joint effort between Operation Lifesaver and RTI.

For the past three years, RTI has partnered with CSX-T, Norfolk Southern and the West Virginia State Public Service Commission in Operation Lifesaver.

"Studies have shown that the years prior to adulthood are when safety habits are formed. Operation Lifesaver targets this age group in an attempt to form rail-safe lifestyles," Burton said.

Burton and Baker made presentations to 138 students in grades K-6. The duo presented a video called "Skylock Fox and Birdie" about railroad safety to grades K-3 and delivered a slideshow presentation to the rest of the students.

"Any time is train time" was the theme for the students, but Operation Lifesaver's goal is to educate and promote safety near railroads and rail equipment.

"The older students asked some really tough questions. They were really interested and learned a lot," Baker said. "We asked the students to give Mark hi-fives as they walked by and promise to be safe around the railroad. They took their promises very seriously."

Western Greenbrier Co-Gen Plant Construction Plans Begin

Western Greenbrier Co-Gen Plant to Convert Coal Waste By-Products into Energy, Concrete Products

by Errin Jewell

Planning has begun on the Western Greenbrier Co-Gen, in 85-megawatt clean coal technology power plant in Rainelle, W.Va. The facility could burn coal and up to 1,160 tons of coal waste materials per day from a nearby dump to produce electricity, steam and bricks made from fly ash wood waste. Western Greebrier Co-Gen is owned by the towns of Rainelle, Rupert and Quinwood.

Western Greenbrier Co-Gen will be the anchor tenant of an industrial park developed through a Cooperative Research and Development (CRADA) between RTI and the United States Department of Energy (USDOE) and which included a West Virginia industrial partner, C-ASH Technologies, Inc. The project is budgeted at an estimated $230 million; funding for half the cost was approved by the USDOE Spring 2003.

Other park tenants will utilize waste steam from the power plant, and electricity will be sold to the regional power grid. At least four other sites are proposed for the park.

Recoverable Materials from Coal-Combustion By-Products Include:

- *Fly Ash*
- *Bottom Ash*
- *Boiler Slag*

Potential Concrete Products Include:

- *Railroad Ties*
- *Bricks*

ADDENDUM

The Winter 2004 issue of *Transportation Focus* featured an article that described a research project presented by Dr. Tony Szwilski and Reseach Associate Pete Dailey during the American Railway Engineering Maintenance of Way Association 2003 Conference and Exposition Oct. 5-7, 2003 in Chicago.

During the conference, Dr. Szwilski, also presented *"Multi-Sensor Mobile System to Monitor Track Superstructure and Substructure: Initial Studies with Non-Invasive Technologies.*

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

Managing Editor: Errin Jewell

Design and Layout: Errin Jewell, Brian Dowler, Ashlee Gibson

Writers and Copy Editors: Brian Dowler, Ashlee Gibson, Pam Hamilton, Errin Jewell, Brandon Totten

Contributors: John Ball, Clayton Burch, Richard Begley, Linda Hamilton, Robert Plymale, Barbrara Roberts

Read ***Transportation Focus*** online at www.marshall.edu/ati/news/newsletter.htmlx

Portland Conference Yields Approval of OHV Courses

by Ashlee Gibson

Above: Busbee describes OHV curriculum.

Dr. Raymond L. Busbee, professor of Park Resources and Leisure Services at Marshall University, represented RTI at the third National Off-Highway Vehicle Conservation Council (NOHVCC) conference March 11-14 at the Red Lion Hotel in Portland, Oreg.

A program agreement among RTI, NOHVCC and Marshall, which creates a series of courses in off-highway vehicle recreation, was officially signed at a special ceremony.

These courses are designed to provide students and professional employees of planning and land management with course work in the aspects of off-highway vehicle recreation in the United States, planning and construction of OHV trails and facilities and operation and management of such facilities.

Busbee said the courses would be available to any student pursuing a baccalaureate or graduate degree, not just those earning a Bachelor or Master of Science with an emphasis in park and conservation. He said attempts to make the courses eligible for a minor course of study are in the works as well as plans to establish 2 + 2 degree programs with Marshall's Community and Technical College and other RTI partners. The courses will also be modified and offered as distance-learning courses via the Internet.

The NOHVCC conference is part of a mission to share educational opportunities and experiences to create a positive image of the sport of riding off-road recreational vehicles.

Nearly 240 people attended the NOHVCC conference, which included a four day pre-ride prior to the field demonstrations. These demonstrations included a look at trail design, trail maintenance, motorcycle and ATV sound testing and two separate sessions on the future of trail travel management on federal lands. Keynote speeches featured representatives from the NOHVCC Adventure Trail and Library.

"It was a great conference and there are quite a few positive things about our OHV program," Busbee said.

RTI Conducts Railroad, Highway Operations Seminar in Mont.

by Ashlee Gibson

RTI and Western Transportation Institute in Bozeman, Mont., hosted the Railroad and Highway Traffic Safety and Operations Seminar March 9-10 in Helena, Mont. This was the second time this seminar, which was developed by RTI, has been delivered to an agency outside of West Virginia. John Ball, P.E., research associate - engineering, served as moderator and instructor. He was assisted by instructors from the railroad and highway industry.

The seminar presents engineering, operations and maintenance topics common to both transportation modes, particularly pertaining to grade-crossing issues.

Elizabeth Horsman, U.S. Asst. Attorney of the District of Montana, was a keynote speaker at lunch March 9. Her presentation was entitled, "Intelligence, Not Just for Law Enforcement Anymore." Robert Martin, Office of Policy Program Development, Federal Railroad Administration, spoke at lunch on March 10. His presentation was entitled, "Federal Investment in Railroad Infrastructure and Reauthorization of TEA-21 Funds."

The seminar was sponsored by Burlington Northern Santa Fe, Federal Highway Administration, Federal Motor Carrier Safety Administration, Federal Railroad Administration, Montana Department of Transportation, Montana Rail Link, Operation Lifesaver, Nick J. Rahall, II Appalachian Transportation Institute, Union Pacific and Western Transportation Institute.

Education

Pete Dailey Named 2003 RTI Student of the Year

by Brian Dowler

Peter J. Dailey, of Charleston, W.Va., was selected as the RTI 2002-2003 student of the year for his outstanding contributions to RTI research and education projects.

The award was presented to Dailey and 32 other students in Washington, D.C. The award is given to one student from each University Transportation Center and given by the United States Department of Transportation at the annual Transportation Research Board conference Jan. 11-15, 2004.

"Pete brings a lot of knowledge as well as ambition to RTI and specifically the ITSAMS project. RTI as well as the transportation industry are fortunate to have him working for them," RTI director Bob Plymale said.

Dailey has worked exclusively on the Transportation Research Project 00-05, Integrated Track Stability Measurement System (ITSAMS) since he was hired at RTI as a research associate in the Fall of 2003. Before becoming a research associate, he served as a graduate research assistant at RTI working with Dr. Tony Szwilski on the ITSAMS project.

The ITSAMS project seeks to reduce railway maintenance cost through non-invasive technologies that measure and sense the railway and track structure and subsurface, providing early detection of potential failure modes.

RTI Sponsors Area schools in FIRST LEGO League State Tournament

by Ashlee Gibson

Four area schools sponsored by the Nick J. Rahall, II Appalachian Transportation Institute (RTI) won awards in the FIRST (For Inspiration and Recognition of Science and Technology) LEGO league tournament December 13, 2003 at the Caperton Center for Applied Technology in Parkersburg, W.Va.

The awards were divided into four main categories: Technical, Team Performance, Special Recognition and Judges Awards.

This year's mission was entitled "Mission to Mars." The teams built LEGO land rovers to simulate travel on the Mars terrain. Students were then given various missions to complete to test the mobility and design of their rovers. These included freeing the rover from a sand dune and moving boulders to designated points.

Linda Hamilton, pre-K-12 outreach instructor who coached the RTI teams, also received a mentor award. The participants coached by Hamilton were from Miller Elementary, Barboursville Middle, Spring Hill Elementary and Davis Creek Elementary, which are located in Cabell County, W.Va.

"Awards like this mean a lot to me, but working with students and stimulating their interests in transportation technologies is what is really important," Hamilton said.

This award goes to the coach or mentor whose wisdom, guidance, patience and devotion were most clearly evident in his/her team's discussion with the judges.

"Four of the top 10 teams in the competition were coached by Linda," RTI director Bob Plymale said. "We are very excited that she has been rewarded for the hours she spends encouraging students to learn with LEGOs."

Above: Linda Hamilton and the team from Barboursville Middle School.

Funding for Research Increased by FRA

Funding was increased by the Federal Railroad Administration to $1 million for RTI.

The funding is from the FY 2004 budget and will be used for the "Development of an Integrated Track Stability Assessment and Monitoring System Using Site-Specific Geotechnical/spatial Parameters and Remote Sensing Technologies." This work will advance track inspection technologies.

Magazine Features Article about RTI Research

The March 2004 issue of *Railway Track & Structures* magazine features an article describing Federal Railroad Administration conducted by RTI Associate Director Dr. Richard Begley and Principal Investigator Dr. Anthony Szwilski.

Their research links a number of monitoring and inspection technologies, including Ground Penetrating Radar (GPR) with high-accuracy GPS.

The equipment was tested at Norfolk Southern's Norris Yard in Birmingham, Ala., in Jan. and at the Association of American Railroads' test facility in Pueblo, Colo., in April. The equipment allows them to look inside earth and rock structures that support railroad tracks in order to spot potential problems before they become structural failures.

Railway Track & Structures is a publication of the American Railway Engineers and Maintenance of Way Employees Association (AREMA).

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resources, ever-increasing the economic possibilities of mountains and valleys.

RTI will undertake a feasibility study of the proposed high-tech corridor and make recommendations on how best to proceed with the partnership. RTI is now in Phase II of its study.

Judy Radford, executive director of 4-C EDA, an economic development agency that consists of a four-county region located long the I-64 High Tech Corridor, also said the new corridor may increase prosperity in southern West Virginia and the surrounding area.

"We expect the partnership with CANA to enhance our efforts to provide technology-related infrastructure for the initial seven counties of the I-64 Technology Corridor," Radford said.

"Assistance from CANA coupled with leadership from the Rahall Transportation Institute at Marshall University and West Virginia State College, will set the stage for southern West Virginia to become very competitive."

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including: conducting research about ways to improve performance of maritime industries, improving the international competitiveness of American maritime industries, assessing technological advancements, developing maritime management initiatives and training maritime workers and improving maritime economics and finance.

Some of the issues with which the NMEI centers are involved include: port and terminal design and operation, including methods to evaluate land use conflicts centering on port location and procedures to improve the efficiency of docking and loading; integration of information technology to enhance the economic viability of the inland waterway system; vessel design improvements to optimize the efficiency of both towboats and tow barge systems; and infrastructure optimization including methods for evaluating lock and dam operations and prioritizing needed improvements.

"Transportation safety concerns every citizen around the country. It is imperative that our nation address these concerns with utmost priority, and it is a mission RTI has taken to heart. With the vital help of Congressman Rahall, we have taken some of the first steps in the nation of filling in one piece of the homeland security puzzle; finding ways to protect our nation's ports," director Bob Plymale said.

Education

Faculty and Student Spotlight

by Brian Dowler

Name: Sean Keith Litteral
Education: Bachelor of Science, Major Geology, Marshall University, Master of Science, Emphasis Geobiophysical Modeling, Marshall University Graduate College (MUGC)

Position: Research Associate - GIS
Birthplace: Ashland, Kentucky
Contributions to RTI: Principal Investigator for TTP 00-11, Development of Transportation and Economic Development Information System, TEDIS, delivered over the Internet. TTP 00-17, Development & Evaluation of a GIS Mapping System for WV Hatfield and McCoy Trail System. TTP00-18, Proposed GIS Mapping System for WV Appalachian Development Highway System (ADHS) Corridors.
Email: Littera2@marshall.edu

Name: Kristin Paulette Smith
Education: B.S. Marshall University, (Majors: Physiology/Molecular Biology/ Microbiology/Environmental Biology/ History)
Currently pursuing M.S. in Geobiophysical Modeling at MUGC
Title: Graduate Research Assistant
Birthplace: Huntington, WV
Contributions to RTI: Kristin currently works on a project in conjunction with the Bureau of Employment Programs (BEP) to geocode businesses throughout West Virginia that their software initially rejected. She is also assigned to the Master Land Use Project to aid in facilitating optimum land use policies within southern West Virginia, based on individual proximity to proposed and current transportation networks.
E-Mail: smith74@marshall.edu

Barrios, Cains and Dudding Become Newest Research Associates

by Ashlee Gibson

Juan de Dios Barrios, Bradley Cains, and Greg Dudding were all named research associates at RTI in late 2003.

Barrios, who is originally from Durango, Mexico, earned his B.S. in Biochemical Engineering from the Instituto de Durango. He has a Masters of Science in Physical Science concentrating in Geobiophysical Modeling. He is working on a Masters of Science in Technology Management with a concentration in transportation. He previously served as a graduate assistant at the Center for International Programs before joining RTI, where he was a research assistant for three years.

Bradley Cains earned a B.S. in Integrated Science and Technology from Marshall University. He is proficient in web development, computer programming, 2D and 3D graphic art, database administration and geographic information systems programming. He started at RTI in 2001 as a project assistant and then served as a graduate assistant for a year before becoming a research associate.

Greg Dudding earned his B.S. in Integrated Science and Technology: Information Technology from Marshall University. He is proficient in programming (Visual Basic, C++), Scripting (HTML, ASP, PHP), Application Management (Apache, SQL server, ArcSde) and Database Administration (MS SQL Sever, Oracle, using SQL, database normalization techniques). He had previously served as a graduate assistant and project assistant at RTI.

RTI partnership working to expand young minds

by Ashlee Gibson

The Nick J. Rahall, II Appalachian Institute (RTI) developed a grant with Marshall University Early Education Center (MUEEC) to create an early childhood outreach program that would provide assistance to early childhood professionals who are located in rural communities where access to alternative resources is restricted.

Above: Young pupils developing an early love of reading.

The MUEEC has developed extensive curriculum support in transportation related education focused on early childhood education. In the past few semesters, children at MUEEC have explored topics such as trains, coal, fire trucks, the Ohio river, buses, bridges, mapping, barges and coal mines.

Clayton Burch, MUEEC director, said Appalachian communities, environments and infrastructure are extremely valuable topics that are often overlooked because many are confused about real learning at any age.

"Kids are capable of much more than simply learning their ABC's. Our kids build and design houses and vehicles. You just have to tap into what most interests kids," Burch said.

Burch said of the most important progressions made through the grant was the website update, which allows parents and teachers to look at children's projects and get information on the center. The site also features a bi-weekly newsletter with the latest projects. A link dedicated to the outreach program is still under construction.

The Outreach website will include an archive of hands-on projects, database of articles on the curriculum and books/text currently used at MUEEC.

A portion of the funding goes toward purchasing transportation materials so the kids can build their projects. The most recent construction project is on designing boats to see what materials make for best sailing.

The MUEEC also plans to run a mock institute for in-service teachers for one week in July. This preliminary session will assist in the development of multiple institutes in the summer of 2005. Burch said he hopes this will be a statewide initiative.

Left: Two potential engineers hard at work on their river barge.

"The efforts of integrating transportation into an innovative curriculum are likely a model to be replicated. This partnership has been delightful to watch in action," Mike Hicks, assistant director of RTI, said.

Other Outreach projects include renovation of the support office (Room 302 Corbly Hall), a computer lab, literature reviews and new informational materials.

Education

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Hands-on Learning Activities Comprise Pre-K-12 Outreach Activities during National Engineering Week

High School Students Learn to Use Infrared Research Equipment

by Errin Jewell

More than 120 top sophomores from local high schools attended the 11th Annual Engineering Career Day, which took place Feb. 26, 2004 as part of National Engineers Week.

The purpose of Engineering Career Day is for high school students to meet working engineers to learn about science and technology subjects, which are required in high school to prepare for college courses and engineering careers.

RTI research associate Pete Dailey and graduate research associates Carlos Ramirez, Dbesh Shrestha, Pierre Cure and Tianing Li explained the use of infrared technologies in engineering and railroad research during the half-day event.

After guiding students in photographing infrared images of objects of varying temperatures, such as their hands, pencils or cups, Dailey and Ramirez showed them how to graph the varying temperatures on a computer. Then Dailey and Ramirez explained how they use the infrared camera in the field while conducting research for Federal Railroad Administration projects.

"Our intention is to see if we can determine the difference between good and bad wooden railroad ties using IR," Dailey said.

Dr. Betsy Dulin and Dr. Bill Pierson of MU's College of Information Technology and Engineering, also hosted a booth to inform students of this summer's Exploring Engineering: Academy of Excellence. Students who visited this booth were encouraged to participate in a LEGO robotics exercise that is an activity taught at the camp. RTI co-sponsors the week long camp, which is designed to encourage students entering their junior year of high school to explore engineering as a career by participating in hands-on engineering activities, touring engineering-related facilities and interacting with practicing engineers.

Engineering Career Day was sponsored by the Society of American Military Engineers and took place at MU's Memorial Student Center. The students began the day with a breakfast, which was followed by exhibits from local and regional engineering firms, educational institutions, government agencies and professional organizations comprised the event. The day ended with a luncheon with Lawrence J. Gilbert, a NASA Langley Aerospace Education Specialist, as the keynote speaker.

Marshall University Early Education Center Students Learn about Bridge Construction, Barges, Water Safety

by Brian Dowler

John Ball, research associate-engineering, guided 12 children from the Marshall University Early Education Center (MUEEC) through a hands-on learning session about bridge structure, barges, railroads and the connections between these modes of transportation.

Ball spoke with the children in participation with National Engineers Week, Feb. 22-28, 2004.

"Children see and use transportation infrastructure everyday, just like adults, only from the backseat of the car," Ball said. "When you explain what they see and what role transportation plays in their lives, they really start asking questions and learning. Transportation is kids' play, and these children develop this into projects, which they demonstrate to the MUEEC staff."

Students at the MUEEC built bridges and barges from blocks prior to Ball's arrival. "They demonstrated how goods, such as coal, food and vehicles are loaded onto barges from docks and are transported on rivers until they reach their designated port," he said.

Above: Graduate research assistant Carlos Ramirez adjusts an infrared camera, which has recorded an image of a student's hand, as indicated on the computer screen. Right: A student from MUEEC displays a "barge" constructed from wooden blocks that carries coal, livestock and people.

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Hands-on Learning Activities Comprise Pre-K-12 Outreach Activities during National Engineering Week (cont'd)

Students Design, Build Model Truss Bridges; Enter West Point Competition

by Ashlee Gibson

During Engineering Week, students at Student Aspect Preparatory School in Huntington, W.Va., learned what it took to build bridges using West Point Bridge Designer. This is a software tool that takes a student through the process of building truss bridges. Students learned the basics of trusses, and then used the software to build and improve upon their designs.

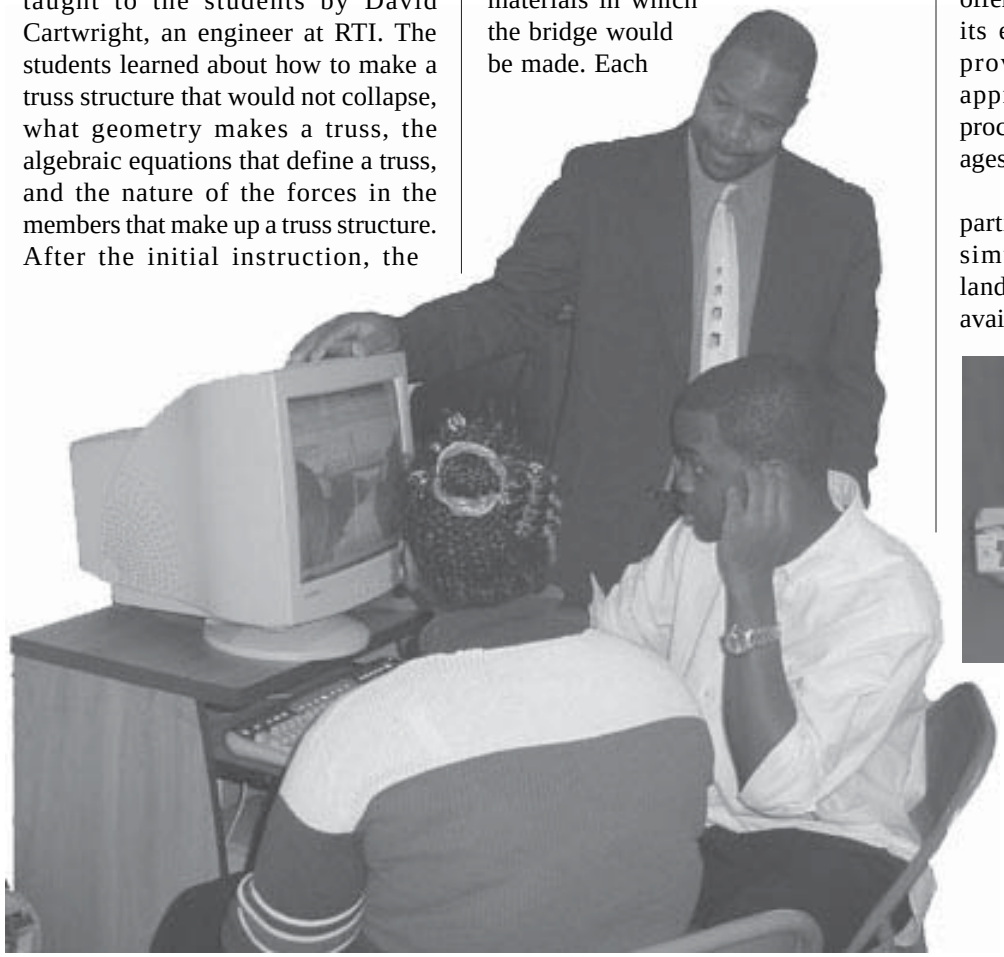
Fundamentals of trusses were taught to the students by David Cartwright, an engineer at RTI. The students learned about how to make a truss structure that would not collapse, what geometry makes a truss, the algebraic equations that define a truss, and the nature of the forces in the members that make up a truss structure. After the initial instruction, the students were taught the basics of the software program.

Once the students familiarized themselves with the program, teams of students started building bridges almost immediately. The program took the students through a set of choices about a bridge. For example, they could determine the type of truss with which they wanted to start out, length of the bridge span, whether to use pillars in their bridge structures or not, and the materials in which the bridge would be made. Each choice had an effect on the strength and the final price of the bridge.

The lower the cost of the bridge, the higher it is scored. The bridges with the lowest cost throughout the three qualifying rounds will win. Nine students participated in the project, with four of them going on to enter their designs in a bridge building contest sponsored by the United States Military Academy at West Point. Judging will end April 5.

The third annual contest is offered by West Point and commemorates its engineering heritage. The contest provides students with a hands-on approach to the engineering design process. The contest is open to children ages 13 to grade 12.

Younger students also participated in the project by drawing simulated models of bridges over landscape and constructing them with available materials.



Left: David Cartwright guides middle school students from Student Aspect Preparatory school in designing a truss bridge using West Point Bridge Designer Software. Above: Instructor Karen Blye assists an elementary student in constructing a model of a truss bridge.

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.

Conferences

August 5-6, 2004
Geohazards in Transportation in the Appalachian Region, Dublin, Ohio.

Transportation Professional Development Courses

May 12, 2004
Survey and Image Mapbase Integration with GIS; Huntington, W.Va.

June 20-25, 2004
Exploring Engineering Academy of Excellence; Huntington, W.Va.

Pre-K-12 Outreach

June 20-25, 2004
Exploring Engineering Academy of Excellence; Huntington, W.Va.

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

Nick J. Rahall, II Appalachian Transportation Institute
at Marshall University
One John Marshall Drive
Huntington, WV 25755-2195-80
1-800-284-9853
www.marshall.edu/rti

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