

# Decks, Tubes and Pterodactyls

Students apply problem-solving skills to Interstate 70 plans

**By Bob Brendel**

Envision for a moment a double-decked Interstate 70 running across Missouri from St. Louis to Kansas City. A pretty spectacular idea, you might say. Sounds like something out of “The Jetsons,” for old Saturday morning cartoon fans.

Well, it’s not MoDOT’s preference for improving the safety, condition and congestion issues that plague the aging facility. But it was an idea that was considered “cool” by a group of fourth- and fifth-graders who spent the spring studying I-70. And they were disappointed to hear that such a solution would cost far, far more than the \$3 billion price tag of MoDOT’s improvement strategy.

“My students are totally hooked on I-70,” said Jill Rice, fourth-grade teacher at Richardson Elementary School in Lee’s Summit. “They talk about it everywhere they go.” Fourth-graders from Parkade Ele-

mentary in Columbia and Hallsville Elementary and a fifth-grade class at Fairview Elementary in Jennings also were involved in the “Improving Interstate 70” unit. Using an innovative, problem-based instructional design method, the four teachers collaborated over the Internet for months to design and implement the unit with their students.

The project was the brainchild of Art Schneiderheinze, an instructional design specialist and researcher in the enhancing Missouri’s Instructional Networked Teaching Strategies program at the University of Missouri-Columbia. Assisting him was Donna Russell, a researcher at UM’s St. Louis campus.

The eMINTS program is a statewide effort to upgrade Missouri’s classrooms in the 21st century by combining cutting-edge technology with first-class teaching. School districts, selected by Missouri’s Department of Elementary and Secondary Education, choose classrooms (typically third or fourth grade) that are transformed into places for learning where teachers and students use multimedia tools to better understand the world, work together and achieve higher levels of learning. Nearly 250 classrooms across Missouri have been outfitted and a corresponding number of teachers have been trained to use technology and employ approaches that include Web quests and multi-media development.

Beginning last July, MoDOT collaborated with Schneiderheinze and Russell to create a framework for the unit that represented the problem solving used by transportation experts.



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Art Schneiderheinze

“The students quickly recognized the significance of the problem, since Interstate 70 impacted all of them in some way,” Schneiderheinze says. “Using the technology to interact with experts from MoDOT and with students from other communities gave them a voice to express their ideas and a way to think more critically about the problem.”

MoDOT I-70 Project Manager Kathy Harvey says, “I thought it was an interesting idea to



expose kids to the process we use, but in a greatly condensed time period, and to see what they would come up with.” When she visited the classroom in Lee’s Summit, she says, “I

was amazed at how much ground they had covered, and at how proficient they were with the computer.”

The students often tapped an expert resource panel that included MoDOT personnel and staffers from other state agencies and the private sector. Questions were submitted by the students to an electronic discussion board that was a part of a new network learning tool – Shadow netWorkspace™, developed by the University of Missouri-Columbia College of Education.

For part of the unit, Rice’s class in Lee’s Summit was divided into eight expert groups: design, construction, human environment, natural environment, socioeconomic, traffic flow and growth, public involvement and finance. The teams gathered information about their roles and interacted online with actual experts from their respective areas. And the various classes also engaged in regular “chat” sessions with each other to collaborate on tackling the problem from the different perspectives represented by each of the communities.

“Some days we spent all day on I-70,” Rice says. “Really, the unit reinforced all of our curriculum issues. It pulled in math, and economics is a big part of fourth grade.”

Her finance team had one of the more compelling ideas: that affected landowners be paid twice the value of their property to eliminate conflict and achieve consensus.

### Wild Ideas

Some of the ideas espoused initially by the Lee’s Summit students were in the far-out category. Tara Manillo thought MoDOT should just flood the I-70 corridor and turn it into a canal where cars and trucks could travel aboard barges. Carrie Gordon envisioned a gigantic, 200-mile-long chair lift.

“My mom said we should use huge birds like pterodactyls to get across the state,” she says.

But those ideas weren’t any more unique than some of those submitted by adults during the first phase of MoDOT’s I-70 Improvement Study. Two ideas proposed from the public involved a safety concept where the roadway



**Students read how the experts responded to their questions about I-70 construction.**



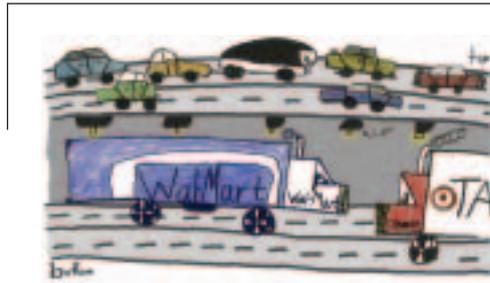
**Students assess the feasibility of their preferred solution: to widening I-70 from the inside to avoid the destruction of land, businesses and homes.**



**Mrs. Jordan’s class discusses how the strategies they proposed affect other areas of expertise, such as public relations, construction and financing.**

would move – like a massive escalator – instead of the vehicles; another one would have used a pneumatic tube – such as the one used at drive-thru banks – to whisk cars from one end of the corridor to the other in a large cylinder. In fact, researchers at the University of Missouri are currently experimenting with a method of freight movement that would use pipeline technology.

However, each solution group, which consisted of at least one person from each of the eight expert groups, had the challenge to propose and defend a feasible solution. One group recommended an underground tunnel that would be used by semi-trucks transporting goods from one part of the state to another or to other states in the country. The eight experts in the group had to reach consensus about the feasibility of the solution,



not only from the perspective of their expert area, but also the perspective of the other three communities.

“What this unit has taught the students is that fixing I-70 is a very complex issue,” Rice says, “and that it takes teamwork to come together to impact change.” ■

**One student team proposed an underground tunnel for semi-trucks to reduce the number of accidents on the interstate and provide more space for increasing amounts of traffic. They suggested that this plan would affect the natural environment the least, since only a special entrance/exit ramp to get to the tunnel would need to be built. They also suggested special vents in the tunnel for truck exhaust. Houses and businesses wouldn't have to move; however, the group thought financing the tunnel and constructing it without affecting I-70 traffic could present obstacles.**

*Bob Brendel is Project Development communications manager at MoDOT General Headquarters.*

# I-70 What's Happening Now

The Missouri Department of Transportation's effort to improve the safety and condition of Interstate 70 and to alleviate congestion by adding capacity to the aging facility has entered its second phase with the launch of "Improve I-70" – an umbrella term used to describe seven highly coordinated but independent studies taking place between Independence and Lake St. Louis.

After completing the first step last year, which developed a strategy to widen and rebuild the entire 200-mile corridor that connects Missouri's two largest urban areas, engineers now will concentrate their analysis of potential impacts in seven distinct geographic areas. The analysis is scheduled to be completed by the summer of 2004.

The studies will consider engineering, environmental and community issues and

result in decisions about the location and basic configuration of I-70 widening and reconstruction improvements. Comprehensive public involvement and thorough environmental documentation will be completed during these studies.

Typically the rural sections of the new I-70 will have six lanes, a 124-foot grass median, 12-foot inside and outside shoulders, a frontage road system and reconstructed interchanges that provide improved access control.

“One of our highest priorities is to take care of the system we have,” MoDOT Director Henry Hungerbeeler says, “and that position was validated during the first phase of the I-70 studies when public input indicated citizens support the widen-and-rebuild strategy by more than a two-to-one margin.”

Although no funds have been identified for the ultimate design and construction of a 21st-century I-70, Hungerbeeler says

“it's important that we move forward and complete the evaluation of human and environmental impacts along the corridor now so that we're in a position to implement the plan when funds do become available.” With the reconstruction of 53 interchanges, 130 bridges and every mile of pavement, the upgraded project is estimated to cost nearly \$3 billion.

The First Tier Environmental Impact Statement was conducted by Kansas City-based engineering consultant HNTB Corporation and was approved by the Federal Highway Administration in December. HNTB will continue to assist MoDOT in this current planning phase, serving as the project's general engineering consultant and coordinating seven teams that will concentrate on localized sections of the corridor.



More information is available at the study web site – [www.improveI70.org](http://www.improveI70.org). Interested persons can also call the project hotline at 1-800-590-0066, or write to:

**Improve I-70**  
**P.O. Box 410482**  
**Kansas City, MO 64141-0482**  
 or send e-mail to:  
[comments@improveI70.org](mailto:comments@improveI70.org)

“A new I-70 is desperately needed, because we really have no good alternatives,” Hungerbeeler said. “We’re already experiencing traffic backups in some parts of the state, and as traffic grows in the coming years, we’ll get to the point where you can’t drive anywhere on I-70 without significant backups.”

“And adding lanes elsewhere won’t help enough,” Hungerbeeler added. “Even if you four-lane Route 36 across north Missouri and Route 50 across central Missouri, studies show that would only divert about 10 percent of traffic off I-70. It also wouldn’t solve the safety, condition and congestion problems on I-70. Simply put, the only good alternative to keep traffic moving across Missouri in the future is to get I-70 upgraded as soon as possible.”

As an interim solution MoDOT has made plans to resurface I-70 without rebuilding or expanding it.

# In The Mode

## The Transportation Quiz

### Big Rigs Keep On Rollin’

By Patty Sparks



Every day, trucks move more than 333,000 tons of outbound and 400,000 tons of inbound freight to and from Missouri communities. In fact, 77 percent of Missouri towns are served exclusively by trucks.

Test your knowledge of trucking in Missouri and beyond.

**1** Missouri’s trucking industry employs approximately how many people?

- a. 25,000
- b. 50,000
- c. 85,000
- d. 120,000

**2** The Missouri trucking industry pays \_\_\_ in salaries each year.

- a. \$4.5 million
- b. \$30 million
- c. \$1 billion
- d. \$6 billion

**3** Compared to rail, water and air, trucking moves what percentage of all manufactured freight in Missouri?

- a. 25 percent
- b. 40 percent
- c. 80 percent
- d. 90 percent

**4** Miles driven by Missouri truckers has \_\_\_ in the past 10 years.

- a. increased by 33 percent
- b. increased by 42 percent
- c. decreased by 10 percent
- d. remained steady

**5** More than a third of truck-related auto fatalities occur when the car:

- a. moves into a truck’s blind spots.
- b. attempts to pass a truck on a hill.
- c. follows a truck too closely.
- d. pulls out in front of a truck at an intersection.

**6** The average tractor-trailer is just under \_\_\_ feet long.

- a. 50
- b. 60
- c. 70
- d. 80

**7** About 6 percent of truck drivers are:

- a. African-American.
- b. over the age of 55.
- c. women.
- d. none of the above.

**8** What term refers to the blind spots around a large truck?

- a. the Black Hole
- b. the Danger Zone
- c. the No-Zone
- d. the Hammer Area

**9** In CB language, what is a “bumper sticker”?

- a. a tailgating car
- b. a hitchhiker
- c. a speeding ticket
- d. an area approved for overnight parking

**10** In 2000, professional truckers in the United States drove enough miles to:

- a. travel from the North Pole to the South Pole.
- b. circle the earth three times.
- c. travel to Mars and back.
- d. make 1,000 trips from the Earth to the sun.

Sources: Missouri Motor Carriers Association, U.S. Department of Transportation.

Answers: 1 - b; 2 - d; 3 - c; 4 - b; 5 - a; 6 - c; 7 - c; 8 - c; 9 - a; 10 - d.

*Patty Sparks is an outreach specialist at MoDOT General Headquarters.*